

APPENDIX G: CUMULATIVE EFFECTS ANALYSIS TECHNICAL MEMORANDUM

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I-405, Bellevue to Lynnwood Improvement Project



Corridor Program

Congestion Relief & Bus Rapid Transit Projects

CUMULATIVE EFFECTS ANALYSIS TECHNICAL MEMORANDUM

April 2011





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SUMMARY

Objective of This Analysis

This technical memorandum estimates the potential contribution to cumulative effects on selected environmental resource areas resulting from the construction and operation of the I-405, Bellevue to Lynnwood Improvement Project (Bellevue to Lynnwood Improvement Project). The potential effects of other major projects within one mile of the Bellevue to Lynnwood Improvement Project are also included in this cumulative effects analysis (CEA).

Cumulative Effects and Why We Study Them

The Council on Environmental Quality's (CEQ) regulations implement the procedural provisions of the National Environmental Policy Act (NEPA). The CEQ/NEPA regulations define cumulative effects as:

"The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions."¹

Cumulative effects are important to consider during the construction and operation of a project. While project effects may be minor when viewed in the individual context of direct and indirect effects, they can add to the effects of other actions and eventually lead to a measurable environmental change. Because cumulative effects can be separated from a proposed project in time and location, their measurement can be more difficult to quantify and assess. The CEQ recommends that a CEA accomplish the following:

- Focus on the effects and resources within the context of the proposed action.
- Present a concise list of issues that have relevance to the anticipated effects of the proposed action or eventual decision.
- Reach conclusions based on the best available data at the time of the analysis.
- Rely on information from other agencies and organizations on reasonably foreseeable projects or activities that are beyond the scope of the analyzing agency's purview.
- Relate to the geographic scope of the proposed project.
- Relate to the time period of the proposed project.

¹ 40 CFR 1508.7 Protection of Environment, Council on Environmental Quality, Cumulative Impact.

It is possible that some environmental resources can be negatively, and others positively, affected by the same proposed project. Cumulative effects can also be positive as well as negative depending on the environmental resource being evaluated. The methodology used for this CEA is presented in Appendix A.

Relationship to the I-405 Corridor Program Cumulative Effects Analysis

This CEA for the Bellevue to Lynnwood Improvement Project used the analysis in the *I-405 Corridor Program NEPA/SEPA Final Environmental Impact Statement*² as a starting point. The I-405 Corridor Program CEA focused on air quality, energy, farmlands, aquatic resources, surface waters, and wetlands. Neither energy nor farmlands were included in the CEA for the Bellevue to Lynnwood Improvement Project. Farmlands will not be affected at all by the project. The project-level analysis is based on the results of scoping, agency consultations, and the anticipated direct and indirect effects on air quality, surface waters, wetlands, and aquatic resources due to the Bellevue to Lynnwood Improvement Project as well as the other projects considered in this CEA.

The Bellevue to Lynnwood Improvement Project is designed to compliment other projects along I-405 including:

- Kirkland Nickel Stage 1 Project, which added one lane in each direction between NE 85th Street and NE 124th Street and opened to traffic in November 2007;
- NE 195th Street to SR 527 Northbound Auxiliary Lane Project, which added one northbound lane between NE 195th Street and SR 527 and opened to traffic in June 2010;
- NE 8th Street to SR 520 Braided Ramps Project, which creates new multi-level “braided” ramps to separate vehicles entering and exiting northbound I-405 between NE 8th Street and SR 520 and is anticipated to be open to traffic in 2012; and
- NE 116th Street Interchange and Street Improvement which will reconstruct the half-diamond ramps to and from the south to a Single Point Urban Interchange configuration, widen NE 116th Street, and improve the signalized intersections (schedule to be open in late 2012).

The Bellevue to Lynnwood Improvement Project will be built at the same time as the Kirkland Nickel Stage 2 Project elements to add northbound and southbound lanes between NE 70th Street and NE 85th Street, and southbound lanes between SR 522 and NE 124th Street, and between NE 70th Street and SR 520 (see Exhibit 3). The Kirkland Nickel Stage 2 project has been environmentally cleared and permitted, and, along with

² WSDOT 2002.

the other projects mentioned in this section, is considered part of the baseline conditions for this analysis.

