

CHAPTER 6 MEASURES TO AVOID, MINIMIZE, OR MITIGATE EFFECTS

This chapter presents the measures that will be used to avoid, minimize, or mitigate any negative effects of the project on the human and natural environments. The project design will incorporate many best management practices (BMPs) that are standard practices for WSDOT.

What measures will be taken to avoid, minimize, or mitigate effects?

Air Quality

For temporary effects during construction, state law requires construction site owners and/or operators to take reasonable precautions to prevent fugitive dust from becoming airborne. Fugitive dust may become airborne during demolition, material transport, grading, driving of vehicles and machinery on and off the site, and through wind events. WSDOT will comply with the procedures outlined in the Memorandum of Agreement between WSDOT and the Puget Sound Clean Air Agency (PSCAA) for controlling fugitive dust. Controlling fugitive dust emissions may require some of the following actions:

- Spraying exposed soil with water or other suppressant to reduce emissions of PM₁₀ and increase deposition of particulate matter.
- Using phased development to keep disturbed areas to a minimum.
- Using wind fencing to reduce disturbance to soils.
- Minimizing dust emissions during transport of fill material or soil by wetting down or by ensuring adequate freeboard (space from the top of the material to the top of the truck bed) on trucks.
- Promptly cleaning up spills of transported material on public roads.
- Scheduling work tasks to minimize disruption of the existing vehicle traffic on streets.

- Restricting traffic onsite to reduce soil upheaval and the transport of material to roadways.
- Locating construction equipment and truck staging areas away from sensitive receptors, as practicable, and in consideration of potential effects on other resources.
- Providing wheel washers to remove particulate matter that would otherwise be carried offsite by vehicles to decrease deposition of particulate matter on area roadways.
- Covering dirt, gravel, and debris piles, as needed, to reduce dust and windblown debris.
- Minimizing odors onsite by covering loads of hot asphalt.

Emissions of PM₁₀, volatile organic compounds, nitrogen oxides, and carbon monoxide will be minimized where practicable. Since these emissions primarily result from construction equipment, machinery engines will be kept in good mechanical condition to minimize exhaust emissions.

Federal regulations have been adopted that require the use of ultra low-sulfur diesel fuel in on-road trucks, and regulations will require the use of ultra low-sulfur diesel fuel for construction equipment by December 1, 2010. These regulations will require reduction of the sulfur content of diesel fuel from its current level of 500 parts per million (ppm) to 15 ppm—a 97-percent reduction—and they will result in a decrease in both sulfur dioxide and particulate matter emissions from these engines. WSDOT will encourage reductions in idling time of equipment and vehicles and use of newer construction equipment or equipment with add-on emission controls.

No permanent effects on air quality are anticipated as a result of this project; therefore, no specific mitigation is necessary or proposed.

Environmental Justice

WSDOT will continue to coordinate with the Muckleshoot Indian Tribe staff to ensure that construction and operational activities do not adversely affect tribal fishing rights. Mitigation measures are stated below in the Ecosystems mitigation commitment list.

As described in the EA, construction will affect SR 520 users and residents and businesses in neighborhoods surrounding the construction area. WSDOT will implement the following measures to avoid or minimize temporary construction effects on all people and businesses within the study area, including low-income and minority populations:

- Work with business owners to reconfigure or provide for alternative access during construction and make special efforts to ensure that the access needs of minority and low-income businesses are met.
- Continue to provide adequate public notice of construction activities, land closures, alternate routes, and detour routes and proactively work to reach low-income or minority populations through the use of print and electronic publications that serve low-income or minority people.
- Continue to conduct briefings on project construction to social service agencies that work with low-income or minority people in neighborhoods along the corridor to ensure that information is reaching all residents and roadway users.

