SECTION 6 MEASURES TO AVOID OR MINIMIZE EFFECTS

What measures will be taken to mitigate effects during construction?

Surface Water Flow

Peak and base flow rates to streams and rivers will not be negatively altered during project construction because detention ponds will be constructed prior to the highway widening. These ponds may be used for temporary erosion and sedimentation control. WSDOT will provide routine maintenance for these facilities throughout construction.

Surface Water Quality

The primary means of avoiding and reducing potential effects from this project are to use standard BMPs during construction. WSDOT makes the following commitments to protect water quality during construction of I-405 projects:

- 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 waterbodies when practical. Seasonal work windows will be identified and implemented.
- BMPs such as erosion-control fencing, landscaping, erosion matting, hydro mulching, soil imprinting, straw bales, detention/sediment trap basins, and vegetated fringes as described in the HRM will be used as appropriate.
- Stormwater chemical treatment following Ecology's guideline may be used as a contingency measure if approved by WSDOT.
- A scour analysis will be conducted on any highway-related structures that are over river or creek crossings or below the OHWM of these water bodies. Appropriate measures such as fish-friendly stream bank protection or bridge modifications will be implemented if the scour analysis identifies needs.

What is the Ordinary High Water Mark?

The line on the shore established by the change in water levels and indicated by physical characteristics such as a clear, natural line impressed on the bank or the presence of litter and debris. The presence and action of water generally leaves an impression on the stream bed and banks that makes a distinct separation between the stream and the adjacent areas and indicates the location of the ordinary high water mark.

- Construction mitigation measures such as use of non-hazardous chemicals and establishment of special hazardous materials storage and handling areas will be implemented to reduce the use, transfer, and storage of hazardous materials in sensitive areas.
- WSDOT will prepare and implement a Temporary Erosion and Sedimentation Control (TESC) Plan. The TESC Plan will consist of operational and structural measures to control the transport of sediment. Operational measures will consist of good housekeeping practices, such as removing mud and dirt from trucks before they leave the site, covering fill stockpiles or disturbed areas, or avoiding unnecessary vegetation clearing. Structural measures consist of the construction of temporary structures to reduce the transport of sediment, such as silt fences or sediment traps. Should any BMP or other operation not function as intended, WSDOT will take additional action to minimize erosion and maintain water quality.

What is a silt fence? Sediment trap?

A silt fence consists of a temporary sediment barrier made of synthetic fabric stretched between posts, with a shallow trench located upslope. The silt fence is "keyed" into the ground to prevent water from running under the fence. A sediment trap consists of a temporary ponding area formed by an earthen embankment or an excavation. Both silt fences and sediment traps are designed to slow the flow of water, allowing sediment to settle out.

- Fuel and chemical storage and fueling operations for construction vehicles and equipment during construction will be located within areas that can provide containment of any spills. A Spill Prevention Control and Countermeasures (SPCC) Plan will be established for construction activities and will also detail the procedures that will be followed in the event of a spill to prevent or minimize effects. The SPCC Plan will specifically address potential fuel spills from vehicles and potential spills of chemicals that are commonly used during construction. Spill response equipment will be located at regular and specified intervals within the construction zones to minimize countermeasure response times.
- 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 will not be dumped into storm drains or onto soil or pavement that carries stormwater runoff. During work on the project site, thinners and solvents will not be used to wash oil, grease, or similar substances from heavy machinery or machine parts in or near sensitive areas. WSDOT will designate a washdown area for equipment and concrete trucks.

- WSDOT will obtain a NPDES (National Pollutant Discharge Elimination System) 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, such as by using sediment ponds to allow sediment to settle out prior to discharge.

Floodplains

Plans for compensatory floodplain storage for temporary and permanent fill will be developed after the project is funded but before construction begins. Mitigation will compensate for fill by volume. Excavation for mitigation will be done in the same floodplain as the fill and at the same one-foot elevation. For fill in the Springbrook Creek floodplain, excavation from the construction of the Springbrook Creek Wetland and Habitat Mitigation Bank may be used as compensatory storage. WSDOT will analyze the effectiveness of the proposed fill mitigation to confirm that the 100-year floodplain elevation will have no rise due to the project.