Geographic Boundaries and Time Period

When evaluating cumulative effects, the analyst must consider expanding the geographic study area beyond that of the proposed project, as well as expanding the time limits to consider past, present, and future actions that may affect the environmental resources of concern.

The geographic scope of analysis is defined by the physical limits or boundaries of the Bellevue to Lynnwood Improvement Project's effect on an environmental resource, as well as the boundaries of other activities that also may contribute to effects on that environmental resource. The time period is determined by identifying time limits that are both relevant to the project and reasonable. The time period and geographic boundaries can be different for each environmental resource evaluated. The geographic boundaries and time period established for the Bellevue to Lynnwood Improvement Project CEA are based on the I-405 Corridor Program Final EIS, scoping, agency consultations, and the area directly affected by the project itself.

Geographic Boundaries

The geographic boundary for the air quality analysis was set at one-half mile from the centerline of the project right-of-way. This boundary provided for consideration of the effects on air quality of other nearby projects included in the CEA. Effects on air quality for the overall Central Puget Sound Region were addressed previously in the *I-405 Corridor Program Final EIS*.

The geographic boundaries for the wetlands, surface waters, and aquatic resources analyses were set at one mile from the centerline of the I-405 right-of-way. Expanding the geographic area beyond that of the direct effect area of the Bellevue to Lynnwood Improvement Project allowed a more comprehensive analysis of the cumulative effects on the environmental resources resulting from the Bellevue to Lynnwood Improvement Project combined with the other projects considered in the CEA.

Time Period

The time period for analysis of regional air pollutant concentrations of carbon monoxide emissions is from 1978 to 2040. The project is within the central Puget Sound area that was classified by the United States Environmental Protection Agency (U.S. EPA) as non-attainment for carbon monoxide (CO) standards in 1978. For this project, air quality pollutant emission factors (expressed in grams of pollutant per vehicle mile traveled) are evaluated for existing conditions (year 2005), No Build (years 2014 and 2040), and Build

(years 2014 and 2040). See the Bellevue to Lynnwood Improvement Project Air Quality Discipline Report³ for detail.

The year 2030 is the future design year used the I-405 Corridor Program and most project planning documents. The Bellevue to Lynnwood Improvement Project uses 2030 for design year analysis of most disciplines, but the Traffic and Transportation Discipline Report has analyzed 2009 existing conditions, 2015 for a project baseline and year of opening, and 2035 for the design year. Air quality analysis is conducted for 2040 for compatibility with the Puget Sound Regional Council's (PSRC) *Transportation 2040*⁴ Metropolitan Transportation Plan (MTP) and analysis of the Transportation Improvement Program (TIP) conformity with the State Implementation Plan (SIP) for Air Quality.

Major Projects Included in this Cumulative Effects Analysis

For the effects of other major projects to be considered, the projects must be located within or near the geographic boundaries used for this CEA. The projects must also be reasonably foreseeable, which typically means they are planned, approved, and funded. Specific projects (see Appendix A for descriptions) considered in this CEA are:

- SR 520 Bridge Replacement and High-Occupancy Vehicle (HOV) Project (WSDOT);
- Brightwater Conveyance System, North Creek Portal (King County Wastewater Treatment Division);
- North Creek Interceptor (NCI) and Olympus Meadows Trunk (OMT) Improvements (Alderwood Water & Wastewater District/King County Wastewater Treatment Division); and
- I-405, NE 8th Street to SR 520 Braided Ramps Project (WSDOT).

How Adverse Cumulative Effects Will Be Mitigated

For the Bellevue to Lynnwood Improvement Project to be consistent with regulatory guidance, reasonable measures to minimize adverse effects have been incorporated into the project design. The measures combine avoidance, mitigation, and enhancement project activities, some of which include minimizing effects to wetlands, construction of noise walls, improving fish habitat, treating stormwater, and using traffic management plans.

