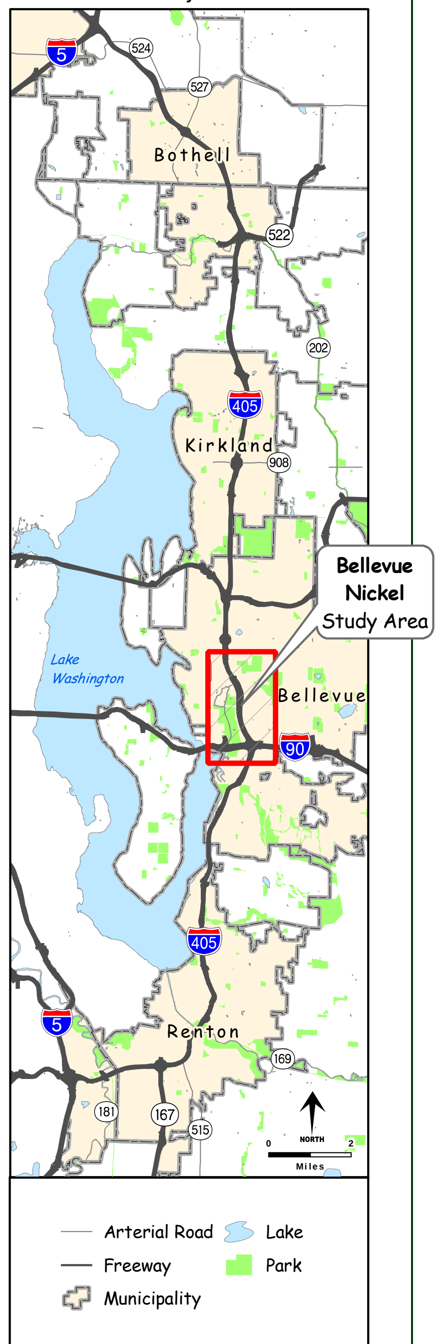
I-405 Bellevue Nickel Improvement Project
I-90 to Southeast 8th Street

INTERSTATE 405 **Corridor Program**
Congestion Relief & Bus Rapid Transit Projects

WETLANDS
DISCIPLINE REPORT

January 2006

I-405 Project Area



Washington State Department of Transportation

U.S. Department of Transportation Federal Highway Administration

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Glossary

best management practices (BMPs)	BMPs are generally accepted techniques that, when used alone or in combination, prevent or reduce adverse effects of a project. Examples include erosion control measures and construction management to minimize traffic disruption. Please see Appendix A for a complete list of BMPs.
buffer	A designated area along and adjacent to a stream or wetland that may be regulated to control the negative effects of adjacent development on the aquatic resource.
emergent	A plant that grows rooted in shallow water or saturated soil, where most of the plant emerges from the water or above the ground surface and stands vertically.
emergent wetland	In the USFWS classification system (Cowardin et al. 1979), a wetland characterized by erect, rooted, non-woody plants.
fill material	Any material placed in an area to increase surface elevation.
forested wetland	In the USFWS classification system (Cowardin et al. 1979), a wetland characterized by woody vegetation that is greater than or equal to 20 feet high.
hydric soil	Soils that develop anaerobic (absence of oxygen) conditions under persistently wet conditions and are characteristic of wetlands.
hydrology	The science dealing with the properties, distribution, and circulation of water.
hydrologically connected	Linked to or associated with the water source of another system either through surface water, a stream, groundwater, etc.
hydrophytic vegetation	Vegetation that is able to grow and thrive under wet soil conditions in wetlands.
mitigation	Defined in the Washington Administrative Code (WAC) 197-11-766 as: (1) avoiding the effect altogether by not taking a certain action or parts of an action; (2) minimizing effects by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce effects; (3) rectifying the effect by repairing, rehabilitating, or restoring the affected environment; (4) reducing or eliminating the effect over time by preservation and maintenance operations during the life of the action; (5) compensating for the effect by replacing, enhancing or providing substitute resources or environments; and/or (6) monitoring the effect and taking appropriate corrective measures.
palustrine	In the USFWS classification system (Cowardin et al. 1979), freshwater areas (having less than 0.5 part per thousand ocean-derived salts) dominated by trees, shrubs, persistent emergents, mosses, or lichens. These areas can be tidal (waters which alternate by rising and falling) or non-tidal. Palustrine also includes wetlands that lack this vegetation but have the following characteristics: (1) area less than 20 acres; (2) no active wave-formed or bedrock shoreline; and, (3) deepest water depth is less than 6.6 feet at low water.
riparian corridor	The land and the vegetation community directly adjacent to (or surrounding) a natural or artificial waterway including streams, rivers, wetlands, and lakes.

Glossary

scrub-shrub wetland	In the USFWS classification system (Cowardin et al., 1979), areas dominated by woody vegetation less than 20 feet high, such as trees, shrubs, or young trees that are stunted due to environmental conditions.
study area	The area specifically evaluated for the presence of wetlands. This area is similar to the project area but it only includes areas within the I-405 right of way and areas that will be affected by other necessary project elements such as stormwater treatment facilities, noise walls, and surface street improvements.
wetland	Wetlands are formally defined by the U.S. Army Corps of Engineers (Federal Register, 1982), the US Environmental Protection Agency (Federal Register 1988), the Washington Shoreline Management Act of 1971 (SMA) (Ecology 1991), and the Growth Management Act (GMA) (Ecology 1992) as: … those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (Federal Register 1982, 1986). The SMA and the GMA definitions add: Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990 that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificially created wetlands intentionally created from non-wetland areas to mitigate the conversion of wetlands.
wetland boundary	The point on the ground at which a shift from wetlands to non-wetlands or aquatic habitat occurs. These boundaries usually follow topographic contours.
wetland hydrology	The presence of water during a portion of the annual growing season.

Acronyms and Abbreviations

BMPs	best management practices
BNSF	Burlington Northern Santa Fe
CAD	computer-aided drafting
Corps	U.S. Army Corps of Engineers
EA	environmental assessment
Ecology	Washington State Department of Ecology
EIS	environmental impact statement
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GIS	Geographic Information System
GMA	Washington State Growth Management Act
HOV	high-occupancy vehicle
I-405	Interstate 405
I-90	Interstate 90
NB	northbound
NEPA	National Environmental Policy Act
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
PEM	palustrine emergent (wetland)
PFO	palustrine forested (wetland)
POW	palustrine open water (wetland)
PSS	palustrine scrub-shrub
ROD	Record of Decision
ROW	right of way
SB	southbound

Acronyms and Abbreviations

SE	southeast
SMA	Washington State Shoreline Management Act
SPCC	spill control and countermeasures plan
TESC	temporary erosion and sediment control plan
USFWS	U.S. Fish and Wildlife Service
WSDOT	Washington State Department of Transportation

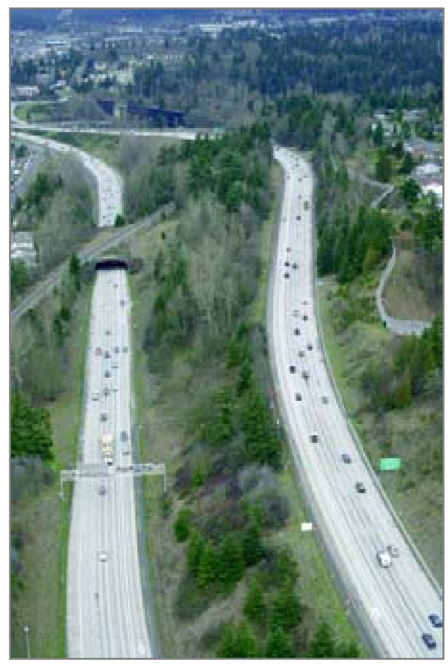
Introduction

In 1998, the Washington State Department of Transportation (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 in an effort to reduce traffic congestion and improve mobility in the Interstate 405 (I-405) corridor. In fall 2002, the combined efforts of these entities culminated in the *I-405 Corridor Program Final Environmental Impact Statement (EIS)* and *FHWA Record of Decision (ROD)*.

The ROD selected a project alternative that would widen I-405 by as many as two lanes in each direction throughout its 30-mile length. The ultimate configuration of the selected alternative includes buffers separating general-purpose lanes from parallel high-occupancy vehicle (HOV) lanes (potentially used by future high-capacity transit). The design also allows for expanded "managed lane" operations along I-405 that could include use of HOV lanes by other user groups, such as trucks.

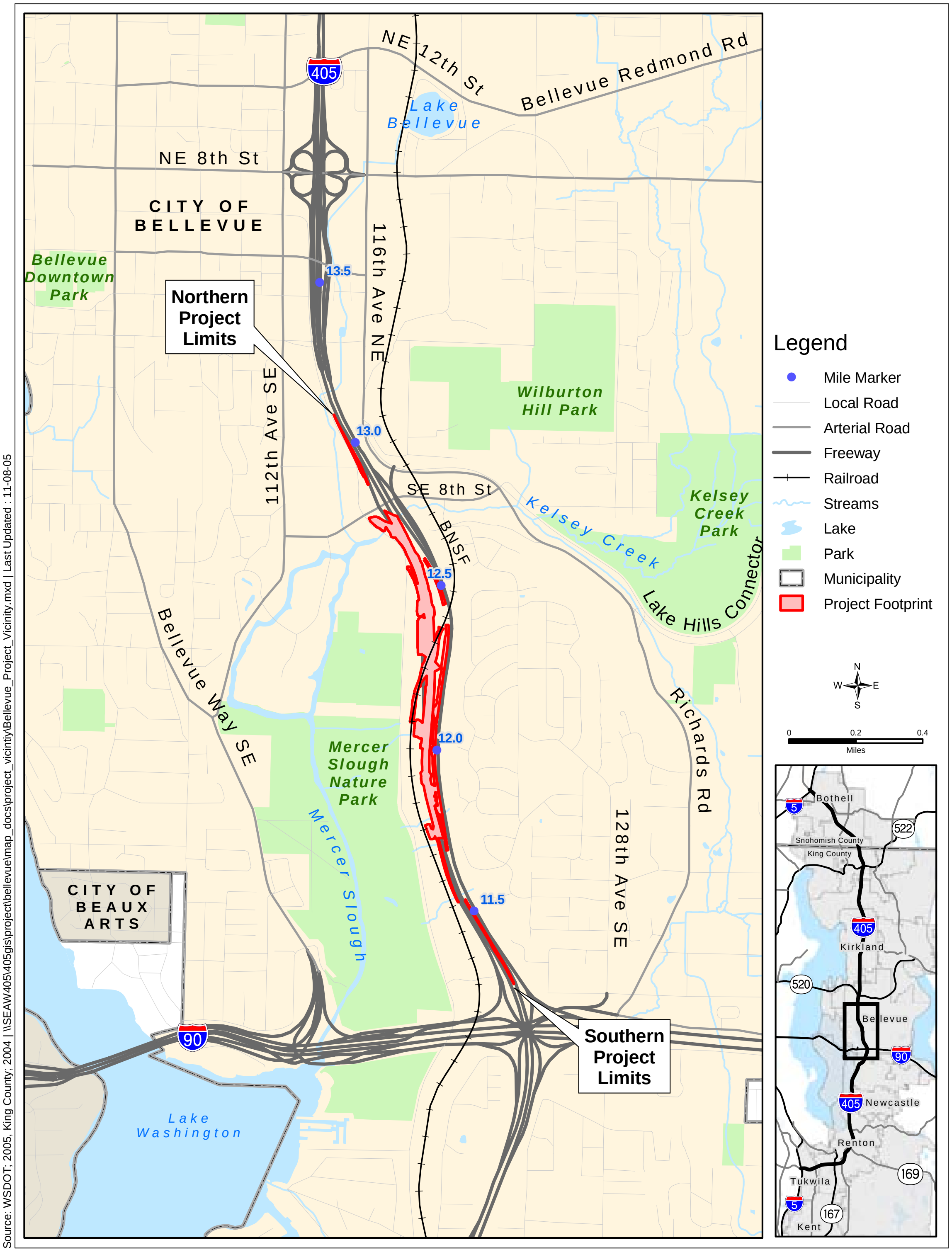
In 2003, the Washington State legislature approved a statewide transportation-funding plan called the "nickel package." The nickel package provided funding for congestion relief projects in three critical traffic hotspots along the I-405 Corridor: Renton, Bellevue, and Kirkland. The Bellevue Nickel Improvement Project is one of several projects now moving forward as part of a phased implementation of the I-405 Corridor Program. Exhibit 1 shows the location of the Bellevue Nickel Improvement Project.

