

CHAPTER 6 MEASURES TO AVOID OR MINIMIZE EFFECTS

The following sections present the measures that will be used to avoid or minimize effects due to the Tukwila to Renton Project. This section does not address those elements of the environment that did not have project effects as detailed in Chapter 5. The project design itself will incorporate many best management practices (BMPs) that are standard practice for WSDOT.

What measures will be taken to avoid or minimize effects?

Transportation

WSDOT will coordinate with the local agencies and other projects to prepare a Traffic Management Plan prior to making any changes to the traffic flow or closing lanes. Local agencies, the public, school districts, emergency service providers, and transit agencies will be informed of the changes in advance through a public information process. Pedestrian and bicycle circulation will be maintained as much as possible during construction.

Transportation demand management strategies will be an important part of the construction management program. The transportation demand management strategies in the Tukwila to Renton Project area will be implemented prior to construction to increase public awareness and participation in HOV travel. The major focus will be on expanding vanpooling and vanshare opportunities.

Noise

To reduce construction noise at nearby receptors, WSDOT will incorporate the following activities where practicable:

- Limit the noisiest construction activities (e.g., pile driving) to between 7 a.m. and 10 p.m., to reduce construction noise levels during sensitive nighttime hours.
- Equip construction equipment engines with adequate mufflers, intake silencers, and engine enclosures to reduce their noise.

- Turn off construction equipment during prolonged periods of nonuse to eliminate noise.
- Where possible, locate stationary equipment away from residences to decrease noise.
- Construct temporary noise barriers or curtains around stationary equipment that must be located near residences, to decrease noise levels at nearby sensitive receptors.
- Require use of Occupational Safety and Health Administration approved ambient sound-sensing backup alarms, to reduce disturbances from backup alarms during quiet periods.

Two new noise barriers are planned for construction with the Tukwila to Renton Project. Noise Barrier 8, will be constructed in front of the Berkshire Apartments as shown in Exhibit 5-3. Noise Barrier 8 will be 20 feet high and roughly 1,100 feet long. Noise Barrier 10, a system of two walls, will be in front of the Renton Hill Neighborhood as shown in Exhibit 5-4. Noise Barrier 10 separates at Cedar Avenue S and becomes Noise Barrier 10A to the north and Noise Barrier 10B to the south. Noise Barrier 10A sits at the top of the stacked structure and overlaps with Noise Barrier 10B where the upper and lower roadway structure begins. Noise Barrier 10B follows Mill Avenue to the bottom of the new stacked road structure. Noise Barrier 10 will be 14 to 20 feet and 20 feet respectively for walls 10A and 10B. Noise Barrier 10 has a total length of roughly 2,500 feet. Other noise calming options may be considered for use on this project if appropriate.

Communities, Businesses, and Public Services

To avoid and/or minimize effects to communities, businesses, and public services, WSDOT will:

- Continue active public involvement and work with neighborhood associations and public services.
- Coordinate with any affected resident or business owner to provide them relocation assistance, in compliance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.
- Coordinate with business owners and the local jurisdictions to ensure that parking losses are mitigated at an appropriate level.

- Maintain access to businesses throughout the construction period and provide reasonable access during business hours. Access measures will be prepared as part of the traffic management plan and included in the contract specifications.
- Post appropriate signs that communicate revised access information to potential customers.

Impacts to existing utilities will be avoided through project design when feasible. Where avoidance is not feasible, utilities will be relocated or protected in place.

Recreational and Cultural Resources

During final design, WSDOT will meet with staff from the Renton and Tukwila Parks and Public Works Departments to coordinate temporary trail closures and detours related to the project. If it is not possible to maintain trail traffic during construction, then the team will identify appropriate, safe detours for use by cyclists and/or pedestrians. WSDOT will develop signs explaining the temporary closure timing and detour routes.