Groundwater

Several construction mitigation measures have been identified by WSDOT, in consultation with the City of Renton and include the following:

- WSDOT will protect groundwater quality during construction by implementing TESC and SPCC Plans to prevent erosion, sedimentation, and spills.
- WSDOT will provide an independent construction environmental coordinator to monitor groundwater quality, storage of hazardous substances, chemical use practices, containment of hazardous materials, and to develop an emergency response and recovery plan for the sole source aquifer.
- WSDOT will develop an environmental protection plan for the City's review prior to construction. This will include additional investigation of the support structures and mitigation for the increase of impervious surfaces, including a monitoring plan.
- WSDOT will identify and locate staging areas away from all drainage courses. Washout from concrete trucks will

not be dumped into storm drains or onto soils or pavement that carries stormwater runoff. Thinners and solvents will not be used to wash oil, grease, or similar substances from heavy machinery or machine parts. WSDOT will designate a wash down area for equipment and concrete trucks.

- WSDOT will ensure that fuel and chemical storage is located within secondary containment areas. These areas will be surfaced with an impermeable material and sized to contain the volume of stored fuel and/or chemicals.
- WSDOT will conduct construction within the City of Renton's Aquifer Protection Zones 1 and 2, in compliance with State of Washington Wellhead Protection Requirements outlined in WAC 246-290-135(4) and the City of Renton Municipal Code RMC4-9. The storage of fuel and construction chemicals as well as fueling operations for construction vehicles and equipment will not be allowed within the City of Renton's Aquifer Protection Zone 1. Every effort will be taken to minimize the storage of fuels and chemicals within Renton's Aquifer Protection Zone 2. Emergency countermeasure equipment will be specified in the SPCC Plan and will be dedicated and located at designated locations within Renton's Aquifer Protection Zones 1 and 2 for rapid and effective response to a fuel spill from a vehicle or chemical spill.
- WSDOT will conduct groundwater monitoring during construction to monitor for spills that can affect the sole source aquifer. If necessary, existing City of Renton monitoring wells can be supplemented with additional monitoring wells at key locations and used to monitor water quality in Aquifer Protection Zone 1.
- WSDOT will take added measures for stormwater control and conveyance during construction within Renton's Aquifer Protection Zones 1 and 2, to protect aquifers. Within Aquifer Protection Zones 1 and 2, WSDOT will construct either a lined or piped stormwater conveyance system. Stormwater will go through an existing lined detention pond, or WSDOT will construct a new lined detention pond.
- WSDOT will construct new roadway that is located over the Renton Aquifer Protection Zone 1 with an impervious

liner underneath the pavement for additional protection from spills escaping the stormwater collection system.

- WSDOT will avoid placement of imported contaminated fill during construction. Imported fill must meet the state's Model Toxics Control Act (MTCA) Method A or B soil cleanup standards (WAC 173-340-740) for unrestricted use. A fill evaluation and testing plan will be developed prior to commencing construction activities.
- Any fill over 50 cubic yards in quantity to be placed over Renton's Aquifer Protection Zone 1 will be certified by a professional engineer or geologist that the soils meet MTCA cleanup standards (City of Renton Municipal Code RMC 4-9). A plan will be developed that establishes criteria for evaluating fill sources. Analytical testing protocol for sources that may contain suspect fill materials shall be specified in the plan to ensure MTCA Cleanup Method A or B soil cleanup standards are met. If analytical testing is required, imported fill soils will be analyzed before arriving at the construction site. The fill testing plan will also apply to suspect excavated soils encountered during construction. All sampling will be performed by a professional engineer or geologist.
- WSDOT will avoid drawdown of nearby wells during construction. These effects can be avoided by the use of recharge wells and/or cut-off walls, if necessary.
- WSDOT will implement good construction management, safety precautions, and safety enforcements near the City of Renton's well field to avoid a construction-related traffic accident, which could damage and disrupt these wells.
- WSDOT will locate areas where permanent drainage will be required by site conditions for cut slopes. If local private groundwater users or downgradient wetlands and spring water right holders could become affected by drawdown of the groundwater table from these drain systems, these effects shall be avoided on a site-specific basis by designing the permanent drainage system to recharge or replenish the downgradient water table.
- WSDOT will locate concrete structures away from production wells and use non-hazardous concrete curing chemicals.

- WSDOT will use steel piles when structures are within 50 feet of production wells and locate new embankments at least 50 feet away from production wells.
- WSDOT will minimize ground vibration and settlement within 50 feet of production wells.
- WSDOT acknowledges that existing structures in the production well area use spread footing foundations. After further geotechnical study, spread footing foundations may be used that do not substantially penetrate the Cedar Valley sole source aquifer for the reconstructed bridges over the Cedar River.
- WSDOT will use two ponds for highway spill containment to protect the sole source aquifer.
- WSDOT will further minimize effects by using BMPs from WSDOT's Geotechnical Design Manual and Bridge Design Manual. Contractors and consultants associated with this project will follow these procedures.