Geology and Soils

To avoid or minimize temporary construction effects related to geology and soils, WSDOT will implement a TESC and use BMPs, which may include the following:

- Providing stabilized pads of quarry spalls, and possibly truck washes, at construction vehicle exits from the site.
- Conducting regular sweeping and washing of adjacent roadways.
- Placing silt fences downslope of all exposed soil.
- Installing quarry-spall-lined temporary ditches, with periodic straw bales or other sediment catchment dams.
- Placing temporary covers over soil stockpiles and exposed soil.
- Providing temporary erosion control blankets and mulching to minimize erosion prior to vegetation establishment.
- Providing temporary sedimentation ponds for removal of settleable solids prior to discharge.

- Establishing limits on the area exposed to runoff.

Construction activities on steep slopes and through areas with known or suspected landslides will use appropriate engineering and construction techniques developed to minimize landslide hazards.

No permanent effects on geology and soils are anticipated as a result of this project; therefore, no specific mitigation is necessary or proposed.

Hazardous Materials

WSDOT will implement standard mitigation measures for addressing hazardous building materials (e.g., asbestos and lead-based paint); encountering contaminated soil and groundwater; and dealing with underground storage tanks (USTs) and accidental spills, along with measures to address other worker safety and public health issues. At a minimum, WSDOT will implement the following measures:

- Mitigating adverse effects relating to hazardous materials by implementing appropriate design and construction measures.
- Preparing a Soil and Groundwater Management Plan (SMP) to address any contaminated soil and/or groundwater that may be encountered during construction of the project. The SMP will include protocols for managing and disposing of hazardous material in accordance with applicable regulations and implementation of construction techniques that minimize disturbance to the subsurface.
- Preparing an SPCC before construction starts. The plan will address procedures, equipment, and material used in the event of a spill of contaminated soil, petroleum products, contaminated water, or other hazardous substances during construction. The plan will also specify procedures for notification in the event of emergencies, inspection schedules for storage of hazardous materials, the identification of migration pathways, and the provision of secondary containment and security for hazardous material storage areas.
- Removal of any discovered USTs and pipelines will comply with the Washington State Department of

Ecology's Underground Storage Tank Statute and Regulations (Chapter 90-76 RCW, Chapter 173-360 WAC).

- Preparing a worker health and safety plan to minimize the effects of both identified and unanticipated hazardous materials from contaminating environmental media. The plans will address proper employee training, the use of personal protection equipment, contingency planning, and secondary containment for hazardous material releases.

Cultural Resources

Two archaeological sites have been identified in the area of potential effects (APE), but neither is considered to be historically significant. One has been extensively disturbed by prior development of the project area and vicinity, and the other has only limited information potential. No adverse effects from construction or operation of the project are expected on any archaeological site.

Although three NRHP-eligible and one Washington Heritage Register-eligible historic structures have been identified within the project APE, no adverse effects from construction or operation of the project are expected on any historic structures.

WSDOT will require monitoring by a professional archaeologist of all mechanical excavations greater than 1 meter (3.3 feet) in depth at all proposed detention ponds (except for one pond in the I-405/SR 520 interchange) and wetlands/stream enhancements in the SR 520 corridor, and the proposed stream channel cuts on the Keller Mitigation Site.

BMPs described in the Noise, Air Quality, Transportation, and Social Elements commitment sections will also reduce or minimize construction-related effects upon cultural resources.

WSDOT will follow its Unanticipated Discovery Plan in the event that unknown archaeological artifacts or human skeletal remains are found during construction.

The project will not adversely affect any significant archaeological site or historic property, so no specific mitigation is necessary or proposed.

Ecosystems

Wetlands

WSDOT has designed the project to avoid and/or minimize the operational and construction effects of the Build Alternative on wetlands to the greatest extent practicable. Total avoidance is not possible due to the location of the project along the existing road rights of way and the constraints associated with safety and design guidelines.

Specific aspects of the design that have been incorporated to avoid and minimize effects on wetlands include the following:

- Retaining walls will be used instead of standard fill slopes to reduce the footprint of the at-grade roadway sections and reduce the amount and extent of wetland fill.
- Stormwater treatment facilities will be constructed to treat roadway runoff before discharging to downstream aquatic habitat. This will improve water quality in riparian wetlands in the study area.
- Existing roadway ramps at the Bellevue Way interchange will be removed to offset some of the effects of new impervious surface and create areas for habitat restoration.