³ *WSDOT 2011b*

⁴ *PSRC 2010*.

Potential Cumulative Effects During Construction

The following summarizes the Bellevue to Lynnwood Improvement Project's anticipated contribution to cumulative effects to air quality, surface waters, wetlands, and aquatic resources during its construction.

Air Quality – Localized, temporary, minor effects characteristic of large roadway projects could occur.

Wetlands – Approximately 0.38 acre of wetland and approximately 1.21 acres of wetland buffer will be permanently affected. To mitigate for the unavoidable loss, a greater quantity of higher quality wetland and wetland buffer will be enhanced.

Surface Waters and Aquatic Resources – The project will permanently affect about 0.03 acre of stream with loss of stream channel habitat. About 0.86 acre of stream buffer will be permanently affected. Removing vegetation from the stream buffer can permanently alter some of the stream's functions.

Potential Cumulative Effects During Operation

The following summarizes the Bellevue to Lynnwood Improvement Project's anticipated contribution to cumulative effects to air quality, surface waters, wetlands, and aquatic resources during its operation.

Air Quality – Carbon monoxide (CO) levels are expected to continue to decrease from existing levels due to more stringent emission standards. - No violation of air quality standards is anticipated.

Surface Waters – New and modified stormwater treatment facilities will treat all the new impervious area, and some of the existing impervious area that currently is untreated. As a result, overall, water quality will be similar to the No Build Alternative in the water bodies downstream of the project study area. The project will have a negligible effect on groundwater resources.

Wetlands – A positive effect is likely because of improved water quality of discharges to wetlands in some areas. Also, the Kelsey Creek wetland site will provide high-quality wetland habitats and functions as compensatory mitigation.

Aquatic Resources – potential for positive effects from improved water quality and compensatory stream mitigation.

Potential Cumulative Effects Associated with the No Build Alternative

Construction-related and operational effects on air quality, surface waters, wetlands, and aquatic resources resulting from the Bellevue to Lynnwood Improvement Project would not occur.

Improvements and enhancements associated with the Bellevue to Lynnwood Improvement Project would not occur. There would be no relief to traffic congestion and, as a result, the rate of localized air quality degradation could increase. There would be no improvements to existing water quality treatment facilities that do not meet current standards. There would be no improvements to stream habitat or riparian vegetation. No compensatory mitigation would occur at the wetland mitigation sites.

Measures to Avoid or Minimize Adverse Cumulative Effects

No measures, beyond those incorporated in the project design or listed in the Air Quality Technical Memorandum, the Ecosystems Discipline Report and the Water Resources Discipline Report, will be necessary.

Unavoidable Adverse Cumulative Effects

No unavoidable substantial adverse cumulative effects are anticipated due to construction and operation of the Bellevue to Lynnwood Improvement Project.

PROJECT DESCRIPTION

What is the intent of the Bellevue to Lynnwood project and what are the improvements?

The Bellevue to Lynnwood Improvement Project is intended to improve safety and reduce congestion along I-405 between NE 6th Street in Bellevue and I-5 in Lynnwood. To accomplish this, WSDOT proposes the following improvements:

- Northbound lane from NE 124th Street to SR 522;
- Braided ramps between the I-405 northbound on-ramp from NE 160th Street and the northbound I-405 off-ramp to SR 522;
- Southbound transit shoulders between SR 522 and NE 160th Street and between SR 527 and NE 195th Street;
- New northbound and southbound structures over NE 132nd Street and a new northbound structure over the railroad for the I-405 northbound off-ramp to NE 124th Street;
- Small amounts of additional widening, between four and eight feet, at several locations for buffers, wider shoulders, enforcement areas and maintenance pull-outs; and
- Minor upgrades to pedestrian facilities in some areas.

Exhibit 1 shows the Bellevue to Lynnwood project vicinity. Exhibit 2, sheets 1 through 17, shows more detail of the project improvements in the 17-mile long corridor.

Are there related projects?

