
5.3 Fisheries and Aquatic Resources

WSDOT designed the Bellevue Nickel Improvement Project to avoid and minimize effects on fish and aquatic habitat. All stormwater runoff from new paved areas will be treated for water quality, including enhanced treatment for suspended solids and metals.

Roadway construction will cover a portion of a stream located in the median of the I-405 roadway. WSDOT will create 500 feet of new stream channel and provide 1.2 acres of new streamside vegetation and 1 acre of enhanced stream buffer along the newly created stream channel.



Please refer to the Bellevue Nickel Improvement Project Fisheries and Aquatic Resources Discipline Report in Appendix P (on CD) for a complete discussion of the Fisheries and Aquatic Resources analysis.

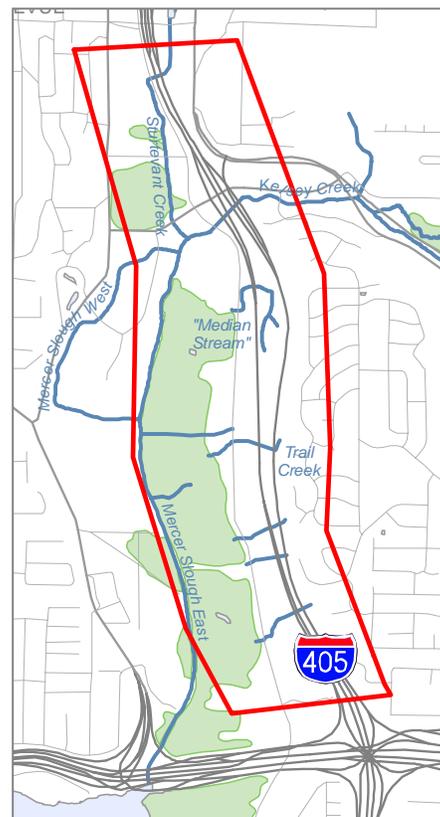
Fish and aquatic resources, such as streams, rivers, and lakes, and the organisms that inhabit those environments, are important elements of our ecosystem. People widely recognize the importance of these resources for food, livelihood, employment, income, and cultural value. Understanding how the project might affect fish and aquatic habitat and how to avoid or minimize those effects is a critical part of the environmental review process.

What is our study area for this analysis?

The study area for fisheries and aquatic resources includes streams, sloughs, and associated streamside habitats (see Exhibit 5.3-1). Streams and sloughs that cross I-405 or occur in the vicinity of the study area include Kelsey Creek, Sturtevant Creek, Trail Creek, Mercer Slough, and several unnamed tributaries to the Mercer Slough wetlands.

We reviewed existing information and conducted stream surveys to determine habitat conditions as far as 300 feet upstream and 0.25 mile downstream of the highway right of way.

Exhibit 5.3-1. Study Area Boundaries



What are the general habitat characteristics of the study area?

In general, residential, commercial, and industrial land uses have substantially altered the rivers and streams in the study area from their natural state. These alterations have included bank hardening, reducing or removing streamside vegetation, straightening stream channels, and removing fallen trees. The vegetation surrounding these waterbodies has also changed significantly. A mix of immature native vegetation and non-native invasive plant species has replaced what was once predominantly mature native vegetation.

What fish and aquatic species occur in the study area?

Anadromous vs. Resident Fish

Anadromous fish are born in freshwater streams, rivers, or lakes, spend their adult phase in the ocean, and return to their birth waters to spawn.

Resident fish spend their entire lives in freshwater systems and do not migrate into saltwater environments.

Fish species found in the area include both anadromous and resident salmonids and a variety of other resident fish. Native species of salmonids found in the study area include Chinook, coho, chum, and sockeye salmon, steelhead trout, and sea-run cutthroat. Resident rainbow and cutthroat trout also use the waterbodies in the study area.

Chinook salmon use the study area primarily for up- and downstream migration and rearing; however, there is also some limited spawning habitat in Kelsey Creek. No one has documented use of the study area by bull trout and dolly varden. Chinook salmon, bull trout, and dolly varden are all currently listed as threatened species under the ESA.

Other fish species likely to be found in the study area include three spine stickleback, longnose dace, speckled dace, longfin smelt, prickly sculpin, riffle sculpin, reticulated sculpin, shorthead sculpin, torrent sculpin, largescale sucker, peamouth chub, bluegill, and redbside shiner, Pacific lamprey, river lamprey, and western brook lamprey.

Would the No Build Alternative benefit fisheries and aquatic resources?

If the project were not built, sloughs and streams in the study area would not experience any physical changes from construction activities; however, routine maintenance activities such as mowing or brush removal would continue and may disturb streamside vegetation.

The untreated stormwater runoff that currently enters these waterbodies from I-405 and local streets would continue. Untreated stormwater can affect a variety of aquatic organisms and can reduce the overall health of an ecosystem over time.