WSDOT will also use BMPs during construction to avoid or minimize effects, including the following BMPs:

- Implementing temporary erosion and sediment control and spill prevention control and countermeasures plans.
- Prohibiting servicing and refueling of vehicles within 100 feet of wetlands to reduce potential spills of petroleum and hydraulic fluids in sensitive areas, as practicable.
- Restoring cleared areas by replanting the areas with appropriate native herbaceous and woody species, as practicable.

Additional BMPs that may minimize effects on wetlands are listed below in the BMPs for Fish and Aquatic Habitat.

The project will provide compensatory mitigation onsite within the project corridor and offsite at the Keller Mitigation Site located in the Bear Creek basin. The mitigation includes the following:

- Rehabilitation of 28.17 acres of formerly agricultural wetlands at the Keller Mitigation Site.
- Rehabilitation of approximately 3.41 acres of wetland/buffer from pasture to a mixture of wetland and upland forest and shrub communities at the Keller Mitigation Site.
- Rehabilitation of approximately 0.57 acre and creation of approximately 0.52 acre of wetland within the Yarrow Creek sub-basin.

The proposed mitigation considers both the quantity and quality of wetlands rehabilitated in order to achieve a no net loss of wetland functions. Monitoring, contingency, and site management plans have been developed as part of the Final Wetland Mitigation Report currently under review by the regulatory agencies and will be used to adaptively manage the mitigation sites.

Wildlife and Wildlife Habitat

Measures to avoid or minimize effects on wildlife and habitat will include the following:

- Limiting construction to a relatively small area immediately adjacent to the existing roadway to minimize vegetation clearing.
- Following BMPs and other safety measures to minimize erosion and sedimentation and to minimize the risk of spilling contaminants.
- Replanting areas affected by construction with native vegetation.
- Improving culverts relative to existing conditions to increase the likelihood that terrestrial animals will be able to pass under the highway at creek crossings.
- Increasing overall stream lengths by 820 linear feet, creating habitat that might be used by wildlife.
- Installing noise walls along the majority of the SR 520 corridor to minimize noise disturbance, which will benefit wildlife using habitat adjacent to the roadway.
- Rehabilitating degraded wetlands that could provide wildlife habitat.

Fish and Aquatic Habitat

Negative effects on streams and fish during construction will be avoided or minimized by restricting all in-water work to authorized construction periods. These “work windows” will exclude periods when juvenile salmon are likely to be present in substantial numbers. Adherence to designated work windows, as identified by the appropriate agencies (Washington State Department of Fish and Wildlife [WDFW], NOAA Fisheries Service, and USFWS), will also eliminate or reduce in-water interference during periods when returning adult salmon are present. WSDOT will restore temporarily cleared areas by replanting those areas with appropriate native vegetation, as practicable.

Potential effects on streams, including sedimentation during construction, will be minimized as follows:

- Prohibiting construction equipment from entering below the ordinary high water mark of streams, except where permitted.
- Prohibiting servicing and refueling of vehicles within 100 feet of wetlands to reduce potential spills of petroleum and hydraulic fluids in sensitive areas, as practicable.
- Using containment tarps or netting when working over water to retain fallen materials.
- Clearly labeling streams and riparian buffers on construction plans and in the field.
- Demarcating clearing limits with orange barrier fencing wherever clearing is proposed in or near critical areas.
- Minimizing the duration of in-water work (below the ordinary high water mark) and strictly adhering to the appropriate fish work windows as identified by the appropriate agencies (WDFW, NOAA Fisheries Service, and USFWS).
- Prohibiting disposal of waste and excess materials below the ordinary high water mark.
- Complying with Washington’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 would occur during construction to ensure compliance with the

Washington State Department of Ecology's standards to protect fish and aquatic life.