The Bellevue to Lynnwood Improvement Project is designed to compliment other projects along I-405 including:

- Kirkland Nickel Stage 1 Project, which added

Exhibit 1: Project vicinity



one lane in each direction between NE 85th Street and NE 124th Street and opened to traffic in November 2007;

- NE 195th Street to SR 527 Auxiliary Lane Project, which added one northbound lane between NE 195th Street and SR 527 and opened to traffic in June 2010; and
- NE 8th Street to SR 520 Braided Ramps Project, which creates new multi-level “braided” ramps to separate vehicles entering and exiting northbound I-405 between NE 8th Street and SR 520 and is anticipated to be open to traffic during the summer of 2012.

The Kirkland Nickel Stage 2 Project will reconfigure the NE 116th Street interchange, build northbound and southbound lanes between NE 70th Street and NE 85th Street, and a southbound lane between SR 522 and NE 124th Street, and between NE 70th Street and SR 520. The Kirkland Nickel Stage 2 project has been environmentally cleared and permitted, and, along with the other projects mentioned in this section, is considered part of the baseline conditions for most analyses. The Bellevue to Lynnwood Improvement Project will be constructed at the same time.

What will the completed project provide?

The Bellevue to Lynnwood Improvement Project fills in the remaining gaps and allows WSDOT to provide an improved system on I-405 between NE 6th Street and I-5. WSDOT has designed this project to maximize the use of existing pavement and minimize the need for new pavement. In some areas, small amounts of widening of less than a lane width, together with narrower shoulders and lanes, will allow an additional lane. In other areas, narrowing the shoulders and lanes will allow an additional lane without any pavement widening.

Exhibit 3 shows the configuration in each of the project segments when this project and the related projects described above are complete.

How will this portion of I-405 be operated after the project is completed?

In this environmental document, WSDOT and the Federal Highway Administration (FHWA) are considering two operational alternatives: 1) Express Toll and General Purpose Lanes (ETL); and 2) High Occupancy Vehicle and General Purpose Lanes (HOV). Under both scenarios, the project footprint is the same. The occupancy requirement for HOVs in this portion of the I-405 corridor is the same. It is assumed the occupancy requirement, to maintain HOV performance standards under WSDOT’s HOV policy, will be three or more people (HOV 3+). The difference is in how the roadway lanes would be managed.

Alternative 1: Express Toll and General Purpose Lanes (ETL)

This operational alternative will provide two express toll lanes in each direction between NE 6th Street in Bellevue and SR 522 in Bothell, and one express toll lane in each

direction between SR 522 and I-5 in Lynnwood. The express toll lane system will be open toll free to all HOV traffic with three or more occupants and all transit operations. The express toll lane system will also be open to single occupant vehicles (SOVs) and HOVs with two occupants through tolling.

The southern end of the express toll lane system will be at the existing direct access ramps at NE 6th Street in Bellevue where one of the two northbound express toll lanes will begin and one of the two southbound express toll lanes will end. South of the NE 6th Street, the other express toll lanes will connect with the existing single northbound and southbound HOV lanes. The northern end of the system would be much like it is today with I-405 becoming SR 525. Access points will be at various locations along the mainline as shown in Exhibit 4. The express toll lanes will be separated from the general purpose (GP) lanes by a two- to four-foot wide buffer. At an access point, the buffer will open and a section of transition lane may be provided between the express toll and general purpose lanes to ease ingress and egress to the system.

Alternative 2: High Occupancy Vehicle and General Purpose Lanes (HOV)

This operational alternative will allow HOV users with three or more occupants and transit vehicles to use the single HOV lane, similar to today's operation. Access between the HOV lane and GP lanes will be allowed throughout the project, except northbound between NE 6th Street and SR 520 where access is not allowed under today's operation. The new northbound lane between NE 124th Street and SR 522 will be operated as a GP lane.

What will conditions be like if the project is not built?

No Build Alternative

A No Build Alternative has been evaluated as the basis for comparing effects associated with the Build Alternatives. No new improvements would be made beyond those constructed as a part of the Kirkland Nickel Project Stage 2 and the NE 8th Street to SR 520 Braided Ramps Project.