Temporary disturbances to landscaping for recreational and cultural resources will be restored following protocols in the *I-405 Context-Sensitive Solutions Master Plan*.¹⁸ Specific measures to mitigate project effects are described below:

- **Duwamish-Green River Trail/Christensen Greenbelt.**
During construction, a segment of the Duwamish-Green River Trail/Christensen Greenbelt where it crosses beneath the Southcenter Boulevard bridge, the I-405 bridges, and the Tukwila Parkway bridge will be closed for public safety reasons. A signed detour will be provided during the closure and notices will be posted to keep the public informed about the construction.

As noted in Chapter 5.4, the Duwamish-Green River Trail/Christensen Greenbelt is a Section 6(f) resource. As such, the RCO will review the conversion approval request for permanent direct use effects once this portion of the project is funded for construction. WSDOT, in consultation with the City of Tukwila, will identify

¹⁸ WSDOT 2006

proposed replacement property. This replacement property can be conveyed in a variety of forms, such as:

- Acquisition of property that can be added to the existing trail corridor;
- Acquisition of property within the City of Tukwila that can be used for public outdoor recreation;
- Monetary compensation to the City of Tukwila for the fair market value of the affected property. The City must use these funds to acquire outdoor recreation property within the city limits.

An appraisal will be completed to establish the fair market value of the trail and of the proposed replacement property. The fair market value of the replacement property must be at least equal to the outdoor recreation property to be converted. The replacement property must also be of reasonably equal recreational value before approval will be granted.

- **Duwamish-Green River Trail Trailhead.** During construction, the trailhead will be closed for public safety reasons. Notices will be posted to keep the public informed about the construction. The trailhead will be restored by replacing existing picnic tables, signs, trash receptacles, and landscaping. WSDOT proposes to replace the lost parking adjacent to the proposed stormwater detention site immediately west of the existing parking.
- **Tri-Park complex.** As discussed in Section 5.4, WSDOT has worked with the City of Renton, through a design charrette, to develop the Tri-Park Master Plan incorporating Liberty Park, Cedar River Park, Cedar River Trail, and the Narco property into one large recreational complex. This plan resolves several conflicts that arise from having a water supply system, recreational facilities, and a widened state highway all within a confined space. WSDOT will continue to coordinate with the City of Renton so that the timing of the Tri-Park Master Plan and the Tukwila to Renton Project coincide.

Both the City and WSDOT will have distinct scope and funding responsibilities to implement the agreed approach in the Tri-Park area. However, neither the City nor WSDOT has secured its funding to implement their

portions of the shared plan. The lack of funding and presumed timing of funding poses a complication in mitigation. It is WSDOT's desire to implement the Section 4(f) mitigation during construction of the project. However, if the City's own funding and timeline for implementation makes this impractical, then the City and WSDOT will work together to develop a strategy to effectively implement both parties' responsibilities.

- **James Nelsen House.** During construction, fencing will be placed to establish the limits of construction and ensure there will be no encroachment near the historic structure. Retaining walls to minimize the footprint and avoid the historic structure are an integral component in the Tukwila Parkway design. The property subject to temporary disturbance, including landscaping, will be restored in kind.

If archaeological sites are discovered in the currently unfunded and inaccessible portions of the APE during future work, the I-405 Programmatic Agreement affirms that avoidance and minimization are the preferred options where possible. If unavoidable adverse effects to archaeological sites are discovered during future work, the I-405 Programmatic Agreement provides for the development of mitigation measures in consultation with DAHP and interested and affected Indian tribes (see Appendix C).

WSDOT will also follow their Unanticipated Discovery Plan in the event that archaeological artifacts are found during construction.

Visual Quality

Guidelines from the WSDOT Roadside Classification Plan (RCP) and the Urban Design Criteria (UDC) for the I-405 corridor will be applied to mitigate for unavoidable negative visual effects caused by this project. For improvement projects such as this, the RCP requires roadside restoration within the right-of-way throughout the project limits. For this project, disturbed areas will be restored to a treatment level 2 per the 1996 RCP, with the following guidelines applied where appropriate and practicable:

- Minimize site disturbances to protect native plant communities and specimen trees.