- Curing concrete before contact with surface water, as required by WAC 110-220-070(1)(g), to avoid higher pH levels that can occur when fresh concrete contacts water.
- Checking equipment regularly to prevent spills into surface water from fuel hoses, oil drums, or oil or fuel transfer valves and fittings.
- Hydroseeding all bare soil areas after completing the grading.
- Containing excavated sediment in Baker tanks or other appropriate containers to avoid discharge to surface water, and taking the sediments to an approved disposal site.

Additional BMPs that may minimize effects on fish and aquatic habitat are included in the BMPs for Geology and Soils and Hazardous Materials.

WSDOT will provide mitigation to compensate for direct effects on fisheries resources and aquatic/riparian habitats. Overall, approximately 820 feet of new open channel aquatic habitat and associated riparian buffers will be developed.

In addition, WSDOT is committing to restoring a major reach of the Yarrow Creek system, restoring connectivity within Yarrow Creek and several tributaries. Yarrow Creek restoration will be guided by a Stream Habitat Mitigation Plan.

Details of these plans are included in the Final Streams Mitigation Report currently under review by regulatory agencies. Mitigation measures for effects on streams and fish will include the following:

- Using retaining walls where practicable to reduce the footprint of the at-grade roadway sections and reduce the amount and extent of wetland fill.
- Removing existing roadway ramps to offset some of the effects of new impervious surfaces and to create areas for habitat restoration.
- Following NOAA Fisheries Service-approved WSDOT protocols for all fish exclusion and removal activities.

- Fully revegetating all riparian buffer areas that undergo temporary clearing for construction, following completion of construction activities.
- Planting native trees and shrubs and following maintenance and monitoring procedures to ensure proper levels of plant survival and cover.
- Shortening replacement stream crossing structures to provide additional open channel, as practicable.
- Removing the road fill associated with two abandoned SR 520 ramps at Bellevue Way, and restoring daylight to Yarrow Creek at three existing culverts within these areas.
- Realigning two reaches of Yarrow Creek (approximately 2,000 feet of stream channel) and 750 feet of the South Fork Yarrow Creek, resulting in a substantial increase in available fish habitat.
- Restoring habitat complexity and stream functions within the realigned reaches to provide higher quality fish habitat than currently exists. Improvements will include improving channel morphology and installing a large amount of large woody debris.
- Removing and regrading existing roadway fill within the realigned reaches along the main stem and South Fork of Yarrow Creek, and planting 2.1 acres with native riparian vegetation (trees and shrubs).

Energy

WSDOT could implement where practicable the following potential measures to avoid or minimize temporary construction effects:

- Adhering to construction practices that encourage efficient energy use, such as limiting idling of equipment; encouraging carpooling of construction workers; increasing public transit, vanpooling, and nonmotorized facilities and programs; promoting regular vehicle maintenance; and locating staging areas near work sites.
- Purchasing construction materials from local suppliers where practicable to limit transportation fuel consumption.

Based on the precision of the methodology used to estimate emissions during operation of the project once complete, its

contribution to greenhouse gas emissions would be similar to what could be expected if the project were not built. As a result, no operational mitigation measures are necessary or proposed.

Land Use, Economics, and Relocation

Land Use

Measures to avoid or minimize effects on land uses during construction and operation, such as traffic congestion, noise, effects on visual quality and aesthetics, and effects on recreation access, are described elsewhere in this chapter.

Economics

WSDOT will implement the following measures to avoid or minimize temporary construction effects:

- Working with business owners to provide signed detours and maintain access for customers.
- Maintaining uninterrupted access to all businesses during construction.
- During the holiday period of November 15 through January 2, making no shifts in traffic patterns or lane configurations, city street closures, or extended ramp closures within the normal and extended operating hours of retail businesses within the City of Bellevue.

Measures to reduce traffic congestion, noise, effects on visual quality and aesthetics, and effects on air quality during construction, which could deter patrons from local businesses, are described elsewhere in this chapter.

It is anticipated that the net economic effects of operation will be positive; therefore, no mitigation is necessary or proposed.