The No Build Alternative does not include additional stormwater treatment or any roadway improvements that would increase roadway capacity, reduce congestion, or improve safety on I-405. Only routine activities such as road maintenance, repair, and minor safety improvements would occur. As with the two build alternatives, we assume that the occupancy requirement for HOVs in this portion of the I-405 corridor will be three or more people (HOV 3+).

Exhibit 2: Project improvements – sheet 1 of 17

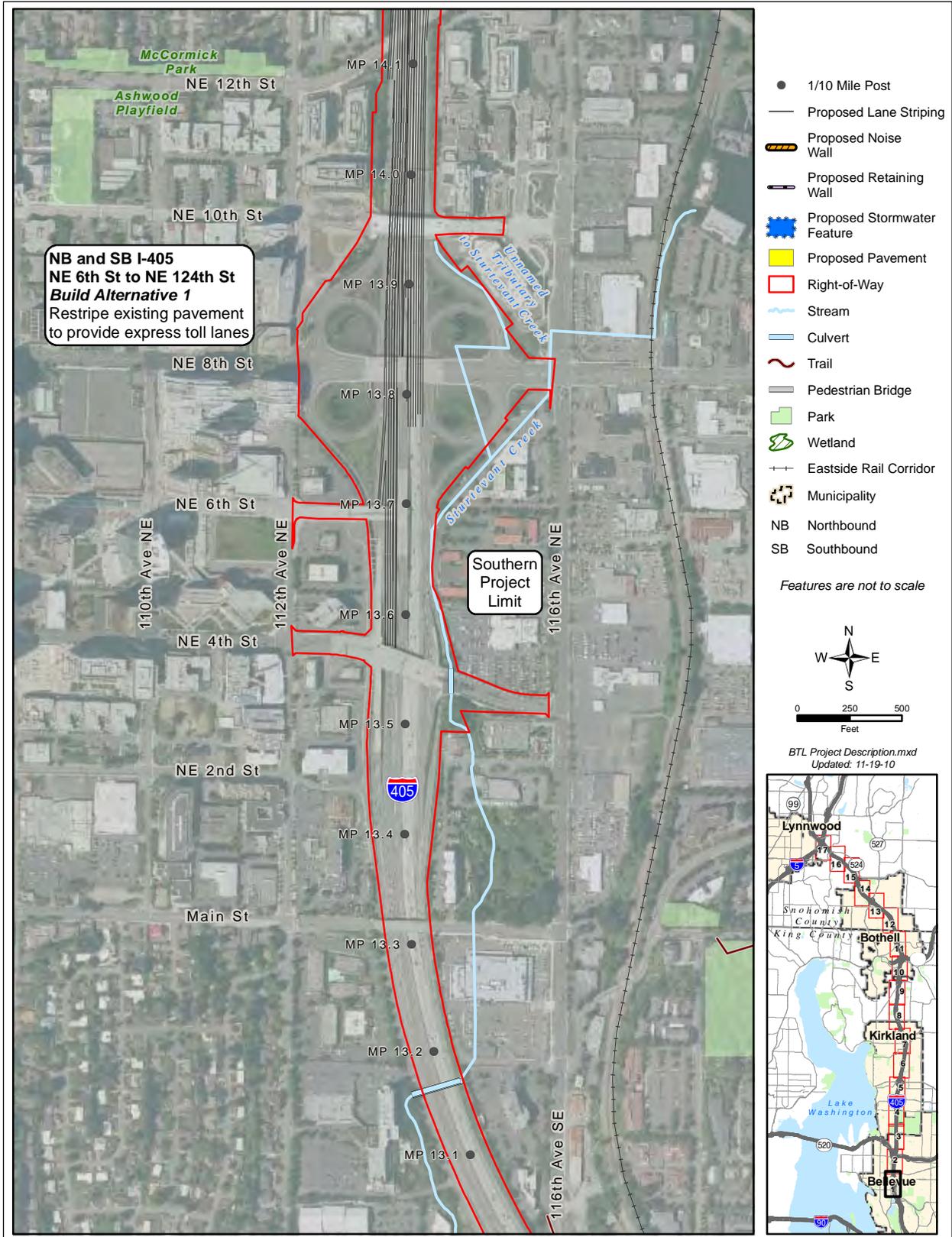


Exhibit 2: Project improvements – sheet 3 of 17

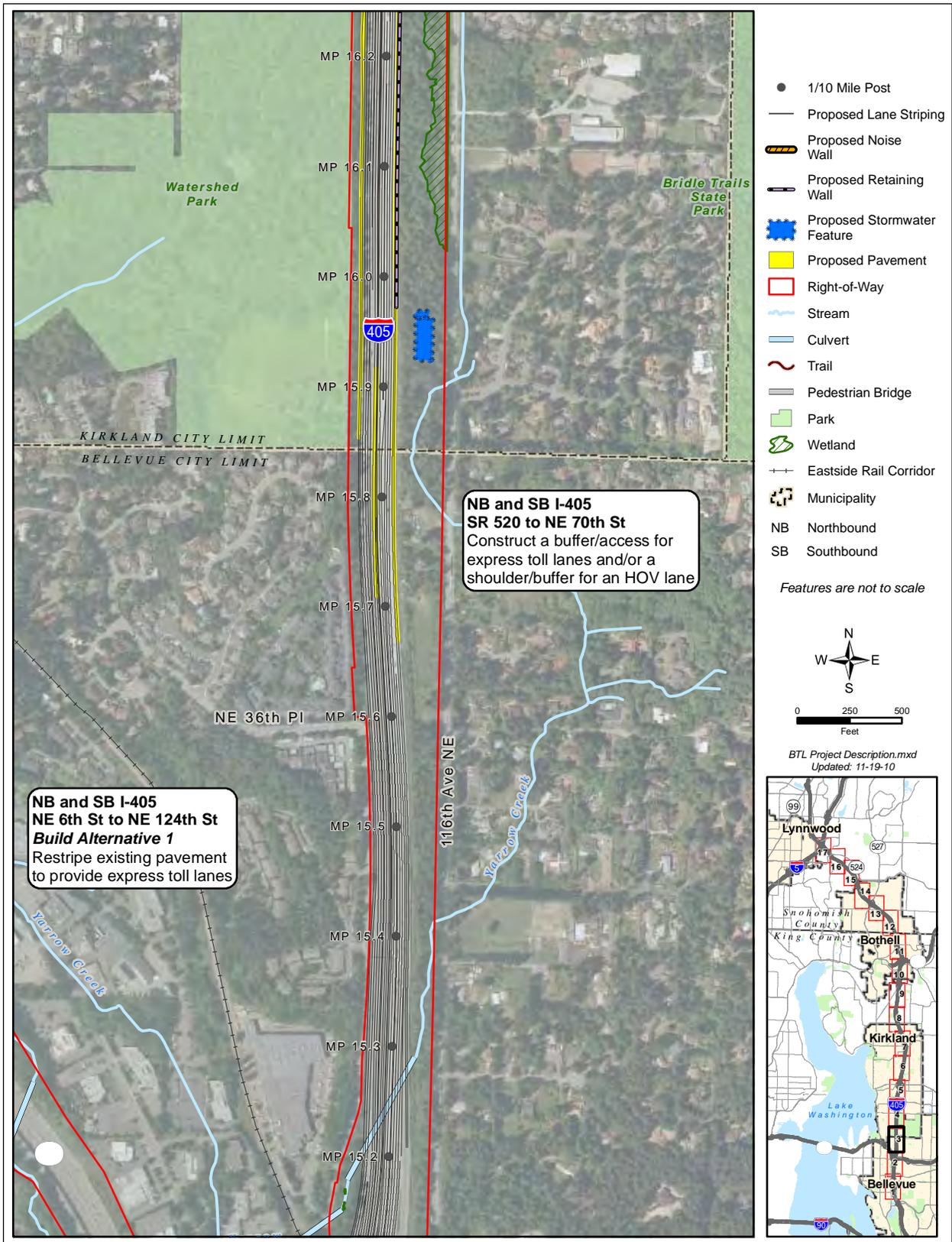