In 2003, the Washington State legislature approved a statewide transportation-funding plan called the "nickel package." The nickel package provides funding for congestion relief projects in three critical traffic hotspots along the I-405 Corridor, including Bellevue.



Traffic moving along I-405

Exhibit 1. Project Vicinity Map



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In keeping with the direction established in the Final EIS (FEIS) and ROD, we are preparing a National Environmental Policy Act (NEPA) Environmental Assessment (EA) that focuses on project-level effects of constructing and operating the Bellevue Nickel Improvement Project.

The Environmental Assessment will describe new project changes, information, effects, or mitigation measures, but the assessment will not revisit the alternatives, impacts, and mitigation measures evaluated in the corridor-level EIS or the decisions documented in the Record of Decision.

We will base the EA on the analysis in the *I-405 Corridor Program Final EIS*, and will describe any new or additional project changes, information, effects, or mitigation measures not identified and analyzed in the corridor-level FEIS. The project-level EA for the Bellevue Nickel Improvement Project will not reexamine the corridor-level alternatives, impacts, and mitigation measures presented in the corridor-level FEIS, or the decisions described in the ROD.

What alternatives do we analyze in this discipline report?

This discipline report is one of 19 environmental elements WSDOT will study to analyze the effects of the Bellevue Nickel Improvement Project. All of the discipline reports will analyze one build alternative and one “no build” or “no action” alternative. This approach is consistent with FHWA’s guidelines for preparing a NEPA EA.

What is the No Build Alternative?

NEPA requires us to include and evaluate the No Build Alternative in this discipline report. We use this approach to establish an existing and future baseline for comparing the effects associated with the Build Alternative. We assume the No Build Alternative will maintain the status quo: only routine activities such as road maintenance, repair, and safety improvements would occur within the corridor between now and 2030. The No Build Alternative does not include improvements that would increase roadway capacity or reduce congestion on I-405. We describe these improvements further in the Bellevue Nickel Improvement Project Traffic and Transportation Discipline Report.

We assume the No Build Alternative will maintain the status quo: only routine activities such as road maintenance, repair, and safety improvements would occur within the corridor between now and 2030.

What are the principal features of the Build Alternative?

The Bellevue Nickel Improvement Project will add one new general-purpose lane in each direction along a 2-mile section of I–405 between I-90 and SE 8th Street. We will generally use the inside or "median" side of I-405 for construction. After we re-stripe the highway, the new lanes will occupy the outside of the existing roadway. The project also includes new stormwater management facilities and better drainage structures and systems.

Other project activities include developing off-site wetland mitigation as well as on-site stream mitigation areas to compensate for the loss of these resources within the project area. We expect project construction to begin in spring 2007 and the improved roadway to be open to traffic by fall 2009.

Improvements to Southbound I-405

We will add one lane in the southbound direction of I-405 from approximately SE 8th Street to I-405.

In the southbound (SB) direction, we plan to add one new travel lane from approximately Southeast (SE) 8th Street to I-90 (Exhibits 2, 3, and 4). In addition, the existing outside HOV lane at I-90 will be extended north so that it begins at the on-ramp from SE 8th Street. In order to add these lanes and maintain traffic flow during construction, we will shift approximately 3,000 feet of the SB roadway as much as 200 feet east into the existing median. The relocated SB roadway will connect to the existing SB travel lanes just north of the I-90 interchange, and south of the existing bridge over SE 8th Street.

We will build a new tunnel underneath the Burlington Northern Santa Fe (BNSF) railroad, just east of the existing Wilburton Tunnel, to accommodate the relocated and widened SB roadway. The existing tunnel does not have the capacity to accommodate additional lanes of SB traffic.

The existing SB travel lanes and the Wilburton Tunnel will remain open to traffic during construction of the new tunnel and the relocated/widened SB lanes. We will also build the new tunnel wide enough to accommodate additional lanes. The existing tunnel will remain after we complete the improvements.

Exhibit 2. Proposed Bellevue Nickel Project Improvements (Sheet 1 of 3)

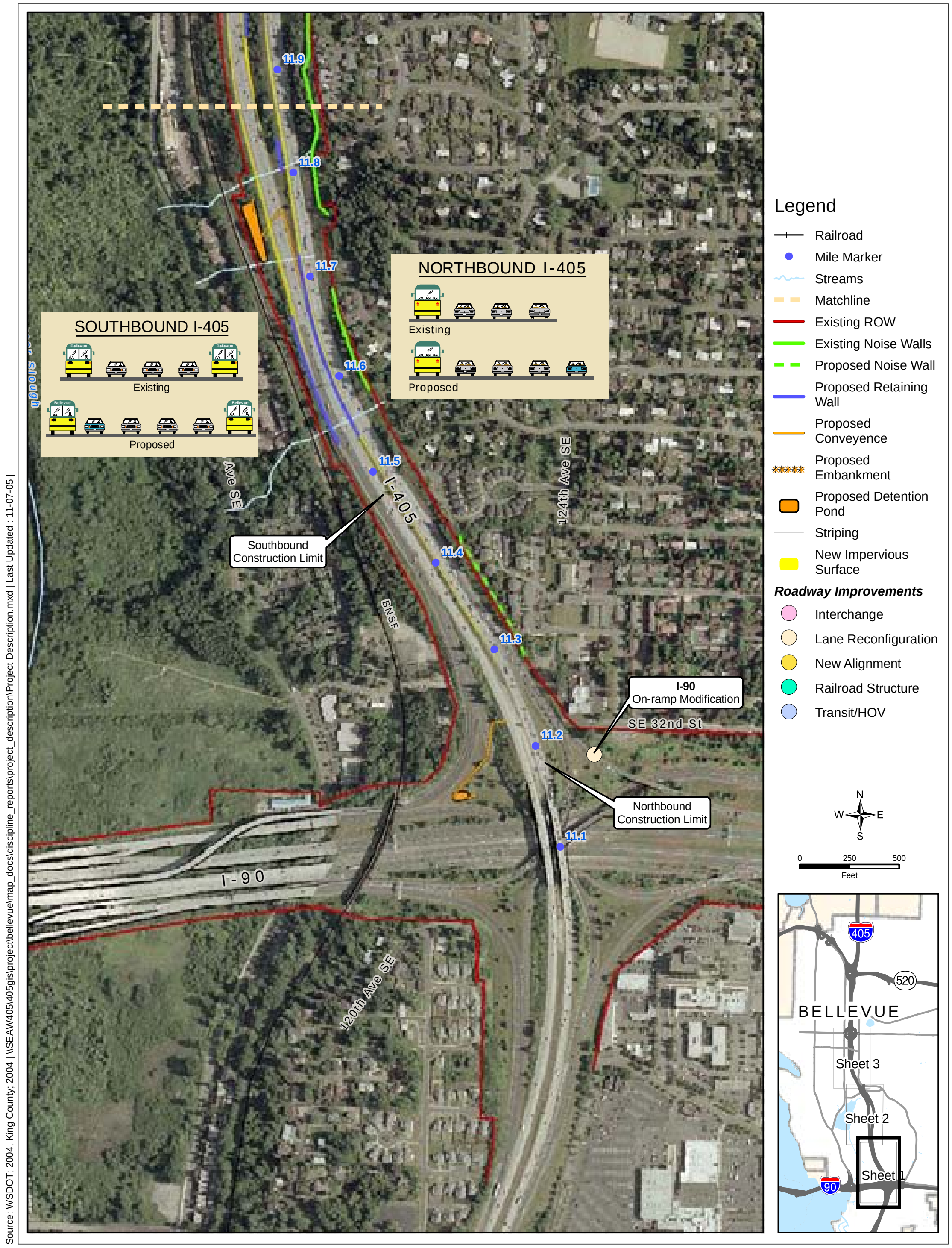

Exhibit 3. Proposed Bellevue Nickel Project Improvements (Sheet 2 of 3)

