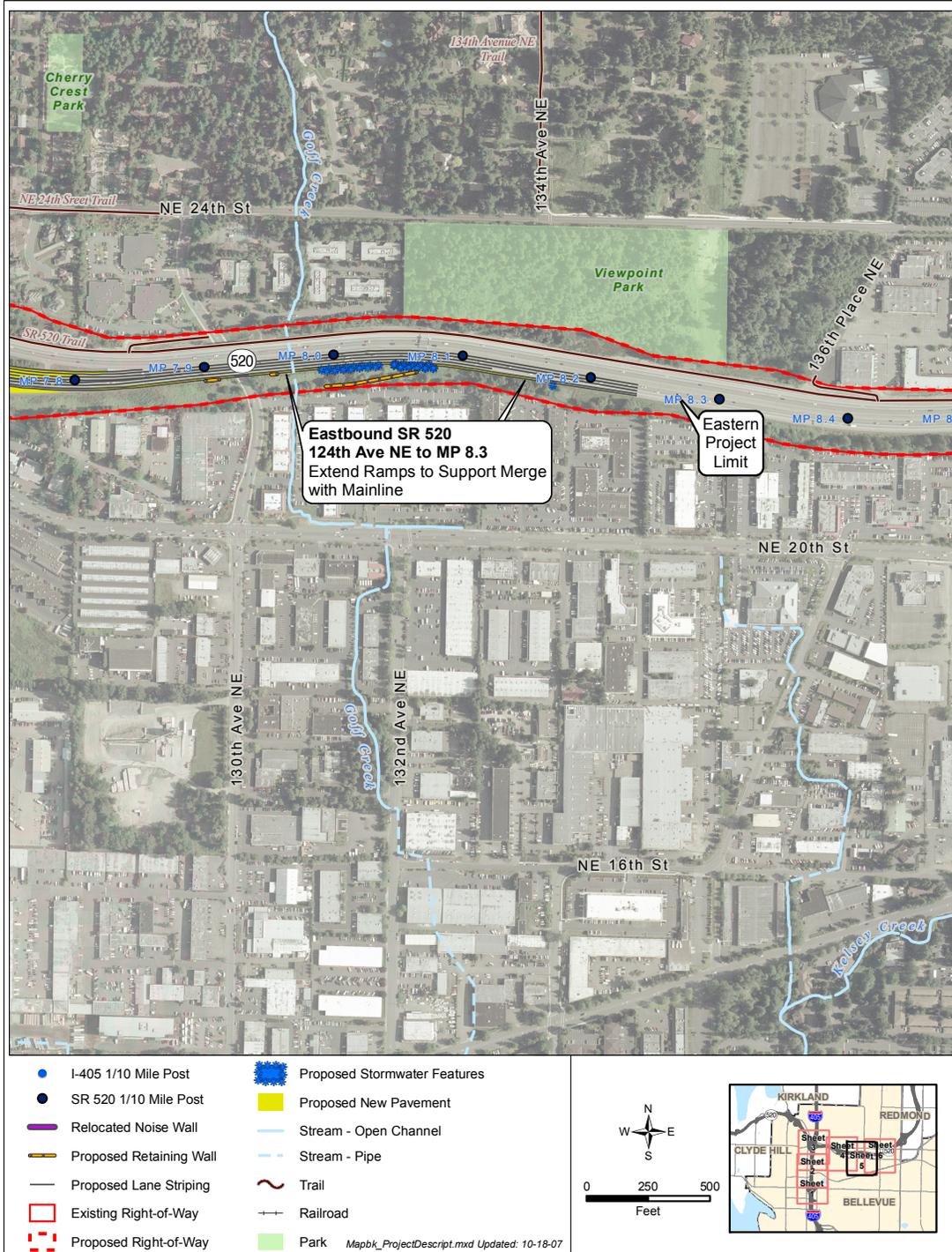


Exhibit 2-3: Project Features - Sheet 5 of 6



I-405, NE 8TH STREET TO SR 520 IMPROVEMENT PROJECT
 WATER RESOURCES DISCIPLINE REPORT

Exhibit 2-3: Project Features - Sheet 6 of 6



Construction Staging

Construction funding is currently available for only some of the proposed improvements in the Build Alternative. Consequently, the project will be constructed in stages. The funded first stage will include the northbound I-405 improvements, including the braided ramps, the NE 12th Street bridge reconstruction, and the northbound NE 10th Street on-ramp. Additionally, one of the three proposed collector-distributor lanes from northbound I-405 to eastbound SR 520 will be constructed. This collector-distributor lane will cross over the existing NE 124th Street on-ramp before merging with SR 520. Construction of these funded improvements is scheduled to begin in 2009 and will be completed in approximately 3 years.