- Restore roadside character with trees (conifers up to 4 feet in height and deciduous trees up to 1 inch in diameter) and shrub seedlings.
- Locate plantings to enhance views of natural features.
- Select vegetation and design planting density to achieve blending with adjacent land use.

If areas are expected to be disturbed by future corridor improvements within 10 years after project completion, temporary erosion control type plantings will be used. In other areas within the project construction limits, additional plantings may be installed where future corridor improvements will not affect the plantings within 10 years.

The UDC implements context-sensitive solutions policy for the I-405 corridor and provides another layer of compensation for unavoidable negative effects caused by the project. In some instances, the UDC guidelines are redundant with those found in the RCP. The major project elements will have the following UDC guidelines applied where appropriate and practicable:

- Ensure visual unity and consistency throughout the I-405 corridor. This includes defining the appearance and style of built elements, such as lighting, paving, railings, signs, bridges, structures (and associated elements), and walls around bridges. The guidelines address the use of aesthetic treatments in the corridor, including the process for selecting and locating architectural treatments.
- Enhance the architectural design of project features such as retaining walls by including terracing to reduce apparent height, using a consistent design theme throughout the corridor, applying texture to the concrete surfaces to reduce apparent scale, and applying pigmented sealer for uniform color and to limit the effects of graffiti and to reduce reflective glare.
- Shield roadway light fixtures to minimize glare and ambient light spillover into adjacent residential areas.
- Minimize clearing for construction, preserving existing stands of mature trees where possible.
- Screen views of the roadway, elevated structures, retaining walls, noise walls, and other project features from areas with high viewer sensitivity where possible.

- Grade slopes to blend with the natural topography by softening slope transitions.
- Follow the guidelines in the RCP to blend the project into the adjacent land uses, while creating a unified experience for the freeway traveler.

For this project, the UDC guidelines will be applied to local street bridges over I-405 at (from south to north): 66th Avenue, Lind Avenue, and Renton Avenue. UDC guidelines will also be applied to I-405 bridges over (from south to north): SR 181, Talbot Road, Lower Mill Avenue, and SR 169. Additional structures that the UDC guidelines will be applied to include the new Tukwila Parkway Bridge over the Green River, the new ramps at the SR 181 interchanges, the new ramps and frontage roads associated with the SR 167 interchange improvements, and the two new noise walls.

Water Resources

Surface Water

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.

Stormwater facilities for this project will maintain the peak flow rate of stormwater runoff at baseline 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, 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.

What is an erosion-control fence?

An erosion-control fence consists of a temporary sediment barrier made of synthetic fabric stretched between posts, with a shallow trench located upslope. The erosion-control fence is “keyed” into the ground to prevent water from running under the fence.

What is a sediment trap?

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.

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 as 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 and 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.
- 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 will 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.
- Fuel and chemical storage and fueling operations for construction vehicles and equipment will be located within secondary containment areas during construction whenever practicable. 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 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 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 by using such BMPs as sediment ponds to allow sediment to settle out prior to discharge.

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 WAC 173-201(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

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.

In addition to providing compensatory floodplain storage, stormwater detention will also be provided in the Green River and Springbrook basins 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 placed in lines parallel to the flow path.

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 in impervious surfaces, including a monitoring plan.
- WSDOT will identify and locate staging areas away from all drainage courses except in areas that are already paved and where no excavation will occur within the staging area. Washout from concrete trucks will not be dumped into storm drains or onto soils 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 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 RICA-9. The storage of fuel and construction chemicals and refueling operations 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 countermeasures equipment will be specified in the SPCC Plan and will be dedicated and maintained 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 during construction activities 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 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.

- For any fill over 50 cubic yards in quantity to be placed over Renton's Aquifer Protection Zone 1, a professional engineer or geologist will certify 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.

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 RMC 4-9. 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 maintained 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.