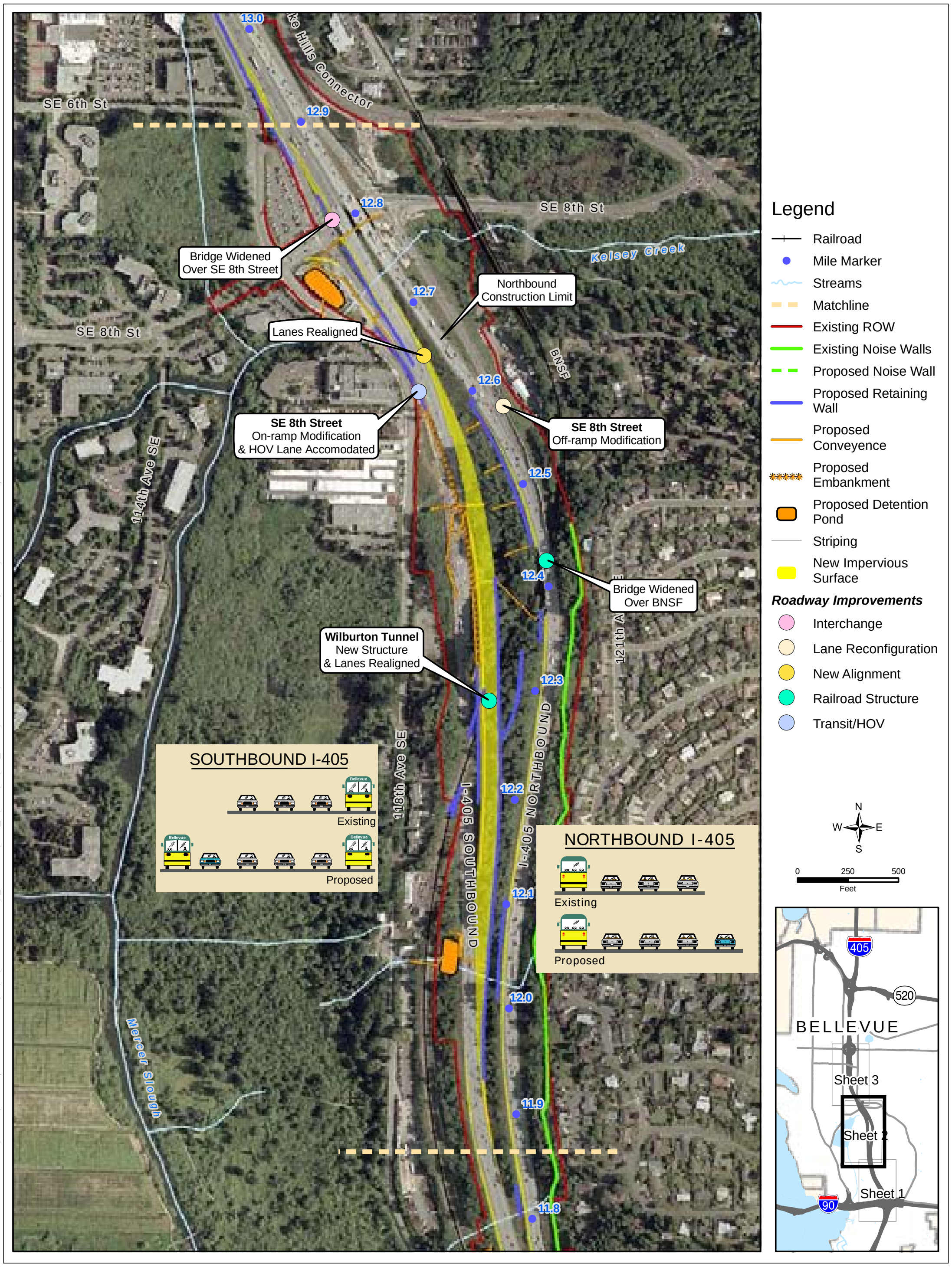

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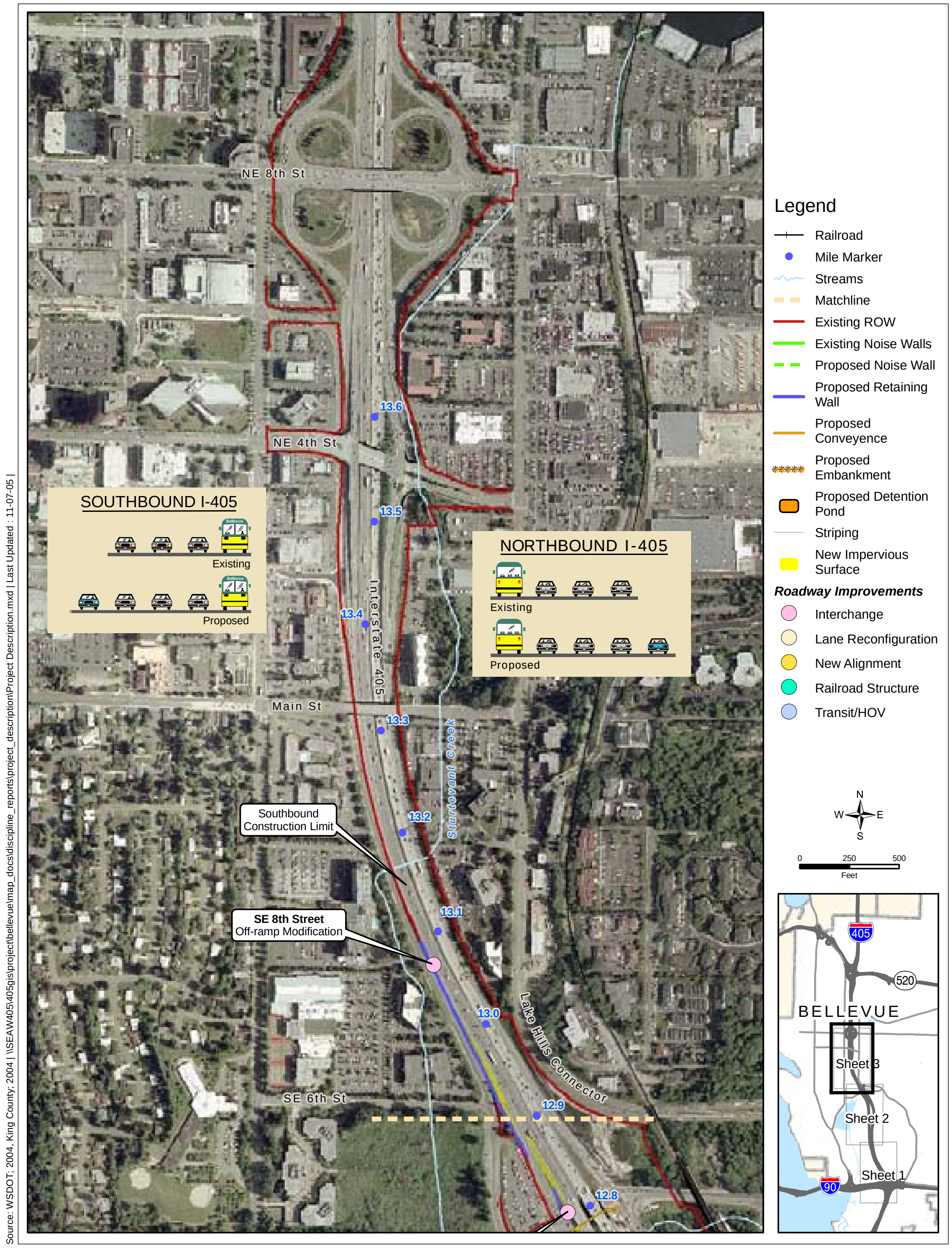
Exhibit 4. Proposed Bellevue Nickel Project Improvements (Sheet 3 of 3)



We will also include the following improvements in the Build Alternative:

- Modify the existing off-ramp at SE 8th Street to make room for an additional southbound lane on I-405. The off-ramp will then become a single-lane, optional off-ramp (i.e., the off-ramp will no longer be an "exit only" off-ramp).
- Build a retaining wall between the SB travel lanes and the off-ramp at SE 8th Street.
- Widen the existing bridge over SE 8th Street to the west to accommodate the new SB lane.
- Modify the existing on-ramp at SE 8th Street to tie into the relocated SB general-purpose travel lanes.
- Reconfigure the on-ramp at SE 8th Street to accommodate the extended outside HOV lane.
- Temporarily shift the existing BNSF railroad track from its current alignment to allow for continuous railroad operation during construction of the new tunnel.
- Construct retaining walls along the eastern edge of the relocated SB travel lanes.

Improvements to Northbound I-405

We will add one lane in the northbound direction of I-405 from approximately I-90 to SE 8th Street. All widening of the northbound mainline will occur on the inside (median side) of the existing roadway.

In the northbound (NB) direction, we plan to add one new travel lane from approximately I-90 to SE 8th Street (Exhibits 2, 3, and 4). We will add one new lane to the NB ramp from I-90. We will shift the NB lanes to allow all of the proposed widening to occur on the inside, or median side of the existing roadway.

Additional improvements include:

- Re-stripe the westbound/eastbound I-90 on-ramp to NB I-405 resulting in one lane becoming two lanes in the NB direction.
- Widen, shift, and re-stripe NB I-405 travel lanes north of I-90 to allow the westbound I-90 to NB I-405 on-ramp and the eastbound I-90 to NB I-405 on-ramp to enter I-405 without having to merge into a single lane.
- Construct several retaining walls needed for road widening in locations that allow for existing and future widening of I-405.

- Construct a noise barrier approximately 725 feet long and 16 feet high (See Exhibit 2).
- Widen the existing bridge over the BNSF Railroad to the west to accommodate the new NB lane.
- Modify the NB off-ramp to SE 8th Street to make it a single-lane "exit-only" off-ramp.
- Transition the NB travel lanes back into the existing lane configuration before crossing over SE 8th Street.

Improvements to the Stormwater Management System

Managing stormwater for the I-405 Bellevue Nickel Improvement Project involves the collection and treatment of rainfall runoff from the new project pavement consistent with the guidelines in the WSDOT Highway Runoff Manual.

Currently, we treat less than 5 percent of the existing runoff from paved surfaces in the project area before discharging it. We will improve this condition by treating 17 percent more area than the new paved surface area we create. By treating a greater area, we improve flow control and remove pollutants from a portion of the existing roadway as well as from newly constructed areas.

Reconfiguration and new construction associated with the SB lanes will mean that we need to replace much of the existing drainage system. We will continue to use open roadside ditches along the shoulders of the roadway shoulders where possible. We will use standard WSDOT catch basins and manhole structures to move the roadway runoff to a system of stormwater drain pipes. These features will transport runoff to treatment and flow-control facilities within the existing ROW.

We will construct three new stormwater ponds (detention ponds combined with stormwater treatment wetlands) as part of the project and enlarge the existing pond at SE 8th Street. Two of the new ponds will be located south of the Wilburton Tunnel between the SB lanes and the BNSF railroad ROW. We will construct the third new pond in the northwest quadrant of the I-90/I-405 interchange. The project will discharge treated stormwater following existing flow patterns to Mercer Slough or to the wetlands that surround it.

Avoidance and Minimization Measures

WSDOT will use Best Management Practices (BMPs), WSDOT Standard Specifications, and design elements to avoid or minimize potential effects to the environment for the Bellevue

Best Management Practices (BMPs)

BMPs are generally accepted techniques that, when used alone or in combination, prevent or reduce adverse effects of a project. Examples include erosion control measures and construction management to minimize traffic disruption. Please see Appendix A for a complete list of BMPs.

WSDOT Standard Specifications

Guidelines and procedures established by WSDOT for roadway design and construction in a variety of design, engineering, and environmental manuals.

Nickel Improvement Project. Collectively, these measures to avoid or minimize potential effects to the environment are known as “avoidance measures.” We describe these measures in more detail in an Appendix A. If the project has additional effects not addressed in the avoidance measures, we will address these measures through mitigation.

Wetland and Stream Mitigation Sites

We will compensate for adverse effects to wetlands and their buffers by creating just over an acre of wetland within the boundaries of Kelsey Creek Park (Exhibit 5). The site is located north of the intersection of Richards Road and the Lake Hills Connector.

Our general concept will be to create an area that will transition from forested land beside the Lake Hills Connector to wetlands within Kelsey Creek Park. We will reshape the surface area to create favorable conditions for the necessary wetland aquatic characteristics, and we will replant and enhance habitat in the area by constructing habitats and replanting adjacent roadside areas with forest-type vegetation.

Similarly, we will compensate for unavoidable effects to “Median Stream,” the unnamed stream within the I-405 median. We have developed a conceptual stream mitigation plan that includes on-site habitat restoration and creation. The conceptual stream mitigation plan includes the following specific elements (see Exhibit 6):

- Connect the new Median Stream culvert under I-90 to the existing channel and wetland located west of SB I-405.
- Create approximately 500 linear feet of stream channel along the western slope of SB I-405.
- Buffer the created stream channel with approximately 16,000 square feet of native streamside vegetation.
- Enhance approximately 300 linear feet of riparian habitat west of SB I-405 by removing selected non-native invasive plant species and replacing with native streamside vegetation.

We provide more detailed information about mitigation efforts planned in conjunction with the Bellevue Nickel Improvement later in this report and in the Surface Water, Water Quality, and Floodplains Discipline Reports.