The unfunded project improvements include the remaining two lanes of the three-lane collector-distributor system, improvements from southbound I-405 to the eastbound SR 520 collector-distributor, and the improvements from eastbound and westbound SR 520 to southbound I-405. Construction of these remaining improvements depends on when project funding becomes available.

Stormwater Management System Improvements

Stormwater for the I-405, NE 8th Street to SR 520 Improvement Project will be managed for both water quality and quantity using currently accepted best management practices (BMPs).

The I-405 Project Team is designing the stormwater management facilities to comply with the WSDOT *Highway Runoff Manual* (HRM),⁴ M 31-16, and *Hydraulics Manual*,⁵ M 23-03. The Department of Ecology has conditionally approved WSDOT's revised HRM for use as an equivalent approach to Ecology's *Stormwater Management Manual for Western Washington*.⁶

Runoff from existing paved surfaces on I-405 and SR 520 within the project limits is generally discharged to streams and ditches without treatment. The project will provide water quality treatment for all of the new impervious surfaces and a

⁴ WSDOT, 2006a.

⁵ WSDOT, 2006b.

⁶ Ecology, 2005a.

What are peak flows?

The maximum instantaneous rate of stormwater flow during a storm, usually in reference to a specific design storm event.

portion of the existing untreated impervious surfaces. Existing conveyance facilities will be modified as required to satisfy water quality treatment and flow control design standards noted above, while maintaining existing flow patterns to each of the receiving water bodies.

The I-405, NE 8th Street to SR 520 Improvement Project will also manage peak flows and duration in accordance with the WSDOT *Highway Runoff Manual*. The stormwater management facilities will also manage peak flows and durations in accordance with the HRM. Six new flow control facilities and one existing facility (constructed as part of the NE 10th Street Bridge Project) will be used to provide stormwater detention. The proposed locations of these facilities are shown in Exhibit 2-3.

Wetland and Stream Mitigation Sites

To compensate for the permanent effects on wetlands, WSDOT will provide mitigation at a wetland mitigation site that is about one mile southeast of the southern project limit. Mitigation at this site was approved as part of the I-405, Bellevue Nickel Improvement Project and has been constructed. The wetland mitigation site is within the boundaries of Kelsey Creek Park (Exhibit 2-1). The site is located north of the intersection of Richards Road SE and the Lake Hills Connector. The mitigation site is an upland area adjacent to a large wetland complex that will be transformed to an emergent wetland. Its wildlife habitat will be enhanced by constructing habitat structures and replanting adjacent upland areas with forest-type vegetation.

We will also mitigate for unavoidable effects on the unnamed tributary to Sturtevant Creek. The mitigation will be in-kind and will be located within WSDOT right-of-way on the east side of I-405 south of NE 4th Street (Exhibit 2-3). Stream mitigation for permanent effects to the unnamed tributary to Sturtevant Creek will occur at Sturtevant Creek and will be designed to meet specific goals. Stream mitigation goals include:

- Increased hydrologic connectivity with two small riparian wetlands;
- Increased fish rearing habitat; and
- Improved riparian buffer conditions.

WSDOT will meet these goals by installing large woody debris and other in-stream channel enhancements. The stream's buffer will be revegetated with plant species native to the area, and invasive vegetation will be removed.

We provide more detailed information about mitigation efforts planned in conjunction with the I-405, NE 8th Street to SR 520 Improvement Project in the Water Resources and Ecosystems Discipline Reports.

Does this project relate to any other improvements on I-405 or connecting highways?