What measures will be taken to mitigate effects of operation?

Surface Water Flow

- Stormwater facilities for this project will maintain the peak flow rate of stormwater runoff at present day conditions or better as mandated by the HRM for a range of storms from 50 percent of the 2-year up through the 50-year recurrent storm event. WSDOT will provide routine maintenance for these facilities.
- The area of the project that is within 10,000 feet of the Renton Municipal Airport will require measures to minimize hazards associated with wildlife attraction to stormwater detention ponds. The following are guidelines that will be considered for stormwater management facilities sited near the airport:
    - Design system to minimize the frequency and duration of open water to acceptable levels. Water that is detained by the 2-year design storm should completely drain or fall to a level that is covered by a net or solid cover within 24 hours after the end of the storm event.

- Minimize the size of open water ponds within the FAA 10,000-foot-radius wildlife hazard management zone to minimize aircraft-wildlife interactions.
- Use steep side slopes and deep pond depths to minimize shallow water areas and minimize the total water surface area.
- Slope the pond bottom to allow quick drainage and reduce the potential for standing water.
- Eliminate the potential for wetland vegetation growth on the pond bottom and side slopes by lining the pond with riprap or quarry spalls. Alternatively, plants that provide minimal habitat to wildlife can be used. Dense brush and small trees that will be perceived by waterfowl as hiding places for predators are a good choice. Avoid closely mowed grass, which is preferred by waterfowl.
- Break up possible flight lines by planting trees and setting up poles and or fences, which do not allow most water fowl clear landing or takeoff room on the pond surface.
- Introduce islands within open water areas as needed to support scrub-shrub vegetation cover within wetpools with emergent aquatic planting areas.
- Cover or net all permanent open water surfaces if water fowl use becomes an issue at the site.

Surface Water Quality

BMPs for this project will remove pollutants from runoff generated by the project. With these BMPs, the runoff is expected to meet Washington State water quality standards listed in WAC173-201(A). According to Ecology, projects meeting the Ecology guidelines or equivalent standards such as the HRM, are presumed to meet federal and state water quality requirements. WSDOT will provide routine maintenance for these facilities.

Floodplains

In addition to providing compensatory floodplain storage, stormwater detention will also be provided for drainage from new impervious surfaces. Detaining stormwater will help

minimize changes to flow patterns of inlet sources to the floodplain.

Bridge piers placed within the floodplain will be designed to minimize hydraulic disturbance to flow. This may be achieved by designing piers that are all the same size and are placed in lines parallel to the flow path. The shape of the pier, round or elliptical, may also be changed to minimize hydraulic effects.

Groundwater

Several operational mitigation measures have been identified by WSDOT, in consultation with the City of Renton, and include the following:

- WSDOT will operate stormwater facilities to minimize leakage within Aquifer Protection Zone 1.
- WSDOT will use two ponds for highway spill containment to protect the sole source aquifer.
- WSDOT will capture fuel and chemical spills from vehicles using the stormwater collection and detention system. Any new stormwater systems installed for the project will include a shut-off capability for containing a spill or release. WSDOT will establish a plan to contain, clean-up, and minimize potential effects from vehicular accidents.
- A higher level of protection is needed for the City of Renton's Aquifer Protection Zones 1 and 2. To protect the aquifer protection zones, WSDOT will establish a plan in compliance with Washington State Wellhead Protection Requirements outlined in WAC 246-290-135(4) and the City of Renton Municipal Code RMC4-9. The roadway and access ramps over Renton's Aquifer Protection Zone 1 will have curbs and gutters or berms to collect and route major spills to the stormwater collection system. The system will be constructed in accordance with City of Renton requirements for sanitary sewage facilities in Aquifer Protection Zone 1 and will be sized to contain a liquid spill from a double tanker truck.
- WSDOT will routinely inspect the roadway for cracks or openings that would permit leakage and escape of a major spill from the stormwater collection system within Aquifer Protection Zone 1. Patching of observed cracks/openings will be within a short time after discovery. Emergency

counter measures equipment will be dedicated and located at a designated location within Renton's Aquifer Protection Zone 1 for rapid response to a fuel spill from a vehicle or chemical spill occurring during use. Procedures will be specified for emergency containment, control, and cleanup of minor and major spills.

- The Green-Duwamish Alluvial Aquifer near the study area is not used for domestic water supply or irrigation purposes and will be protected during operation by WSDOT maintenance following standard pollution control practices.

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