How will the project affect fisheries and aquatic resources?

Effects to fisheries and aquatic resources can result from removal of streamside vegetation, and stormwater runoff that could affect stream water quantity and quality and, in turn, affect fish and fish habitat.

Construction In or Over Existing Streams

The project will directly affect Median Stream, which flows in the I-405 median, crosses I-405 via a series of concrete culverts, flows to and alongside Southeast 118th Avenue, and discharges into the Mercer Slough wetlands. Median Stream may support resident, local non-ESA fish species.

During construction, we will realign the southbound I-405 roadway to the east into the existing median to allow for the construction of a new 7-lane tunnel. As a result, we will permanently cover approximately 500 linear feet, and approximately 0.25 acre of Median Stream.

We will direct the existing flow of Median Stream into a new culvert under the realigned southbound I-405 roadway where it will discharge on the west side of I-405.

In addition to the new culvert for Median Stream, we will replace three other existing culverts that cross I-405 within the study area. These culverts are located at MP 11.7 (unnamed creek), MP 11.8 (unnamed creek), and MP 12.03 (Trail Creek).

Streamside Vegetation Removal

The project will permanently remove approximately 1.7 acres of streamside vegetation along 500 linear feet of Median Stream. Existing vegetation in this area is degraded and composed mostly of Himalayan blackberry, upland grasses, and a few immature native deciduous trees. We will remove no other streamside vegetation as part of this project.

Development has altered many of the functions provided by streamside vegetation (such as large woody debris, contribution of other organic material, fish cover, bank stabilization, and

stream temperature regulation) from natural conditions. The project will not substantially affect them further.

How will project construction affect fisheries and aquatic resources?

Project construction will have several temporary effects on fisheries and aquatic resources. These temporary effects, discussed in the sections below, primarily relate to construction-related in-water disturbances and stream diversions, in-stream deposit of sediments, and streamside vegetation effects.

Direct In-Stream Disturbance and Stream Diversions

Construction activities over, in, or near a stream can disturb fish, other aquatic species, and aquatic habitat. Except where absolutely necessary (as in the case of culvert replacements or extensions), construction equipment will not enter streams below the ordinary high water mark (OHWM) and we will remove water from within the stream channel prior to placing new or lengthening existing culverts. Dewatering and stream diversions could strand fish and create temporary barriers to fish movement.

Before starting in-water work, we will isolate any fish that may exist and remove them from the work area using approved methods. We will remove water from streams during the driest time of the year when flows are low. We will limit in-water construction to approved work windows, as defined by permit conditions, and we will complete this work in the shortest time possible. These measures should minimize adverse effects to any fish and other aquatic species from project construction.

In-Stream Sedimentation

Earth-disturbing construction activities could introduce fine sediments into streams in the study area through runoff and erosion. Excessive fine sediment entering the streams could cause fish eggs in the gravel to be smothered, reduce the amount of food available for fish, and create conditions where visual predators, such as coho salmon, have reduced capacity to capture prey. In addition, certain types of sediments can damage the gills of fish, leading to their death (Lake and Hinch 1999).

The potential for erosion and sedimentation will be highest in Median Stream where construction activities will occur within and directly adjacent to the stream. We will address potential effects from sedimentation by the following measures:

Ordinary High Water Mark

The elevation marking the highest water level that is maintained for a sufficient time to leave evidence on the landscape, such as a clear, natural line impressed on the bank, changes in soil character, or the presence of litter and debris. Generally, it is the point where the natural vegetation changes from predominately aquatic to upland species.

- The project will use retaining walls and steep side slopes to minimize effects to streams, wetlands, and other critical areas. Except where absolutely necessary, construction equipment will not enter streams below the OHWM. We will locate staging and stockpiling areas well away from streams.
- We will develop a TESC plan before initiating construction of the project. We will implement the plan throughout all phases of construction.
- We will remove water from streams prior to replacing or lengthening culverts and will strictly follow conditions of all applicable permits and approvals.
- We will implement, monitor, and maintain appropriate BMPs (see Appendix B) to reduce the risk of erosion, and to reduce or minimize opportunities for sediment to enter waterbodies in the vicinity of the project.

Even with BMPs, short-term effects to water quality from sediment (such as temporary increases in stream cloudiness) are possible, particularly during storm events. We expect these effects will be small in magnitude and not likely to harm fisheries and aquatic resources in the study area.

Streamside Effects

During construction, we will remove streamside vegetation located within 10 feet of any new permanent structures or toes of slopes. We will temporarily disturb 0.1 acre of streamside vegetation during construction. We will replant all temporarily cleared or disturbed areas with appropriate native vegetation.

How will the project affect federally listed species and federal species of concern?