Exhibit 5. Proposed Wetland Mitigation Area

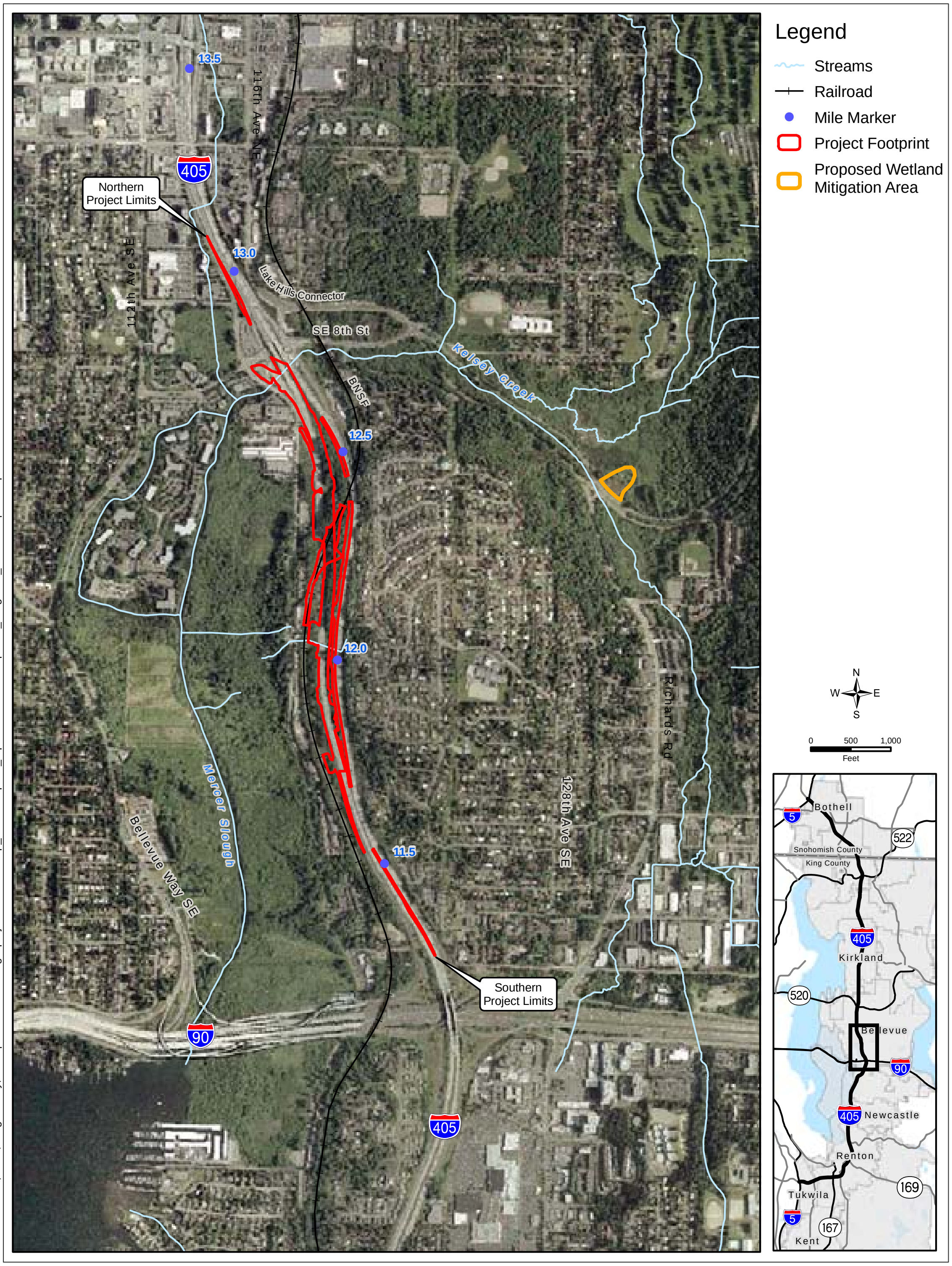


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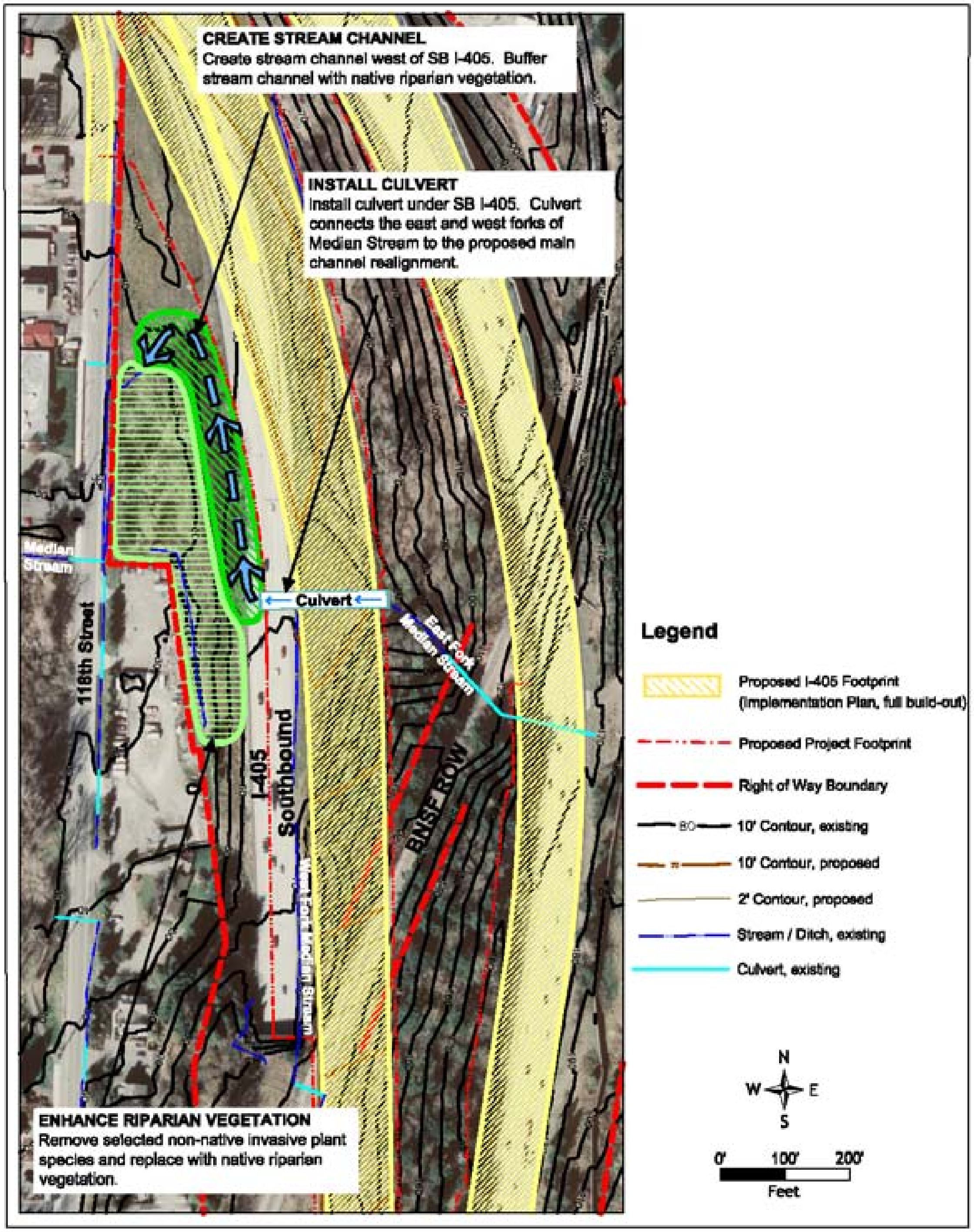
Exhibit 6. Conceptual Stream Mitigation Plan



Why do we consider wetlands as we plan this project?

Wetlands are a valuable resource to our environment. They can help to moderate stormwater flows by slowing down and retaining floodwater during periods of rain. They can help to minimize flooding downstream and to clean the water of material such as dirt and oil. Wetlands can also provide vital habitat for many plants and animals. We are implementing measures that avoid or minimize effects to wetlands, as well as creating and enhancing vital wetland resources in the Bellevue Nickel Improvement Project area.

What are the key points of this report?

This report will discuss the following key points:

- The methods used to delineate and evaluate effects to wetlands are consistent with federal, state, and local regulations pertaining to wetlands.
- Wetlands do occur within the study area and have been disturbed to some extent by development, including the original construction of I-405 and commercial and residential development in the surrounding area. Most of the wetlands are dominated by emergent or scrub-shrub vegetation and are considered of low value, providing relatively little function other than floodflow alteration and sediment removal.
- We have designed the project to minimize effects to wetlands.
- The project will result in unavoidable permanent negative effects to 0.74 acre of wetlands and an additional 0.18 acre of temporary effects to wetlands, which will be mitigated per federal, state, and local regulations.

I-405 plays a critical role in the regional movement of people and freight.

Existing Conditions

What is the study area for wetlands and how did we define it?

The study area includes existing WSDOT ROW along a 2-mile section of I-405, between the interchange with I-90 and SE 8th Street in the City of Bellevue, Washington.

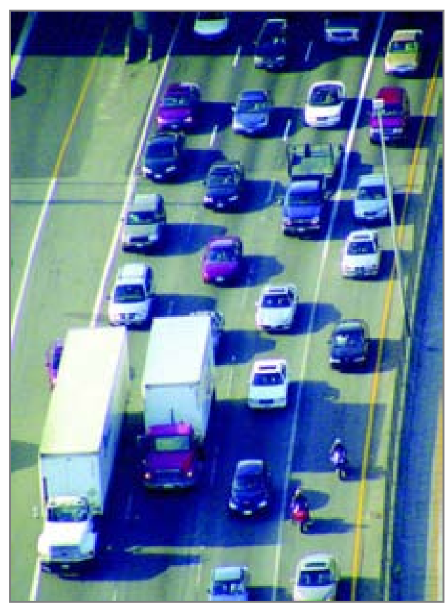
We identified the study area based on the project's anticipated construction footprint. The construction footprint includes all areas affected by proposed improvements to I-405, in addition to all areas affected by other necessary project elements, such as stormwater treatment facilities, noise walls, and surface street improvements.

What regulations govern project activities in wetlands?

There are numerous federal, state, and local regulations that govern development and other activities in or near wetlands. Agencies that have primary jurisdiction over wetlands in the Bellevue Nickel Improvement Project area are:

Federal	U.S. Army Corps of Engineers (Corps)
State	Washington State Department of Ecology (Ecology)
Local	City of Bellevue

The federal Clean Water Act is the principal piece of legislation that regulates activities that may affect wetlands. The Clean



Congestion building along the I-405 corridor

Water Act grants both the Corps and a designated state agency (for Washington, this is Ecology) the authority to regulate certain activities in wetlands and other types of water bodies. At the local (city) level, the Washington State Growth Management Act (GMA) requires that wetlands be protected under the local zoning code and/or other regulations that have been developed specific to the management of wetlands and other environmentally critical areas. In addition, the Shoreline Management Act (SMA) manages appropriate uses of shorelines in the state.

In addition to oversight by these agencies, WSDOT and/or the FHWA are obligated to consider wetland protection and to minimize the destruction, loss, or degradation of wetlands as a result of several other orders, rules, and agreements including:

- Federal Executive Order 11990 of 1978, Department of Transportation Order 5660.1A (FHWA).
- Washington State Executive Order 89-10, Protection of Wetlands (WSDOT).
- Memorandum of Agreement between WSDOT and Ecology (1993) (WSDOT).

What information exists on wetlands in the study area?

The Corps and Ecology wetland determination manuals require project biologists to conduct a review of existing information before proceeding with the necessary fieldwork. Several publicly available resources can help to determine if wetlands have a high potential to occur in a particular geographic area. For the Bellevue Nickel Improvement Project, biologists reviewed the *National Wetland Inventory* (NWI) (1988), the *King County Sensitive Areas Map Folio* (1990), Bellevue's *Sensitive Areas Notebook* (1997), and the Washington State Department of Fish and Wildlife *Priority Habitats and Species Database* (2005). We obtained additional information about the location of known hydric soils by using maps published by the U.S. Soil Conservation Service (now known as the Natural Resources Conservation Service [NRCS]).

These resources did not show any wetlands in the study area. This is not uncommon because the background resources focus on larger, less disturbed wetland systems. The resources did indicate that there was a high probability that wetlands would be present in the study area, primarily associated with Mercer Slough and Kelsey Creek.

Although the background information did not identify any wetlands in the study area, it did identify several nearby wetlands. We identified the following wetland areas during the review of available existing information:

- Mercer Slough – a large wetland complex on the west side of I-405 and parallel to the roadway that discharges to Lake Washington. It extends from south of I-90 north to SE 8th Street. This wetland is identified as Wetland 1-C in the *City of Bellevue Sensitive Areas Notebook*.
- Kelsey Creek Park Wetland – located east of northbound I-405 and west of the Lake Hills Connector. This large wetland complex is identified as Wetlands 3-A and 6-J in the *City of Bellevue Sensitive Areas Notebook*.

None of these inventoried wetlands occur within the Bellevue Nickel Improvement Project wetland study area.

In addition to known inventoried wetlands, the NRCS has identified two soil units (Seattle Muck and Tukwila Muck) that are classified as hydric soils (soils that can be indicative of wetlands). All the other soil units mapped by the NRCS (Alderwood gravelly sandy loam, Everett gravelly sandy loam, Kitsap silt loam, Bellingham silt loam, Indianola loamy fine sand, Norma sandy loam, and Urban land) are not categorized as hydric soils but the NRCS notes that these soil types can contain small areas of hydric soils within the larger soil unit. As a result, we were not able to exclude any specific area from the field investigation based solely on soil conditions.

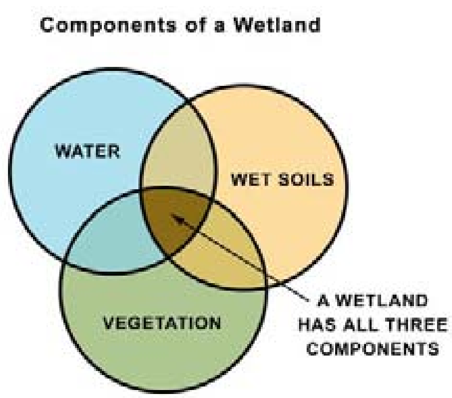
How did we identify wetland boundaries in the field?

After completing a review of the background information, we conducted field studies for areas that we had identified as having a high likelihood of supporting wetlands. The field studies involved biologists walking the areas within the project footprint and marking wetland boundaries with colored flagging. The identification and flagging of wetland boundaries is commonly referred to as "delineating wetlands." After we delineated each wetland in the field, professional surveyors located and recorded the wetland boundaries, which were then transferred into WSDOT's Geographic Information System (GIS) database. After we completed the surveying and mapping, the same biologists who conducted the field study reviewed the maps to check for accuracy.

Biologists conducted the wetland field study for the Bellevue Nickel Improvement Project between late September 2004 and early April 2005. In Washington State, federal, state, and local regulations require that wetland studies be conducted using a single common study method developed by the Corps. This method is described in the *Corps of Engineers Wetlands Delineation Manual* (1987) and must be followed for all wetland studies conducted for wetland permits issued by the Corps. In 1997, the state of Washington published a companion document that includes Corps methods with guidance on implementation, the *Washington State Wetlands Identification and Delineation Manual*, for use by state and local agencies in conjunction with the implementation of state SMA- and GMA-related regulations. The procedures for wetland studies described in Ecology (1997) are consistent with the 1987 U.S. Army Corps of Engineers method.