In 1998, WSDOT joined with the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), Central Puget Sound Regional Transit Authority (Sound Transit), King County, and local governments to develop strategies to reduce traffic congestion and improve mobility in the I-405 corridor. In fall 2002, the combined efforts of these entities culminated in the I-405 Corridor Program NEPA/SEPA Final Environmental Impact Statement (EIS) and Record of Decision (ROD).

WSDOT created the I-405 Corridor Program as a comprehensive strategy to reduce congestion and improve mobility throughout the I-405 corridor. The corridor begins at the I-405/I-5 interchange in the city of Tukwila and extends northward 30 miles to the I-405/I-5 interchange in the city of Lynnwood. The program's purpose is to provide an efficient, integrated, and multimodal system of transportation solutions.

The I-405, NE 8th Street to SR 520 Improvement Project is one of several I-405 projects (see links to WSDOT's project-specific web pages at <http://www.wsdot.wa.gov/projects/>). Other projects along the I-405 corridor and connecting highways include:

- Renton Nickel Improvement Project, 1-5 to SR 169 (under construction)
- Renton to Bellevue Project, SR 169 to I-90 (proposed)
- South Bellevue Widening (112th Avenue SE to SE 8th Street) Project (under construction)
- NE 10th Street Bridge Crossing Project (under construction)

- SR 520 Bridge Replacement and HOV Project (proposed)
- SR 520 to I-5 Widening Project (proposed)

What are express toll lanes?

An express toll lane is a limited-access freeway lane that is actively managed through a variable toll system to regulate its use and thereby maintain express travel speeds and reliability. Toll prices rise or fall in real time as the lane approaches capacity or becomes less used. This ensures that traffic in the express toll lane remains flowing at express travel speeds of 45 to 60 miles per hour. Toll prices may differ for carpools, transit, motorcycles, and single-occupant vehicles. Tolls are collected electronically using overhead scanners that read a transponder inside the vehicle and automatically debit the operator's account.

In addition to improvements along I-405 and SR 520, WSDOT has planned projects on SR 167, I-90, and SR 522 as recorded in WSDOT's *Highway System Plan*.⁷ This plan forecasts transportation needs for the next 20 years. The Metropolitan Transportation Plan for the central Puget Sound region, *Destination 2030*, revised in 2003, defines the region's action plan for the next 30 years.

The I-405 Corridor Program EIS identified possibilities to better manage the corridor through tolling. WSDOT could achieve this through the use of express toll lanes that would be managed through a variable toll system to regulate their use and thereby maintain express travel speeds and reliability. The footprint of the project identified in this document would not preclude implementation of express toll lanes. The freeway system would, however, operate differently if express toll lanes are used. If express toll lanes are to be implemented in the future, additional operational analysis and any necessary environmental documentation would be prepared. Therefore, an operational change to express toll lanes would be a future decision.

What is the No Build Alternative?

The No Build Alternative assumes the new NE 10th Street bridge across I-405 that is being constructed as part of another project will be in place. The No Build Alternative assumes that only routine activities such as road maintenance, repair, and minor safety improvements would take place over the next 20 years. The No Build Alternative does not include improvements that would increase roadway capacity, reduce congestion, or improve safety on I-405 or SR 520. For these reasons, it does not satisfy the project's purpose—to reduce congestion created by weaving traffic on I-405 and SR 520.

The No Build Alternative has been evaluated in this discipline report to establish a reference point for comparing the effects associated with the Build Alternative.

⁷ WSDOT, 2007a.

SECTION 3 STUDY APPROACH

What is the study area and how was it determined?

For the I-405, NE 8th Street to SR 520 Improvement Project, the I-405 Team inventoried water resources (surface water and groundwater) within the study area and evaluated potential project effects on them. For determining project effects, the I-405 Team limited the study area to the area in which surface water, water quality, groundwater, and floodplains could be affected by the proposed highway construction and operation. We evaluated project effects on surface waters approximately 300 feet upstream from the interstate right-of-way, and ¼ mile downstream of the right-of-way. For potential effects on groundwater conditions, we defined the study area as the area within ½ mile of the project limits (project limits are shown in Exhibit 2-1).

What policies or regulations are related to effects on water resources?

Numerous federal, state, and local laws, regulations, and procedures are in place to protect surface water, water quality, floodplains, and groundwater. These laws, regulations, and procedures are listed below along with the applicable regulatory authority.