Relocation

The acquisition and relocation for the project will be conducted in accordance with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Displaced residents are eligible to receive relocation advisory services and certain monetary payments for moving and replacement housing costs. Displaced businesses are eligible for advisory services and monetary payments for moving and re-establishment costs. Resources

will be available to all relocated residential and business owners without discrimination. If WSDOT determines that insufficient housing exists, it will commit to Replacement Housing of Last Resort (49 CFR 24.404 and Washington Administrative Code 468-100-404), which provides necessary housing in a number of ways and in a manner feasible for the individual displacement situations. Relocation of property has been minimized wherever possible.

Relocations will occur prior to construction. Thus, there will be no adverse relocation effects from operation of the project.

Noise

To limit construction noise at nearby receptors, WSDOT could incorporate the following measures, as practicable:

- Requiring all engine-powered equipment to have mufflers that were installed according to the manufacturer's specifications.
- Requiring all equipment to comply with pertinent U.S. Environmental Protection Agency (USEPA) equipment noise standards.
- Limiting noisiest construction activities, such as jackhammers, concrete breakers, saws, and other forms of demolition to daytime hours of 7:00 am to 7:00 pm.
- Obtaining noise variances from local jurisdictions as necessary.
- Minimizing noise by regular inspection and replacement of defective mufflers and parts that do not meet the manufacturer's specifications.
- Installing temporary or portable acoustic barriers around stationary construction noise sources.
- Locating stationary construction equipment as far from nearby noise-sensitive properties as possible.
- Shutting off idling equipment.
- Scheduling construction operations to avoid periods of noise annoyance identified in complaints.
- Notifying nearby residents whenever extremely noisy work would be occurring.

- Restricting the use of back-up beepers and requiring onsite spotters during evening and nighttime hours.
- There is virtually no effective method to reduce vibration effects from construction; however, by restricting and monitoring vibration-producing activities, vibration effects from construction could be kept to a minimum. WSDOT will conduct pre- and post-construction surveys of structures abutting the work zone for vibration, depending on construction activities.

To mitigate for operational noise, WSDOT will construct noise walls on both sides of SR 520 from approximately Evergreen Point Road to just west of Bellevue Way NE. These noise walls have been developed as part of the project design and will reduce noise levels to below the Noise Abatement Criteria (NAC). WSDOT conducted a detailed analysis to determine the appropriate location and extent of noise walls to be incorporated into the project. See Appendix O of the EA, Noise Technical Memorandum, for additional detail about the analysis and design of noise walls for the project.

Social Elements

The project will include a number of measures to avoid or minimize any negative effects due to construction of the project, including ongoing work with the Eastside community design collaboration to develop specific measures. WSDOT will meet with these groups to inform them about any construction activities and ensure that avoidance and minimization measures are effective.

Measures to reduce traffic congestion, noise, dust, effects on land use, and visual effects on social elements are identified elsewhere in this section. In addition, WSDOT will implement the following measures to avoid or minimize construction effects:

Community Cohesion

- Continuing to use the project Web site and send out newsletters providing information about the project. Newsletters will be sent out in the appropriate languages to ensure effective communication with study area residents.

- Scheduling neighborhood meetings, as often as needed, to keep residents informed of any construction activities before and during construction.
- Working with local jurisdictions for their input on design and landscape treatments associated with the lids.

Community Services

- Coordinating with public service providers before construction, including proposed detour routes, and work with them to establish alternative detour routes, if necessary.
- Coordinating with school officials during construction.
- Notifying residents of any disruptions or changes to services well in advance.
- Preparing a consolidated utility plan that lists existing locations of utilities, potential temporary locations, potential permanent locations, schedule for utility work, and detailed information on any service disruptions.

Recreational Facilities

- Identifying and signing detour routes for the temporary closures and rerouting of Points Loop Trail.
- Restoring the landscape of those park properties that will be temporarily affected during construction.