Ecosystems

All in-water work will be restricted to authorized construction periods when juvenile salmon are not likely to be present in substantial numbers. Adherence to designated work windows, as defined by appropriate permitting agencies (Washington State Department of Fish and Wildlife, NMFS, and the USFWS), will also eliminate or reduce in-water interference during periods when juvenile and adult salmon are likely to be present.

WSDOT will restore temporarily cleared areas to preconstruction grades and replant the areas with appropriate native vegetation. This applies to both wetland and upland areas.

Wetlands

WSDOT, in partnership with the City of Renton, is currently developing a wetland mitigation bank called the Springbrook Creek Wetland and Habitat Mitigation Bank (Bank). WSDOT intends to debit credits from this Bank to mitigate for permanent effects to wetlands resulting from project construction. Mitigation banking is one early-action approach identified in the *I-405 Corridor Program Final Environmental Impact Statement* and the Bank is part of WSDOT's watershed approach to wetland mitigation. By consolidating mitigation into one large site, we have created mitigation that specifically contributes aquatic ecosystem functions that are lacking in the local watershed while providing safe, high-quality wildlife habitat away from the dangers of a roadside location.

Aquatic Resources

Temporary construction effects will be reduced or avoided by the use of standard construction BMPs.

Aquatic resource effects will be mitigated by implementing either the Panther Creek Watershed Rehabilitation Plan,¹⁹ or performing on-site, in-kind mitigation (such as planting native trees near where trees have to be removed to construct the project), or off-site mitigation to improve habitat conditions in areas away from the project where mitigation might be more beneficial. Specific mitigation plans will be included in the permit applications for construction of the Tukwila to Renton Project. In any of the mitigation scenarios, WSDOT will address over-water, in-stream, and stream buffer effects to satisfy the requirements of the local critical areas regulations, the Hydraulic Code, and ESA to enhance in-stream fish habitat to the maximum extent practicable.

The Panther Creek Watershed Rehabilitation Plan is an I-405 Water Resource Initiative that proposes stream mitigation for the Panther Creek system. The plan will provide phased stream mitigation (concurrent and/or advance) at a watershed level for effects from improvements in the I-405/SR 167 vicinity that affect the Panther Creek and lower Springbrook Creek subbasins. This plan also evaluates highway drainage and how it could be cost-effectively managed to complement the stream mitigation work. Additional mitigation will be provided for effects to aquatic resources in other basins.

The benefits of implementing this conceptual plan include:

- Providing stream mitigation to address limiting factors at a watershed level.
- Providing fish habitat improvements via stream flow management to: 1) provide more reliable stream base flows; 2) create stream flow changes that are compatible with wetland floodplain enhancement; and 3) manage stream flows to be compatible with downstream flood control needs.
- Preserving high quality forested wetlands within the contiguous Panther Creek wetland complex.

¹⁹ *WSDOT 2007q*

- Providing a direct discharge of treated highway stormwater into the Panther Creek wetland complex to provide additional project benefits that are compatible with the mitigation proposal.

If the Panther Creek Watershed Rehabilitation Plan is not implemented, WSDOT, in cooperation with resource agencies and tribes, will develop alternative plans for habitat improvement, restoration, or construction to mitigate the effects of roadway widening and the increased width of stream crossings.

The I-405 Team will conduct further evaluation on the seven culverts that are fish passage barriers to determine which ones will be retrofitted or replaced as part of the project. The determination of which culverts will be retrofitted or replaced will occur during the project's permitting phase.

Wildlife and Vegetation

Mitigation measures to offset construction effects will include the revegetation of all temporarily disturbed soils resulting from construction activities. Planted shrubs and tree species will be maintained for a period to ensure the revegetation of target cover types. Planting will occur in areas that provide connectivity to existing wildlife habitat but still meet safety and maintenance standards set forth by WSDOT.

No measures are necessary to mitigate for operational effects to wildlife habitat.

Cumulative Effects

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

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