Surface Water Policies and Regulations

- Washington State Department of Ecology: Chapter 173-201A Washington Administrative Code (WAC) and the *Stormwater Management Manual for Western Washington* (2005)
- Washington State Department of Transportation: *Highway Runoff Manual*⁸ and the *Environmental Procedures Manual* (EPM),⁹ Sections 431, 432, and 433
- Ecology: Water Rights (Chapter 173-152 WAC)
- U.S. Environmental Protection Agency (EPA): Federal Clean Water Act

⁸ WSDOT, 2006a.

⁹ WSDOT, 2007b.

- National Oceanic and Atmospheric Administration (NOAA) and U.S. Fish and Wildlife Service (USFWS): Endangered Species Act (ESA)
- Joint Aquatic Resource Permit Application (JARPA):
 - USFWS: Hydraulic Project Approval (HPA)
 - Ecology: 401 Water Quality Certification
 - Washington State Department of Natural Resources: Aquatic Resource Use Authorization Notification
 - Corps of Engineers: Section 404 and 10
- King County: Floodplain Ordinance and Critical Areas Ordinance for Shorelines and Wetlands (21A.24.230-260)
- Bellevue City Code: chapters 9.12 and 20.25
- Ecology: Washington State Shoreline Management Act (Chapter 173-18 WAC)

Groundwater Policies and Regulations

- Ecology: Washington State Water Quality Standards (Chapter 173-200 WAC)
- Ecology: Washington Groundwater Management Areas (Chapter 173-100 WAC)
- Washington State Department of Health: Washington Well Head Protection Program (Chapter 246-290 WAC)
- Ecology: Washington Underground Injection Control Program (Chapter 173-218 WAC)
- King County: Local critical aquifer recharge area (CARA) ordinance
- EPA: well head protection regulations (Section 1428 of the Safe Drinking Water Act and corresponding State of Washington regulations)
- EPA: water pollution control regulations (Section 431.02 of the Clean Water Act and corresponding State of Washington regulations)

How did we collect information on water resources?

The project team contacted state and local agencies to obtain information about existing conditions within the study area. The information collected for this project and the data sources are summarized below.

Surface Waters

- Field surveys and aerial photos
- Data within the geographic information system (GIS) on topography and locations of streams, lakes, wetlands, buffers, culverts, and sub-basin and watershed boundaries.
- Drainage maps
- Locations of all existing WSDOT water quality detention and treatment facilities within the existing I-405 and SR 520 right-of-way, including the design standards, contributing basin, and outfall location (based upon WSDOT data)
- City of Bellevue storm drainage inventory from GIS mapping
- Locations and conditions of outfalls that discharge runoff from the existing highways in the study area (WSDOT data)
- Cut, fill, and edge of pavement lines to determine the area of new impervious surface in each sub-basin for each alternative
- U.S. Department of Agriculture soil survey maps used to determine soil types in the study area

Surface Water Quality

- Ambient water and sediment quality of the natural environment from the Ecology 303(d) List and 305(b) Assessment
- Chapter 173-201A WAC for stream classifications, beneficial uses, and water quality standards
- Washington State Department of Natural Resources official water type reference maps for King County
- City of Bellevue stream water quality data

Floodplains

- Data within the geographic information system on FEMA 100-year floodplains and floodways, and culverts
- FEMA floodplain map panels 53033C068F, 53033C065F, 53033C069F, and 53033C056F

Groundwater

- Regional geology and hydrogeology from published Ecology and U.S. Geological Survey sources
- GIS base maps showing the following features in the study area:
 - Surficial geology
 - Topography
 - Regional groundwater elevation contours
 - Water bodies and streams
 - Locations of Class A and Class B wells and wellhead protection areas
 - Critical aquifer recharge areas
 - Cut, fill, and edge-of-pavement lines for each alternative
 - Elevation profiles of each alternative
- Hydrogeologic monitoring data collected for the project

How did we evaluate effects on water resources?

The project team used methods described in WSDOT's *Environmental Procedures Manual*¹⁰ to evaluate the potential project effects on surface water (flows and quality), floodplains, and groundwater. The manual provides guidance for determining effects and ensuring that the project complies with the policies, guidance, and regulations listed above.