What qualifies an area as a "wetland" under the delineation manuals?

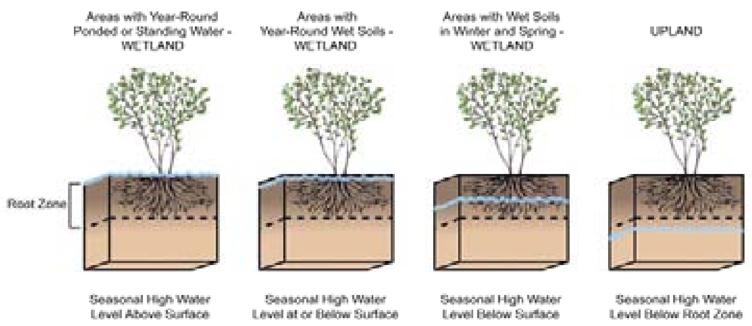
Exhibit 7. The Three Components Necessary for an Area To Be Determined a Wetland



The Corps and Ecology delineation manuals require the presence of three fundamental characteristics for an area to be delineated as wetland: (1) wetland hydrology (the presence of water during a portion of the annual growing season); (2) hydric soils (soils that develop in conditions without oxygen under persistently wet conditions); and, (3) hydrophytic vegetation (vegetation that is able to grow and thrive under wet soil conditions), as illustrated in Exhibit 7. Field indicators of these three characteristics must all be present to make a positive wetland determination.

Water is an essential element of the wetland resource. The wetland delineation manuals require that water be present on a persistent basis in order for wetlands to exist; however, the area does not have to be flooded or ponded, and water does not have to be present throughout the entire year, as illustrated in Exhibit 8. Under certain conditions, areas where groundwater occurs within the root zone for only about two consecutive weeks each year can meet the requirements for a wetland.

Exhibit 8. Presence of Water Relative to the Root Zone in Wetland and Upland Areas



An area must have hydric soils to be considered a wetland. Wetland soils exhibit certain characteristics that can be visually observed by biologists in the field. Hydric soils are often dark in color. The dark color is often a result of persistent saturation by water or flooding or ponding for long periods of time.

The wetland delineation manuals require that water-tolerant (hydrophytic) plants must be prevalent to meet the jurisdictional definition of “wetland.” Most plants require air around their roots to grow properly. Under typical conditions, the air that normally occurs in the spaces between particles of soil is sufficient to promote healthy and vigorous growth. In wetlands, however, the space between soil particles are, at some point, saturated with water, limiting or excluding air. Hydrophytic plants are generally defined as plants that have specific adaptations that allow them to grow under persistently wet conditions, where saturation limits air in the root zones for all or some of the annual growing season.

The USFWS has published the *National List of Vascular Plant Species that Occur in Wetlands* (1997), which is a list of what plant species are known or likely to be present in wetlands. Biologists identified hydrophytic plants based on this publication.

How did we characterize wetlands?

We classified the wetlands in the study area according to the Cowardin classification system. This system, published in 1979 by a team of USFWS scientists led by L.M. Cowardin, bases the classification of wetlands on their physical characteristics, such as the general type of vegetation in the wetland (trees, shrubs,

Wetland Definitions

Palustrine – Freshwater areas dominated by trees, shrubs, persistent emergents, mosses or lichen.

Emergent – A wetland characterized by erect, rooted, non-woody plants.

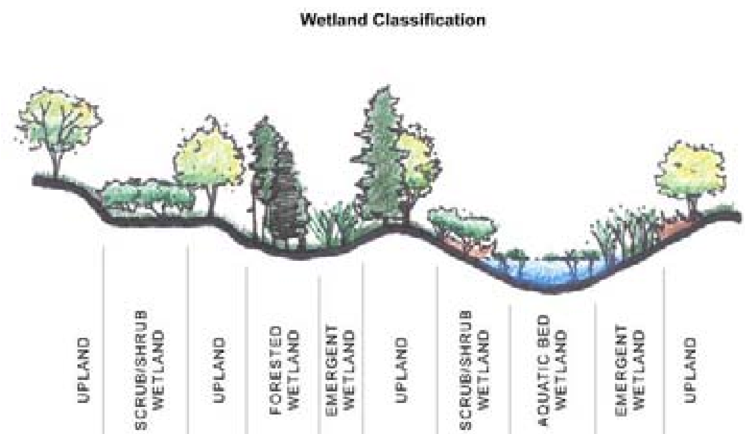
Forested – A wetland characterized by woody vegetation that is greater than or equal to 20 feet high.

Scrub-shrub – A wetland characterized by vegetation less than 20 feet high.

grasses or forbs, etc.) and how much, and where, water is present in the wetland.

The Cowardin classification system classifies every known wetland type that occurs throughout the United States. Relatively few types of wetlands are present in the study area. Specifically, we assigned each wetland to one of the following Cowardin classes: palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO). These terms are defined in the Glossary. Exhibit 9 illustrates the various wetland types and example positions where they may occur in the landscape.

Exhibit 9. Types of Palustrine Wetlands and their Typical Positions in the Landscape



Where are the wetlands in the study area and what are their characteristics?

After we completed the review of existing information, we field-surveyed the study area to determine if any other wetlands were present.

During the site-specific field investigation, we delineated nine wetlands that had not been previously mapped (Exhibits 10 to 13). The wetlands totaled 3.36 acres within the study area for the Bellevue Nickel Improvement Project. Finding a high number of small unmapped wetlands is not uncommon in this geographic region (referred to as the Puget Sound trough). High densities of small wetlands are particularly common throughout lower elevation areas of the Lake Washington watershed.

Exhibit 10. Bellevue Nickel Improvement Project Wetlands (Sheet 1 of 4)

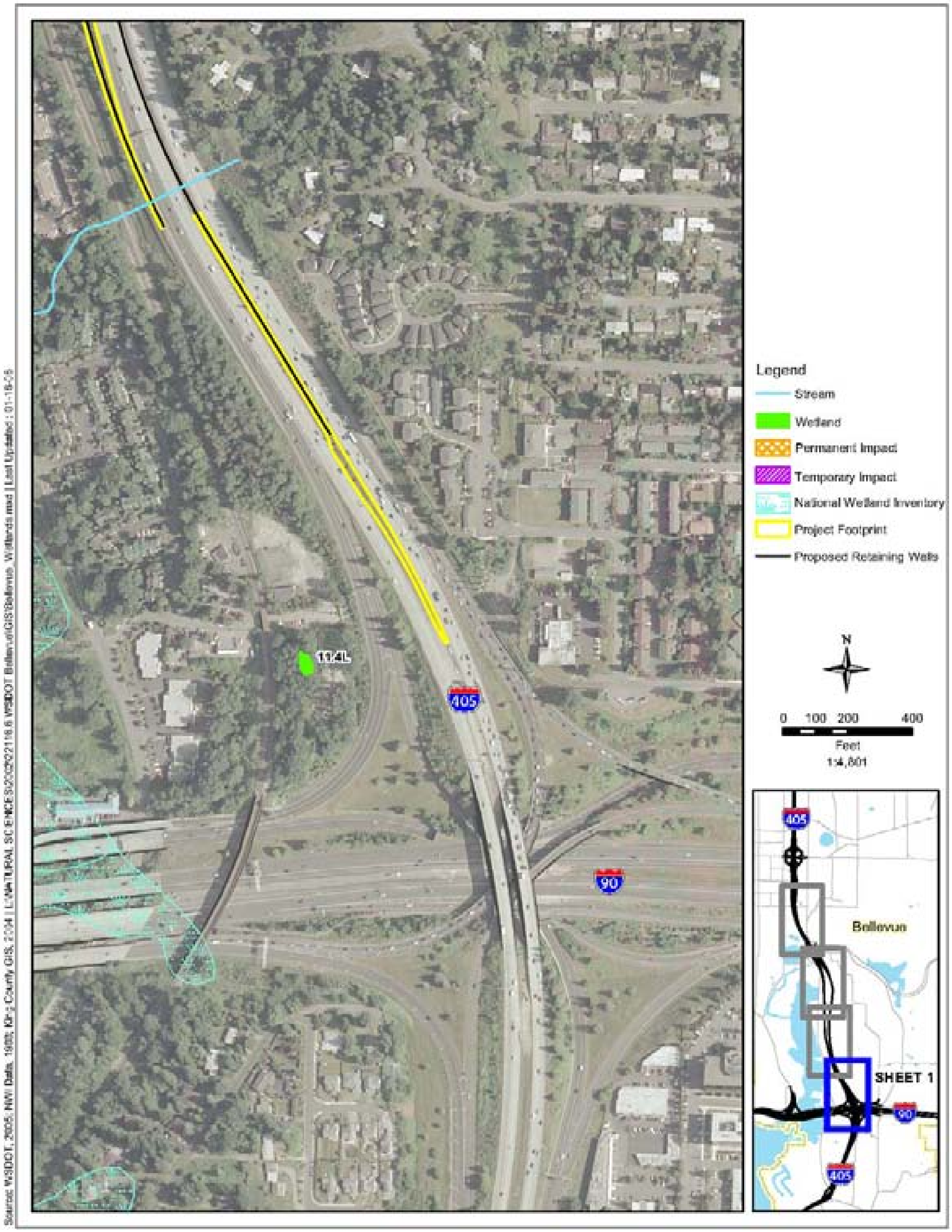


Exhibit 11. Bellevue Nickel Improvement Project Wetlands (Sheet 2 of 4)

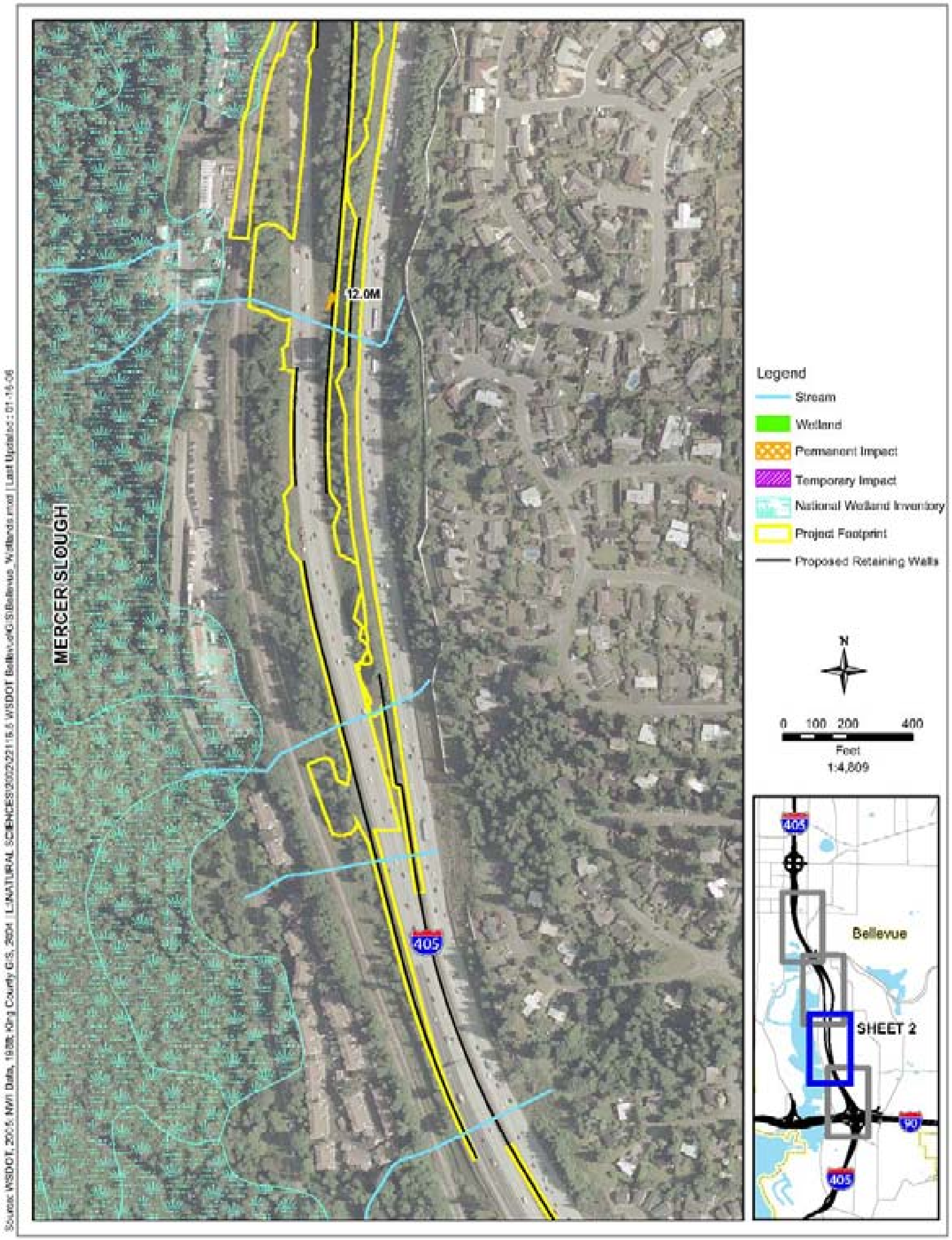


Exhibit 12. Bellevue Nickel Improvement Project Wetlands (Sheet 3 of 4)