Pedestrian, Bicycle, and Transit

- Identifying and signing detour routes on bicycle/pedestrian pathways.
- If temporary transit stops are required, clearly marking the stops and providing additional signage indicating location.
- If there are any alternative routes and/or temporary transit stops, ensuring that stops are accessible for those with disabilities.

During operation, no adverse effects are anticipated on any of the social elements; therefore, no mitigation is necessary or proposed.

Transportation

WSDOT will develop a Transportation Management Plan (TMP) prior to construction. The TMP will contain strategies

for managing traffic operation, traffic control, and public information for the project. Strategies for managing traffic flow during construction will include the following measures:

- Timing of necessary lane closures outside of the peak commute times will be designed to minimize the effects to traffic.
 - Nighttime lane and ramp closures will be restricted to designated hours.
 - Full closures of the freeway, if necessary, will be employed over the weekend to minimize effects during peak commute periods.
- WSDOT will ensure that temporary road and lane closures are minimized and detour routes are well signed.
- Traffic on the Evergreen Point Road NE, 84th Avenue NE, and 92nd Avenue NE bridges will be maintained at all times during the construction of the proposed lids since no alternative detour routes exist on the north side of the freeway. The Bellevue Way NE bridge structure will be completed in stages, with resulting reduced capacity, to maintain traffic operations on that road during construction.
- SR 520 will remain open between 5:00 am and 9:00 pm on weekdays throughout construction and operate with all lanes, including the westbound HOV lane.
- Multiple, full-weekend closures are expected; however, closure hours and dates will be restricted to avoid special events and other freeway closures that might occur.
- Nighttime lane and ramp closures will occur outside of peak commute hours.
- The Bellevue Way NE bridge structure will be completed in stages with reduced capacity to maintain traffic operations on that road during construction.
- Sidewalks along all arterials will be maintained during construction.
- The southbound Bellevue Way NE to westbound SR 520 on-ramp may be closed for 2 to 3 months and the 108th Avenue NE westbound SR 520 on-ramp could be closed for 6 to 9 months during construction. Construction

restrictions will be in place to prevent closures of both ramps at the same time. A detour route between the two ramps via Northup Way will be in place during the ramp closures.

- Construction effects to the freeway transit stations at Evergreen Point Road and 92nd Avenue NE will be minimized using the following measures:
 - Construction methods may require the closure of the stations for short durations; however, construction restrictions will be in place to prevent closure of both stations at the same time.
 - Construction will be staged to minimize disruption to commuters and ensure that full and safe access is available to the new facilities.

During operation, no adverse effects are anticipated; therefore, no mitigation is necessary or proposed.

Visual Quality and Aesthetics

WSDOT will apply several BMPs to minimize or avoid negative visual effects that could arise from construction and operation of the project. These include the following:

- Shielding construction site lighting to reduce the amount of light spilling onto nearby residences and businesses.
- Minimizing visual obtrusiveness by locating construction equipment and stockpiled materials in areas that are less visually apparent and less visible from the road or to residents and businesses, as practicable.
- Screening construction staging areas from view with opaque fencing or vegetation, as practicable.
- Creating visual unity and consistency throughout the SR 520 corridor by adhering to the agreed-upon vision of a naturalistic contemporary visual character.
- Designing permanent facilities to fit with the surroundings by choosing forms and colors that do not contrast or stand out and by minimizing structural bulk, as practicable.
- Using lids to enhance community connectivity across SR 520 and provide opportunities to enhance visual quality for all viewer groups.