Surface Waters

The project team assessed the existing conditions of streams within the study area including flow patterns, land uses and cover, steep slopes, and wetlands. Developments can affect

¹⁰ WSDOT, 2007b.

surface water resources by altering the amount of stormwater runoff entering a stream, by extending culverts or constructing new culverts or pipes, or by removing riparian vegetation within the stream buffer.

The following information was used to evaluate construction and operational effects:

- Preliminary storm drainage design and drainage patterns
- Existing and proposed outfall locations
- Estimates of the net new impervious surface
- Stormwater management facility locations and preliminary design

Surface Water Quality

The project team conducted a pollutant loading analysis that assessed potential increases or decreases in the amount of pollutants that would be discharged to local surface waters from the project limits using the WSDOT methodology. The analysis included:

- Calculating pollution-generating impervious surface (PGIS) exposed to rainfall
- Estimating annual loading for existing conditions using WSDOT methodology,¹¹ and then loading per storm for each proposed alternative using the same method and assumptions

Floodplains

The project team assessed the existing conditions of floodplains and historic flooding patterns within the study area. The project team qualitatively evaluated potential floodplain effects by determining whether or not the project will place fill in the FEMA 100-year floodplain or floodway. No hydraulic modeling was conducted to quantify potential effects or changes in flood elevations.

Groundwater

The methods we used to evaluate the project's potential effects on groundwater included:

¹¹ WSDOT, 2007b.

- Reviewing the proposed project design concept and likely construction methods.
- Evaluating the potential effects of the project on groundwater quality and quantity based on existing conditions and standard WSDOT practices. For example, increased surface water runoff as a result of increased amounts of impervious surfaces in the study area could reduce groundwater levels or possibly affect groundwater quality due to an increase in infiltration of contaminants.

Evaluations were based on sound engineering principles, standard WSDOT practices, and professional judgment. Part of WSDOT's practice is to use the 2005 *Geotechnical Design Manual*, which contains many WSDOT design and construction practices that minimize effects on groundwater.

SECTION 4 EXISTING CONDITIONS

What surface water bodies exist in the study area?

The I-405, NE 8th Street to SR 520 Improvement Project is located entirely in Water Resource Inventory Area (WRIA) 08, the Lake Washington/Cedar-Sammamish watershed. This is one of the most heavily developed watersheds in the Puget Sound area, which encompasses portions of the city of Seattle and the cities of Bellevue, Kirkland, Redmond, and Renton. Within the study area, I-405 and SR 520 intersect and/or discharge stormwater to the following streams (from south to north [I-405] and west to east [SR 520]):

- Sturtevant Creek
- Unnamed tributary to Sturtevant Creek
- Yarrow Creek
- Unnamed tributary to Yarrow Creek
- West Tributary to Kelsey Creek
- Goff Creek
- Valley Creek

The project lies within the Lake Washington and Kelsey Creek subwatersheds. Yarrow Creek and its unnamed tributary are located within the Lake Washington subwatershed, and drain directly to Lake Washington. Sturtevant Creek, West Tributary to Kelsey Creek, Goff Creek, and Valley Creek are located within the Kelsey Creek subwatershed. The main branch of Kelsey Creek is located just outside of the study area as it crosses I-405 approximately 0.75 mile south of the project limits near SE 8th Street. Kelsey Creek flows into Lake Washington via Mercer Slough.

Exhibit 4-1 shows the subwatersheds and basins within the general vicinity of the project. The physical characteristics of these surface water bodies are listed in Exhibit 4-2 and shown on Exhibits 4-3 through 4-8. The subsections below provide a more detailed description of the stream basins within the study area. For information on the aquatic habitat conditions of these water bodies, refer to the Ecosystems Discipline Report. No surface water rights were identified for streams in the study area.

What is a Water Resource Inventory Area (WRIA)?

The Washington State Department of Ecology (Ecology) divided the state's watersheds into 62 management areas, called WRIAs. These help Ecology manage all related water resource and water quality issues in each area. A WRIA may include more than one watershed or stream/lake basin.

Exhibit 4-1: Study Area Drainage Basins