The “federally listed” aquatic species known or presumed to be in the study area are chinook salmon and bull trout. The only federal aquatic species of concern known to inhabit the study area is coho salmon. We know Chinook and coho salmon use Mercer Slough and Kelsey Creek at various life stages. We are also aware that coho salmon use Sturtevant Creek.

Though bull trout presence in the study area is likely limited due to the lack of quality habitat for this species, the USFWS has designated Lake Washington and associated Mercer Slough, Sturtevant Creek, and Kelsey Creek as proposed bull trout critical habitat.

No in- or overwater construction related to this project will occur in Mercer Slough, Sturtevant Creek, or Kelsey Creek. We will use all appropriate and available BMPs to limit effects from construction in the vicinity of these waterbodies.

How will we avoid or minimize potential adverse effects on fish and other aquatic species or aquatic habitat?

We have designed this project to avoid and minimize adverse effects on fish, other aquatic species, and aquatic habitat. Where possible, the project design locates the new roadway and associated roadway structures away from existing fish habitat to prevent permanent habitat effects. In cases where avoidance was not possible, the project design minimized effects to aquatic habitat.

Throughout the study area, the project design includes retaining walls and steep side slopes that limit direct effects to streams and streamside vegetation. Although existing runoff from the study area receives treatment only at the I-405/Southeast 8th Street interchange and along portions of the project area by flowing through grass-lined ditches, all stormwater runoff from new impervious surfacing will be treated for water quality, including enhanced treatment for suspended solids and metals.

How will we minimize construction effects?

Appendix B includes avoidance and minimization measures that we will incorporate into the project to address effects on fisheries and aquatic resources. We highlight key measures below.

We will restrict all in-water work to authorized construction periods as defined by appropriate permitting agencies (WDFW, NMFS, and USFWS) to minimize negative effects to fish species by preventing construction activities during periods of fish migration or spawning.

Throughout construction, we will use appropriate erosion BMPs to avoid unintentional discharges of sediment from bridge, culvert, and roadway construction. We will define specific BMPs for use as part of a TESC plan that will define BMPs for clearing, removing vegetation, grading, ditching, filling, compacting embankments, or other excavation activities. BMPs used in the plan will control sediment input from all vegetation- or ground-disturbance activities.

We will restore temporarily cleared areas to pre-construction grades and replant the areas with appropriate native vegetation, including the area built upon and any staging areas we use.

BMPs that we could use during construction include the following:

- Using effective erosion control measures, such as filter-fabric fence, straw mulch, and plastic sheeting to prevent silt and soil from entering surface waters (including wetlands).
- Spreading grass seeds on all bare soil areas following grading.
- Clearly labeling streams and stream buffers on the construction plans and in the field.
- Marking clearing limits with orange barrier fencing wherever clearing occurs in or near critical areas.
- Locating staging areas and equipment storage areas away from sensitive areas such as streams and wetlands.
- Refraining from vehicle refueling and maintenance activities within 100 feet of streams and wetlands.
- Minimizing the duration of in-water work (below the OHWM) and strictly adhering to the appropriate fish work windows, as dictated by applicable permits.
- Prohibiting waste and excess materials from disposal or storage below the OHWM.
- Complying with Washington State's surface water quality standards (Chapter 173-201A WAC), which specify a mixing zone beyond which water quality standards cannot be exceeded. Monitoring of water quality will occur during construction to ensure compliance with Ecology's standards to protect fish and aquatic life.
- Preparing a Spill Prevention Control and Countermeasures (SPCC) plan for the project prior to beginning any construction, and maintaining a copy of the plan with any updates at the work site.
- Containing excavated sediment in appropriate containers to avoid discharge to surface water, and transporting the contained sediments to an approved disposal site.
- Curing concrete before contact with surface water as required by WAC 110-220-070(1)(g) to avoid increased alkalinity that can occur when fresh concrete contacts water.

Mixing Zone

A limited area where initial dilution of a discharge takes place.

- Regularly checking items such as fuel hoses, oil drums, and oil and fuel transfer valves and fittings for drips or leaks to prevent spills into surface water.
- Keeping the illuminated area and intensity of nighttime lighting to the minimum that is necessary for the intended purpose. Workers will direct lights onto the work areas and away from the water.

How will we mitigate for unavoidable negative effects to fish or aquatic habitat?

We have developed a preliminary stream mitigation plan for Median Stream that includes onsite habitat restoration and creation.

The preliminary stream mitigation plan includes the following objectives shown in Exhibit 5.4-2 in the Surface Water, Water Quality, and Floodplains section of this EA.

- Create approximately 500 linear feet of new stream channel between southbound I-405 and 118th Avenue Southeast.
- Plant approximately 1.2 acres of native streamside vegetation along the newly created stream channel.
- Enhance approximately 0.9 acre of stream buffer by removing non-native plant species and replacing with native streamside vegetation.