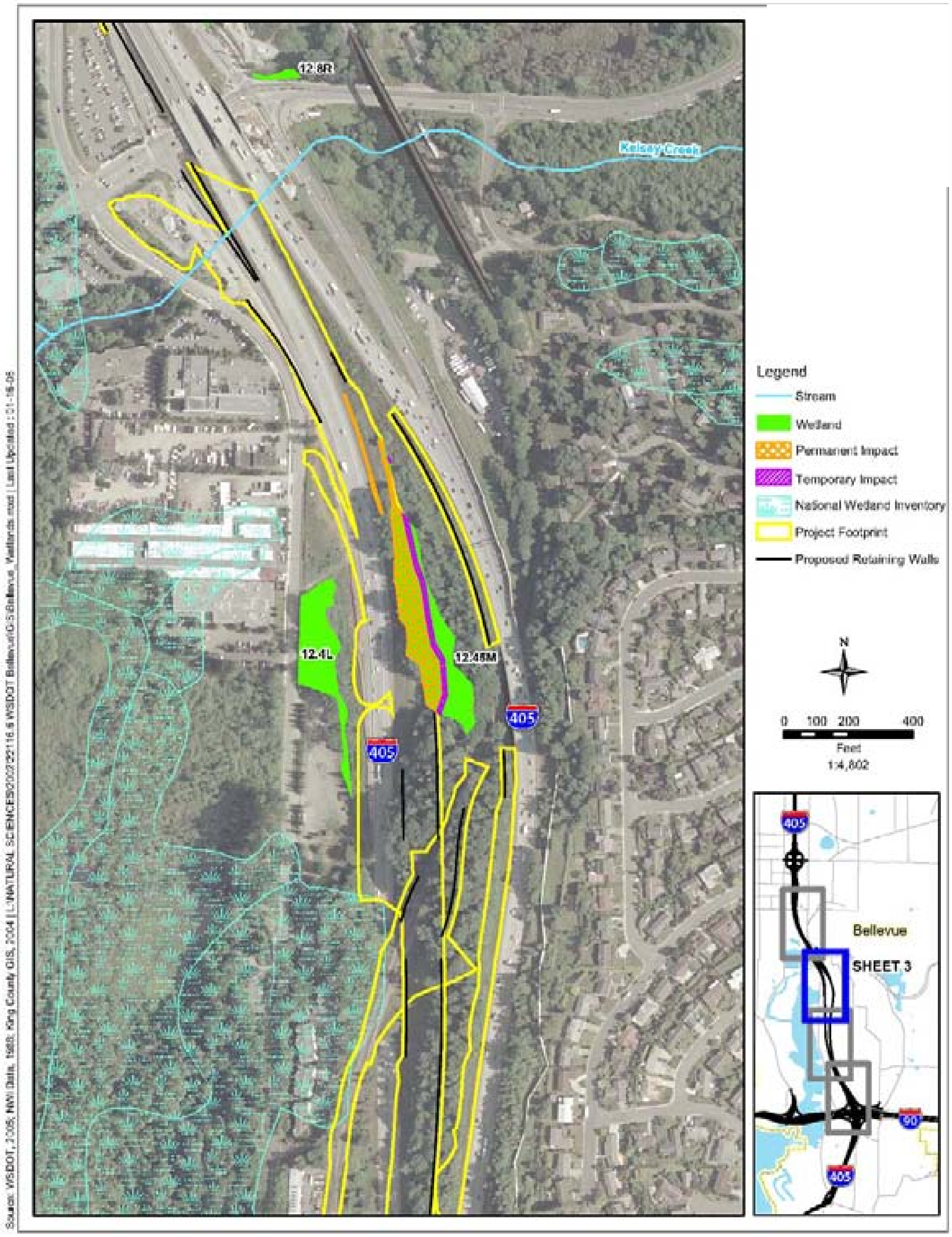
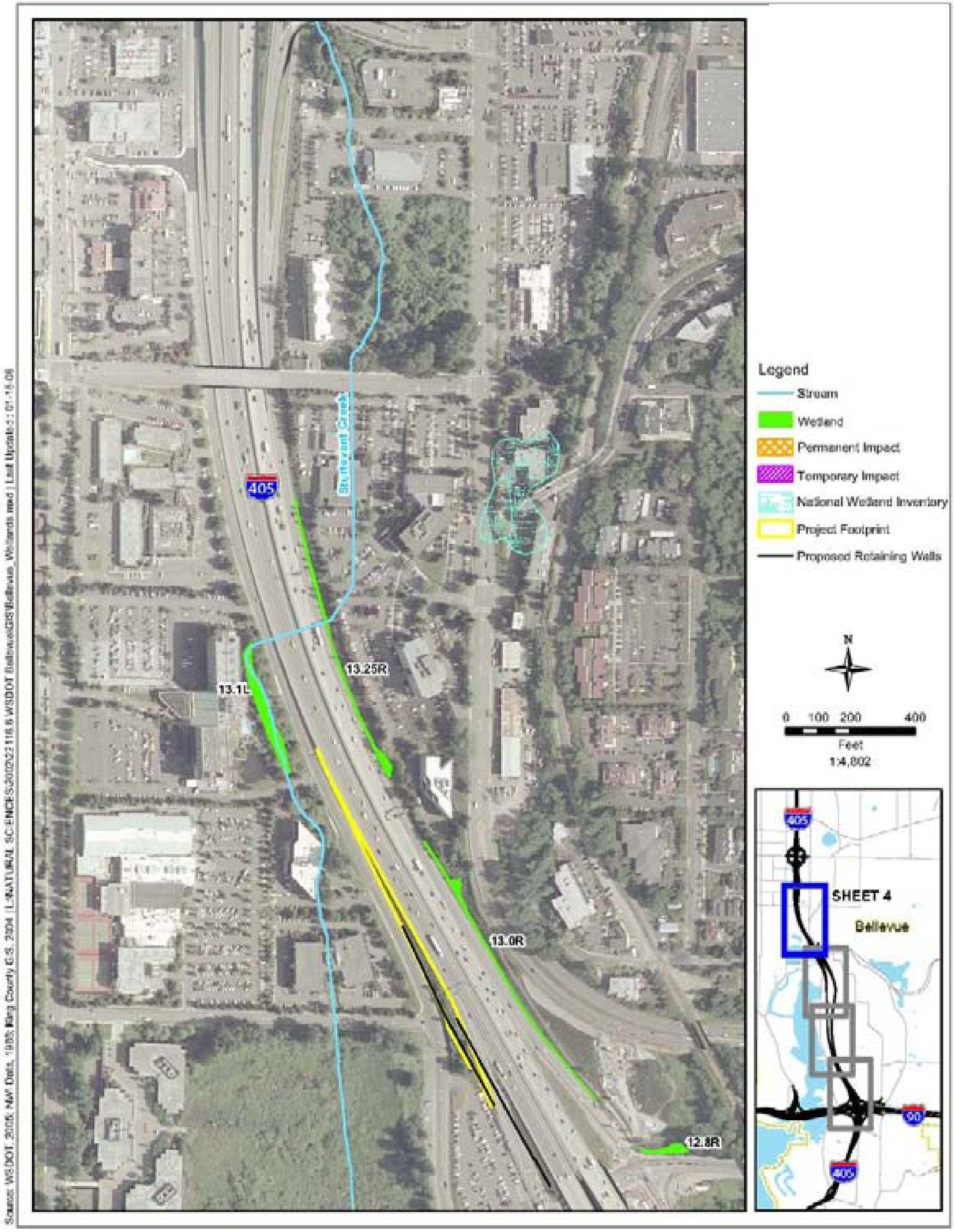


Exhibit 13. Bellevue Nickel Improvement Project Wetlands (Sheet 4 of 4)



Wetlands identified in the study area are typically associated with streams, hillside seeps, or drainage ditches. Drainage ditches that receive road runoff and convey stormwater are considered wetland if they meet the three wetland criteria and are connected to a seep or stream-associated wetland or appear to have been constructed in a historical wetland.

The Bellevue Nickel Improvement Project is located within the Mercer Slough and Kelsey Creek drainage basins. I-405 crosses Kelsey Creek near SE 8th Street. Kelsey Creek flows into Mercer Slough, which connects to Lake Washington. Of the wetlands delineated in the study area, the Mercer Slough basin contains five of the wetlands covering 2.70 acres. The Kelsey Creek basin contains four wetlands covering 0.69 acre.

Mercer Slough

The five wetlands in the Mercer Slough basin receive water from hillside seeps, Kelsey Creek, surface water drainage, and groundwater. The majority of wetlands are roadside ditches dominated by bentgrass, velvetgrass, and soft rush. These wetlands receive road runoff and typically discharge to a catchbasin or culvert. Exhibit 14 is a summary of wetlands in the Mercer Slough basin. The wetland area shown in Exhibit 14 represents the total area of wetland delineated within the Mercer Slough sub-basin.

Three of the five wetlands in the Mercer Slough basin are forested and have more value than the other two wetlands. Wetland 11.4L is approximately 0.06 acre and contains a forested topographic depression dominated by black cottonwood and Oregon ash. Wetland 12.4 L is a 0.86-acre depressional wetland located between I-405 and 118th Avenue SE. This wetland is dominated by willow and red alder but also contains reed canarygrass. It discharges to Mercer Slough through a culvert under 118th Avenue SE. Wetland 12.45M is located in the median north of the Wilburton Tunnel. It is a 1.69-acre riparian and hillside seep wetland, associated with an unnamed stream (“Median Stream”), which enters the median through a culvert under the northbound lanes and the Burlington Northern Santa Fe (BNSF) railroad. This wetland is dominated by willow, red alder, blackberry, and reed canarygrass. Wetland 12.0M is a small (0.02 acre) hillside seep and Wetland 12.5M is a small (0.05 acre) ditch-associated wetland.

Exhibit 14. Summary of Wetlands Located within the Mercer Slough Sub-Basin

Wetland Name	Size (acres)	Cowardin Classification	Wetland Characteristics
11.4L	0.06	PFO	Isolated depression dominated by black cottonwood, Oregon ash, black twinberry and Himalayan blackberry; dark grayish brown silty clay loam with dark yellowish brown mottles; located on a parcel outside the ROW, northwest of the I-90/I-405 interchange and south of Arrow Road.
12.0M	0.02	PSS	Hillside seep dominated by Himalayan blackberry, reed canarygrass, velvetgrass, and soft rush; gray loamy sand with brown mottles; located in median south of Wilburton Tunnel.
12.4L	0.86	PFO	Depressional wetland dominated by Pacific willow, red alder and reed canarygrass; very dark gray silty clay loam; located between I-405 and 118th Avenue SE.
12.45M	1.69	PFO	Riparian and hillside seep dominated by Pacific willow, red alder, Himalayan blackberry, reed canarygrass, and lady fern; soils are black loam or an olive gray gravelly sandy loam; located in the median north of the Wilburton Tunnel.
12.5M	0.05	PEM	Ditch-associated wetland dominated by soft rush, bentgrass, and reed canarygrass; greenish gray clay loam with gravels and yellowish brown mottles; located in the median north of Wilburton Tunnel.
TOTAL	2.70		

Kelsey Creek

The Kelsey Creek basin contains four wetlands with a combined area of 0.69 acre. These wetlands receive water from the creek and its tributaries, surface water, and groundwater. Exhibit 15 is a summary of wetlands in the Kelsey Creek basin. The wetland areas shown represent the total area of wetland delineated within the Kelsey Creek sub-basin.