- Treating the surfaces of walls that are visible from SR 520 with a pattern that would minimize the scale and lengths of the walls, be interesting but not distracting, and establish a distinctive character for the Medina to I-405 corridor.
- Designing transit stops in a manner that is sensitive to the character of existing residential areas.
- Applying a pattern to the surface of walls and structures seen from the communities' side that responds to and blends with the existing visual character of the communities.
- Designing the architecture of the transit stops to be appropriate for the character and scale of the Points communities.
- Continuing to engage the Eastside communities in discussions about the visual quality and aesthetics of the roadway and corridor and apply the results to the design.
- Replanting or enhancing vegetation, street trees, and landscaping for screening or community identity and aesthetics, as practicable.
- Minimizing visual effects on cultural resources, public parks, and open spaces.
- Following the guidelines of the Roadside Classification Plan to blend the project into the adjacent land uses, while creating a unified experience for the highway user.
- Establishing landscaping that is compatible with the character of the existing vegetation and that meets community goals.
- Planning the landscaping for lids with input from the local jurisdictions so the landscape fits with the community and provides enhanced connectivity between neighborhoods and greenbelts.

Water Resources

WSDOT will implement the following measures to protect water resources during construction. In addition, BMPs related to Geology and Soils, Hazardous Materials, and Ecosystems are listed elsewhere in this section.

Surface Water

- Where construction must occur within stream channels, such construction will occur “in the dry” whereby stream flow is temporarily diverted around the work site, where practicable, to prevent turbidity.
- Construction disturbances will be limited to the minimum area needed, the shortest duration, and an appropriate distance away from water bodies, as practicable.
- New or replacement culverts and stream reaches will be aligned adjacent to the existing structures so they could be constructed in dry conditions where practicable, thereby minimizing the amount of in-water work and associated water quality effects.
- WSDOT will identify and develop staging areas for equipment repair and maintenance away from all drainage courses except in areas that are already paved and where no excavation will occur within the staging area. WSDOT will require that washout from concrete trucks not be dumped into storm drains or onto soil or pavement that carries stormwater runoff. During work on the site, thinners and solvents will not be used to wash oil, grease, or similar substances from heavy machinery or machine parts within the construction areas. WSDOT will designate a washdown area for equipment and concrete trucks.
- WSDOT will obtain a National Pollutant Discharge Elimination System (NPDES) construction permit. WSDOT will ensure that water meets the standards specified in the NPDES permit prior to discharge from the construction site. If necessary, water quality will be improved by using such BMPs as sediment ponds to allow sediment to settle out prior to discharge.

Operational effects will be avoided or minimized through provision of stormwater treatment facilities as part of the project design; therefore, no mitigation is necessary or proposed. Stormwater discharges from the Build Alternative will meet or exceed *Highway Runoff Manual* requirements and water quality regulations.

Groundwater

Potential effects on groundwater during construction will be negligible. These potential effects will be minimized by implementing TESC and SPCC plans. The project's stormwater treatment facilities will protect groundwater quality.

The Build Alternative will increase the amount of land covered by pollution-generating impervious surfaces (PGIS) in the study area; however, this increase will not cause a detectable change to groundwater recharge. Pollutant loading to stormwater discharges will remain within the range of ambient levels or be reduced in some cases; therefore, potential groundwater contamination is not a concern. Because permanent effects on groundwater will be negligible, and human use of groundwater in the study area is limited, no mitigation is necessary or proposed.

Section 4(f) Resources

Section 4(f) resources within the study area include four parks, a pedestrian/bicycle trail, and three NRHP-eligible historic properties. The information in the EA demonstrates that the construction and operation of the proposed project will not constitute a "use" of two of the Section 4(f) parks, and will meet the *de minimis* effect criteria for Points Loop Trail, Fairweather Park, and Wetherill Nature Preserve.

BMPs described in the Noise, Air Quality, Transportation, and Social Elements commitment sections will also reduce or minimize construction-related effects upon Section 4(f) resources.

Points Loop Trail

During construction, access will be maintained with detour routes using local streets, ensuring that the continued use and continuity of the trail will not be impaired.

Fairweather Park

Access to the park will be maintained during construction. After construction, the disturbed area outside of the trail alignment will be regraded and revegetated.

Wetherill Nature Preserve

Access to the trails within the Wetherill Nature Preserve will be maintained during construction.

Indirect and Cumulative Effects

No additional measures beyond those already listed in this section will be necessary during construction and operation of the project to avoid or minimize adverse indirect or cumulative effects.