Exhibit 15. Summary of Wetlands Located within the Kelsey Creek Sub-Basin

Wetland Name	Size (acres)	Cowardin Classification	Wetland Characteristics
12.8R	0.06	PEM	Ditch-associated wetland dominated by red alder, Himalayan blackberry, watercress, common cattail and reed canarygrass; very dark gray loam and dark greenish gray sandy clay loam; located adjacent to the I-405 NB on-ramp and SE 8th Street Exit.
13.0R	0.16	PEM	Ditch-associated and hillside seep wetland dominated by reed canarygrass and red fescue; soils are very dark greenish gray sand with cobbles and very compact below 11 inches depth; located north of the SE 8th Street interchange.
13.1L	0.27	PEM	Riparian wetland associated with Sturtevant Creek dominated by bentgrass, Watson's willow-herb and creeping buttercup; very dark gray sandy clay loam with dark brown mottles; located west of 114th Avenue SE.
13.25R	0.19	PEM	Ditch-associated wetland dominated by reed canarygrass, red fescue, common cattail, and Himalayan blackberry; dark grayish brown sandy clay loam with cobbles and dark yellowish brown mottles; located south of the Main Street overpass.
TOTAL	0.69		

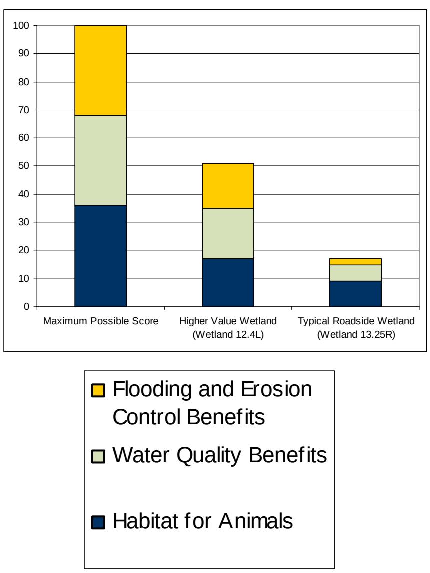
All of the wetlands in the Kelsey Creek drainage are emergent wetlands dominated by reed canarygrass, soft rush, and bentgrass, with some alder, willow, and blackberry. Three of the wetlands are ditch-associated and convey stormwater runoff. Wetland 13.1L (0.27-acre) is a narrow riparian wetland associated with Sturtevant Creek that is regularly maintained and mowed.

How did we evaluate wetlands and what rating systems did we use?

Both state and local resource agencies rate or categorize wetlands according to their relative rarity or importance. The agencies use these ratings to determine buffer requirements and appropriate replacement ratios for mitigation purposes. Wetland buffers are areas that surround a wetland and reduce adverse effects to the resource from adjacent development.

At the state level, wetlands are categorized by applying a rating system developed by Ecology: the *Washington State Wetland Rating System for Western Washington - Revised* (Hruby 2004). Ecology developed this system to differentiate wetlands based on their sensitivity to disturbance, their significance in the watershed, their rarity, our ability to replace them, and the beneficial functions they provide to society. Wetlands are categorized according to the following criteria:

Exhibit 16. Point Totals for Higher and Lower Value Wetlands Based on Ecology Rating System



- Category I wetlands represent a unique or rare wetland type; or are more sensitive to disturbance; or are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime or provide a high level of functions.
- Category II wetlands are difficult, though not impossible, to replace, and provide high levels of some functions.
- Category III wetlands have a moderate level of function. They have been disturbed in some ways, and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.
- Category IV wetlands have the lowest levels of functions and are often heavily disturbed.

We applied the Ecology rating system to rank wetlands in the Bellevue Nickel Improvement Project study area. The Ecology rating system required us to collect specific information about the wetland in a step-by-step process. Three major functions are analyzed: flood and erosion control, water quality improvement, and wildlife habitat. Ratings are based on a point system where points are given if a wetland meets specific criteria related to the wetland's potential and opportunity to provide certain benefits. Exhibit 16 illustrates a comparison of the point totals between a typical high-value wetland and a lower value wetland found in the Bellevue Nickel Improvement Project study area.

Local governments have also created criteria for rating wetlands that allow them to prioritize wetland protection. The local rating system considers some criteria specific to that jurisdiction, such as rarity within the local area.

The City of Bellevue is currently proposing updates to the Critical Areas Ordinance portion of its Land Use Code, including their wetland rating system. It is likely that the updates will be adopted by the end of 2005. The City is proposing to adopt the state wetland typing system, as described previously. This would replace an existing system using type A, B, or C that the City currently uses. Adopting the state typing system will bring the City in line with many other jurisdictions in the area. The City is also proposing new wetland buffer widths based on the state rating system.

How valuable are the wetlands in the study area?

Using the Ecology rating system, we categorized six of the nine total wetlands (67 percent) that occur in the study area as Category IV wetlands, the lowest-value class of wetlands described using that rating system. We ranked two of the wetlands as Category III wetlands and classified one as a Category II wetland. No Category I wetlands occur within the study area.

Using the proposed amendments to the critical areas portion of the Bellevue Land Use Code, Chapter 20.50, the wetlands would have the same ratings as the state system. Wetland buffer widths have been assigned based on wetland characteristics, size, water quality, and habitat scores determined by the state rating system, as illustrated in Exhibit 16. Exhibit 17 shows the state and local ratings of the wetlands in the study area.

Exhibit 17. Wetland Ratings, I-405 Bellevue Nickel Improvement Project Study Area

Wetland Name	Size (acres)	Cowardin Classification	State Rating (Ecology)	City of Bellevue Rating[1]	City of Bellevue Wetland Buffer[1]
11.4L	0.06	PFO	III	III	60
12.0M	0.02	PSS	IV	IV	NR[2]
12.4L	0.86	PFO	II	II	75
12.45M	1.69	PFO	III	III	60
12.5M	0.05	PEM	IV	IV	NR[2]
12.8R	0.06	PEM	IV	IV	NR[2]
13.0R	0.16	PEM	IV	IV	40
13.1L	0.27	PEM	IV	IV	40
13.25R	0.19	PEM	IV	IV	40
TOTAL	3.36				

[1] City of Bellevue ratings and buffers based on proposed amendments to the Critical Areas portion of the Bellevue Land Use Code. The City may adopt the amendments at the end of 2005.
[2]NR – Not regulated. The City does not propose to regulate Class IV wetlands less than 2,500 square feet.

How did we assess the wetland functions and values?

WSDOT has developed a qualitative method for assessing the functions, or beneficial activities, performed by wetlands along linear corridors. The method, *Wetland Functions Characterization Tool for Linear Projects* (2000), provides a rapid and consistent qualitative assessment of wetland functions using best professional judgment. The WSDOT method assesses the following functions:

- Flood flow alteration
- Sediment removal
- Nutrient and toxicant removal
- Erosion control and shoreline stabilization
- Organic matter production and its export
- General habitat suitability

- Aquatic invertebrate habitat
- Amphibian habitat
- Wetland-associated mammal habitat
- Wetland-associated bird habitat
- General fish habitat
- Native plant richness
- Educational or scientific value
- Uniqueness and heritage

We documented the conditions of the wetlands on data forms during the field investigation of each wetland in the study area (Appendix B). Positive answers to several questions on the data forms generally indicate the presence of factors that are important in order for the wetland to provide a particular function or value. We then used best professional judgment to determine if that particular function is actually being performed by each wetland.

What functions do study area wetlands provide?

We evaluated study area wetlands for functions and values using the WSDOT method described above. Exhibit 17 summarizes the functions and values of wetlands in the study area. Seven of the nine wetlands (78 percent) within the entire study area are relatively small (less than 0.33 acre). The two largest wetlands are located in the Mercer Slough sub-basin and are 0.86 acre (Wetland 12.4L) and 1.69 acres (Wetland 12.45M), respectively. None of the four wetlands in the Kelsey Creek basin are larger than 0.33 acre.

Six of the nine wetlands (66 percent) support emergent and/or scrub-shrub vegetation. Three of the wetlands (33 percent) are classified as forested systems (per Cowardin et al. 1979). Due to the area's developed condition, forested wetlands are generally considered to be of higher value than emergent or scrub-shrub wetlands because of their limited presence in the study area and the benefits they provide.

Larger wetlands in the study area are typically located in flat low-lying areas. Smaller wetlands tend to be located in small topographic depressions with no drainage outlet, or are hydrologically connected (linked to or associated with the water source) to hillside seeps or roadside drainage ditches. Due to their size and topographic location, larger wetlands within the study area are more likely to provide a higher number and higher value functions than smaller wetlands.

The entire study area is located within the City of Bellevue urban growth area and within existing road rights of way. All of the wetlands within the study area have been disturbed to some extent by previous development, including the original construction of I-405, and commercial or residential development in the surrounding area. Consequently, the wetlands are compromised in their ability to provide full functions and values.

We found seven of the nine wetlands to have the potential to provide valuable stormwater management functions including flood flow alteration, sediment removal, nutrient and toxicant removal, and erosion control. Some of these areas have constricted outlets and dense woody vegetation, slowing floodwaters during storm events. Most wetlands have dense herbaceous vegetation that can remove sediment and toxicants present in road runoff.

Approximately half of the wetlands are likely to provide function related to general habitat, habitat for amphibians, wetland-associated mammals, and/or wetland-associated birds. These wetlands may have multiple vegetation classes, seasonal or permanent open water, or have evidence of wildlife use such as dens, tracks, scat, or gnawed stumps. Wetland 13.1L, the riparian wetland adjacent to Sturtevant Creek, is likely to provide general value as fish habitat. Wetlands 12.4L and 12.45M likely provide native plant richness. None of the wetlands provide uniqueness or heritage value because they do not contain any listed plant or wildlife species and are not bogs or estuaries. The wetlands in the study area are either not publicly owned or in WSDOT ROW, which limits their education and recreational uses (Exhibit 18).

Exhibit 18. Wetland Functions and Values, I-405 Bellevue Nickel Improvement Project Study Area

Wetland Identifier	Area (acres)	Cowardin Classification	Flood Flow Alteration	Sediment Removal	Nutrient and Toxicant Removal	Erosion Control and Shoreline Stabilization	Production of Organic Matter and its Export	General Habitat Suitability	Habitat for Aquatic Invertebrates	Habitat for Amphibians	Habitat for Wetland-Associated Mammals	Habitat for Wetland-Associated Birds	General Fish Habitat	Native Plant Richness	Educational or Scientific Value	Uniqueness and Heritage
11.4L	0.06	PFO	✓	✓	✓			✓	✓	✓						
12.0M	0.02	PSS														
12.4L	0.86	PFO	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓		
12.45M	1.69	PFO	✓	✓	✓	✓	✓	✓	✓					✓		
12.5M	0.05	PEM		✓	✓											
12.8R	0.06	PEM		✓	✓		✓		✓							
13.0R	0.16	PEM		✓	✓		✓									
13.1L	0.27	PEM		✓	✓		✓						✓			
13.25R	0.19	PEM	✓	✓		✓										

✓ = function likely provided by this wetland

Potential Effects

How did we calculate wetland areas and effects to wetlands?

We surveyed and mapped the wetland areas based on the boundaries identified by field biologists in the field. WSDOT reviewed the wetland mapping and compared it to the project footprint. When a wetland appeared to be located within the project footprint, WSDOT changed the footprint to avoid the wetland if possible or, if the wetland could not be avoided, we determined how much wetland area would be lost due to project construction. For example, WSDOT made multiple design changes, such as realigning the project footprint and adding retaining walls designed to allow groundwater flows, to reduce effects to Wetland 12.45M. We were careful to avoid disturbing existing wetland hydrology so as not to cut off the wetland's water source. We avoided such effects by preserving the existing volume of surface water that flows into wetlands; providing water quality treatment facilities for all new pavement stormwater and a percentage of existing pavement prior to it flowing into wetlands; and, maintaining groundwater or hillside seepages that flow into wetlands. We calculated wetland loss using computer-aided drafting (CAD) software. In addition to calculating direct wetland loss as a result of constructing the project, we also calculated the areas of temporary wetland loss that will occur during construction.

Typical wetland vegetation found in the study area

How will project construction affect wetlands?

Permanent Effects

Permanent effects

Permanent effects, as defined in this document, result from WSDOT directly filling a wetland to construct new facilities or diverting or redirecting surface runoff so that an area would no longer be wetland after construction.

To build the additional roadway and stormwater facilities, WSDOT will construct in and adjacent to wetlands and their buffers. WSDOT will have to remove trees and shrubs, and convert unpaved areas to paved roadway. Three wetlands, (totaling 0.74 acre), of the nine wetlands identified in the study area, will be permanently affected as a result of filling (see Exhibit 19). All three wetlands are located within the roadway median between the northbound and southbound lanes. Wetlands 12.0M and 12.5M will be completely filled and Wetland 12.45 M will be partially filled. Wetland 12.0M is a small, hillside seep wetland that is dominated by Himalayan blackberry and reed canarygrass. Because it is on a slope and located in the roadway median, it does not provide any flood flow alteration, sediment removal, or habitat functions.

Wetland 12.45M provides some limited water quality improvement functions that will be reduced permanently by filling a portion of it. Filling the western portion of Wetland 12.45M will reduce the wetland's capacity to store stormwater, filter pollutants, and provide wildlife habitat. However, the portion of Wetland 12.45M that will not be affected primarily includes hillside seeps vegetated with black cottonwood and Himalayan blackberry. Because this portion of the wetland receives water from seeps, it will continue to be wetland with the ability to filter pollutants and provide wildlife habitat functions. The retaining wall proposed for northbound lanes has been designed to include a dispersal trench that will re-distribute the groundwater to the wetland in a manner similar to the existing hillside seeps.

Temporary Effects

To build the additional roadway and stormwater facilities, some construction will take place outside of the permanent infrastructure footprint. WSDOT may have to temporarily clear wetland and upland vegetation in the Bellevue Nickel Improvement Project study area. If so, WSDOT will need to place temporary fill in wetlands and buffers to allow enough space for construction. Approximately 0.18 acre of wetland will be temporarily disturbed during construction activities, including vegetation clearing and the placement of fill material. After completing construction, WSDOT will restore and replant these areas with appropriate vegetation. WSDOT will develop a project-specific plan before construction to identify how restoration will occur.

Construction disturbance will result in a short-term loss of wetland functions. Habitat functions will be temporarily reduced as the planted trees, shrubs, and emergent plants become established. When wetland vegetation is cleared or trimmed, the wetlands will still retain some water quality and quantity function. The wetland will therefore function at a diminished level until the vegetation is completely reestablished. Erosion and sedimentation caused by construction activities will increase the amount of sediment settling within a wetland and reduce the quality of habitat available for invertebrate life and habitat for plants. Additionally, loose sediment will reduce the potential water quality and quantity benefits provided by those wetlands. However, WSDOT will implement specific best management practices (BMPs), as required in the WSDOT Highway Runoff Manual, to avoid and minimize erosion and sedimentation effects during construction.

Summary of Effects

WSDOT engineers worked together with the biologists to make design changes in order to avoid or minimize effects to wetlands and their buffers. Such avoidance and minimization measures are identified in Exhibit 19. We could not avoid all effects because some of the wetlands occur immediately adjacent to the existing roadway in areas where the roadway needs to be widened.

Project design will require filling an estimated 0.74 acre of wetland representing approximately 22 percent of the wetlands identified within the study area. Construction will temporarily disturb about 0.18 acre.

Overall, the majority of wetlands within the study area are of lower value because of their proximity to and association with I-405. All of the wetlands within the study area have been disturbed to some extent by development including the original construction of I-405 and surrounding development. Consequently, the wetlands’ ability to provide fully beneficial functions has been compromised. In addition, the wetlands that will be affected by the project have reduced function due to their location in the freeway median.

Exhibit 19. Filled or Disturbed Wetlands, I-405 Bellevue Nickel Improvement Project Study Area

Wetland Identifier	Area (acres)	Permanently Filled or Otherwise Disturbed Area (acres)	Temporarily Filled or Otherwise Disturbed Area (acres)	Ecology Category	City of Bellevue Rating	Avoidance and Minimization
11.4L	0.06	0	0	III	C	Avoided
12.0M	0.02	0.02	0.01	IV	C	Unavoidable due to roadway design standards
12.4L	0.86	0	0	II	B	Avoided
12.45M	1.69	0.67	0.17	III	B	Footprint adjusted to minimize direct effects. Complete avoidance not possible due to requirements for the construction/design of new Wilburton Tunnel. Temporary effects during construction unavoidable.
12.5M	0.05	0.05	0	IV	C	Unavoidable due to roadway design standards
12.8R	0.06	0	0	IV	C	Avoided
13.0R	0.16	0	0	IV	C	Avoided
13.1L	0.27	0	0	IV	B	Avoided
13.25R	0.19	0	0	IV	B	Avoided
TOTAL	3.36	0.74	0.18			

[1]City of Bellevue ratings and buffers based on proposed amendments to the Critical Areas portion of the Bellevue Land Use Code. The City may adopt the amendments at the end of 2005.
[2]NR – Not regulated. The City does not propose to regulate Class IV wetlands less than 2,500 square feet.

How will project operation affect wetlands?

We do not expect any additional effects on wetlands during the operation of the Bellevue Nickel Improvement Project. Some wetlands that occur within the ROW are currently affected by the lack of forested upland buffer and the lack of modern stormwater control and management facilities. Wetlands that occur within ROW areas that must be kept clear of trees for safety reasons, and those wetlands that currently receive untreated or under treated stormwater runoff, will likely continue to be affected by these conditions.

How would the No Build Alternative affect wetlands?

The No Build Alternative would have no permanent, temporary, or indirect effects on wetlands in the Bellevue Nickel Improvement Project study area. No wetland or wetland buffer would be filled or cleared under this alternative, and there would be no change to current moderation of stormwater flows or existing wildlife habitat functions.

Some wetlands that occur within the ROW are currently affected by the lack of forested upland buffer and the lack of modern stormwater control and management facilities. Wetland areas that occur within right of way areas that must be kept clear of trees for safety reasons and those wetlands that receive untreated or under treated stormwater runoff, would likely continue to be affected by these conditions. Water quality in these wetlands would continue to be affected by sediment transport and erosion. Additionally, minor roadway safety improvements would continue to take place.

Does the project have other effects that are delayed or distant from the project?

An effect is considered indirect when it occurs later in time or farther removed in distance from an original project action and is reasonably certain to occur as a result of that action. For wetlands, we consider indirect effects as they relate to the loss of specific wetland functions. There are two primary pathways of indirect effects that will occur as a result of effects to wetlands for this project.

The first type of indirect effect will not occur as a result of the direct effect on an individual wetland but will occur at a later time than the direct effect. For example, the loss of wetland area would have the direct effect of reducing the habitat area available for wetland-dependent wildlife. The associated indirect effect could be an increase in competition for the remaining wetlands due to the potential influx of displaced wildlife from the affected wetland.

The second type of indirect effect will be a result of other wider-ranging alterations from the project, such as the addition of new impervious surface due to the need to construct additional road surface. Even though the new impervious surface may not result in direct effects to wetlands, the new impervious surface could result in changes to existing drainage (such as increasing the amount of runoff, decreasing the potential infiltration of rainwater, or changing the period that runoff occurs). These changes could subsequently result in changes to hydrology of downgradient wetlands—even wetlands that occur beyond the actual project limits.

The likelihood that an indirect effect could occur as a result of the project and the severity of that effect is related to two primary factors: (1) the level of function provided by the affected wetland, and (2) the ability of WSDOT to mitigate for the potential effect. The likelihood and severity of indirect effects caused by increased competition among wetland-dependent wildlife would be highest for wetlands with the highest potential for providing wildlife habitat.

Similarly, there would be a low likelihood and severity of indirect effects to wetland-dependent wildlife if the wetland had low wildlife habitat function before an action occurred. If there is a relatively high likelihood that an indirect effect would occur, the severity of the effect should be considered relative to WSDOT's ability to provide adequate mitigation to offset that effect. If the project resulted in the loss of wetland that provided a high level of function as wetland-dependent wildlife habitat, WSDOT would need to mitigate for these potential effects. Possible mitigation could include the creation of new wetlands or the rehabilitation or enhancement of degraded wetlands. Such mitigation would provide new habitat opportunities for wildlife to replace those lost as a result of the indirect effect.

Did we consider potential cumulative effects for the Build and No Build Alternatives?

Consistent with the I-405 Corridor Program Final EIS and the results of scoping for the Bellevue Nickel Improvement Project, WSDOT analyzed cumulative effects for this discipline in the separate Cumulative Effects Analysis Discipline Report.

Measures to Avoid or Minimize Project Effects

How will we avoid or minimize adverse effects from construction?

WSDOT engineers reviewed the wetland mapping and compared it to their current footprint of where the road will be widened. Then we made specific roadway design changes to avoid or minimize effects to wetlands, as identified in Exhibit 19. In most cases, we avoided permanent effects to wetlands by adjusting the footprint. In some cases, however, effects were unavoidable due to roadway design standards, as with Wetland 12.45M. In other cases, we limited effects by adding a retaining wall.

During construction, WSDOT will minimize project effects by following construction best management practices (BMPs) specified in the *Highway Runoff Manual* and described in Appendix A. WSDOT will also develop and implement a temporary erosion and sediment control (TESC) plan and a spill control and countermeasures (SPCC) plan to avoid effects to wetlands.

Typical stream in the study area

How will we compensate for unavoidable negative effects on wetlands?

To compensate for direct and indirect effects to wetlands and their buffers resulting from the Bellevue Nickel Improvement Project, WSDOT will fund, plan, design, construct, and monitor a proposed wetland mitigation site located in Kelsey Creek Park. Washington State Executive Order 90-04 mandates that the actions and activities of state agencies achieve a goal of "no net loss" of wetland acreage and function. In recognition of the "Wetlands Executive Order," WSDOT has adopted the "no net loss" goal as agency policy and will meet this requirement for the Bellevue Nickel Improvement Project at both the project-wide and intra-jurisdictional levels.

In 1993, Ecology entered into an agreement with WSDOT – *Implementing Agreement between the Washington State Department of Transportation and the Washington State Department of Ecology Concerning Wetlands Protection & Management dated July 1, 1993*. WSDOT's wetland mitigation for its projects is currently subject to the 1993 Implementing Agreement. The mitigation approach described in this mitigation plan has been designed to meet the "no net loss" guidance mandated under federal and state executive orders and to meet the compensation requirements stipulated in the 1993 Implementing Agreement.

WSDOT mitigation projects must also be consistent with local regulations to the extent practicable. WSDOT worked with the City of Bellevue to coordinate mitigation activities prior to the development of a specific mitigation approach. Each mitigation project must satisfy appropriate requirements of the City of Bellevue and compensate for the respective loss of wetlands resulting from implementing the Bellevue Nickel Improvement Project within the limits of the City's jurisdiction.

A mitigation plan is currently in development that describes the approach for the mitigation of unavoidable wetland effects that occur within the City of Bellevue. The current mitigation concept is to excavate an area of upland adjacent to Kelsey Creek to match the topography of the adjoining wetland and then replant and enhance the area to provide a high functioning wetland. The location of the proposed wetland mitigation area includes an approximately 3.62-acre area within Kelsey Creek Park, located north of the intersection of Richards Road and the Lake Hills Connector. Of this area, approximately 1.94 acres could be used for wetland creation. The general concept would be to create an area that would transition from forested upland (adjacent to the roadway) to emergent wetland (adjacent to the existing Kelsey Creek wetland complex). WSDOT would regrade the area to facilitate the necessary wetland hydrology, and would replant and enhance habitat in the area by constructing habitat structure and replanting adjacent upland areas with forest-type vegetation.

Additional travel lanes will immediately benefit local residents, commuters, transit riders, and freight.

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Appendix A

Avoidance and Minimization Measures

Appendix B

Wetland Delineation Data Sheets

Wetland Rating Forms

Wetland Functional Assessment Forms
(available on enclosed CD)