Exhibit 2: Project improvements – sheet 4 of 17

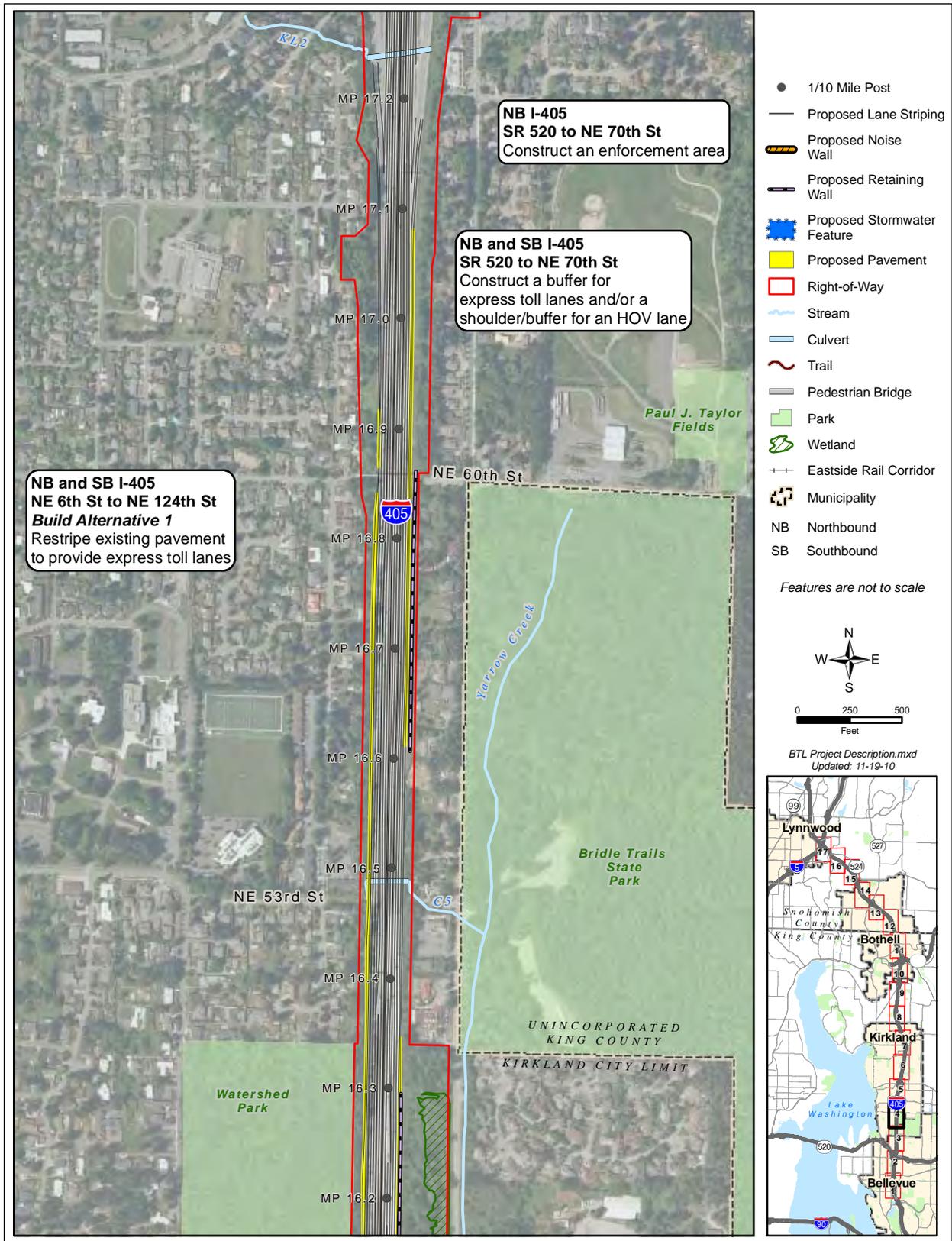


Exhibit 2: Project improvements – sheet 5 of 17

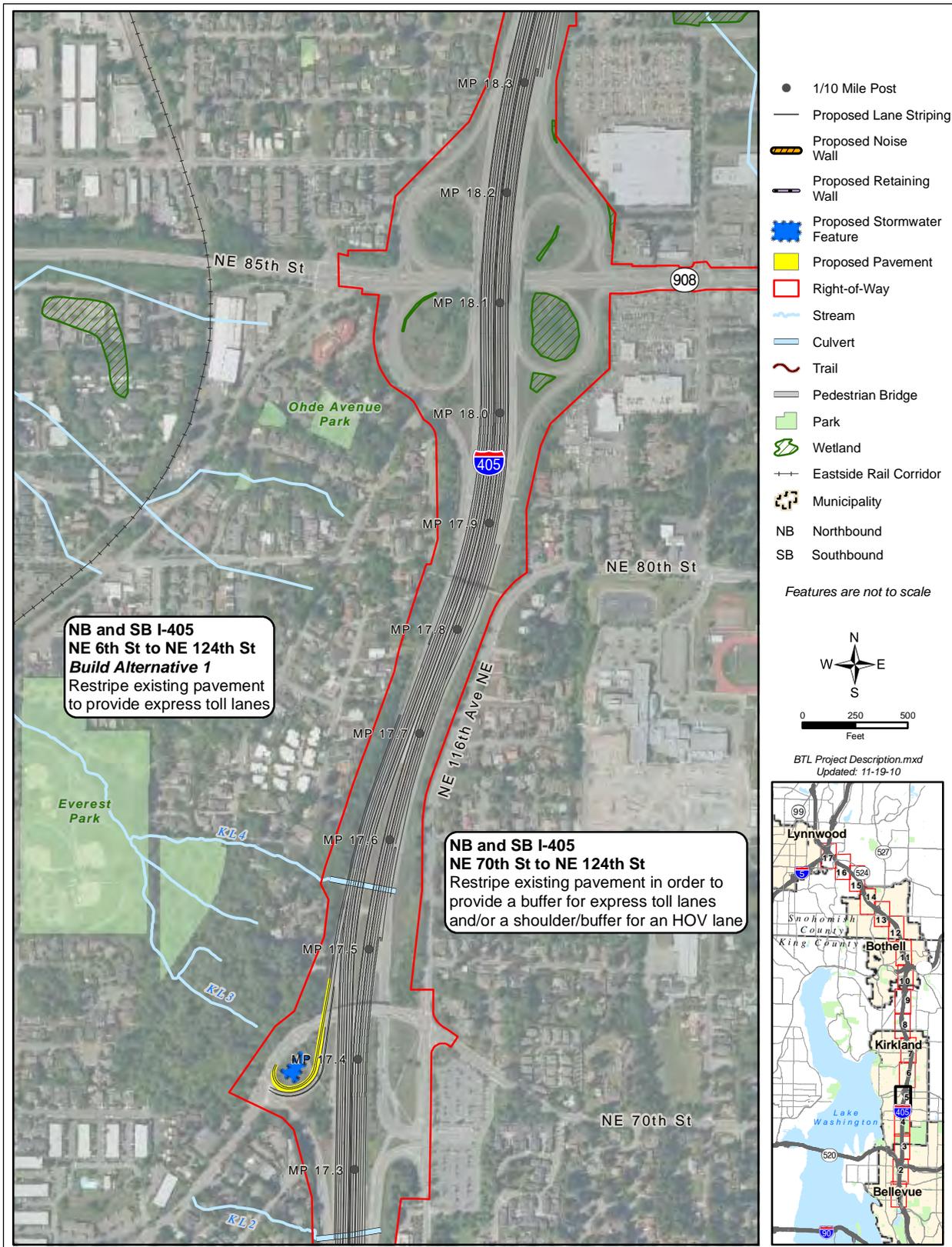


Exhibit 2: Project improvements – sheet 6 of 17

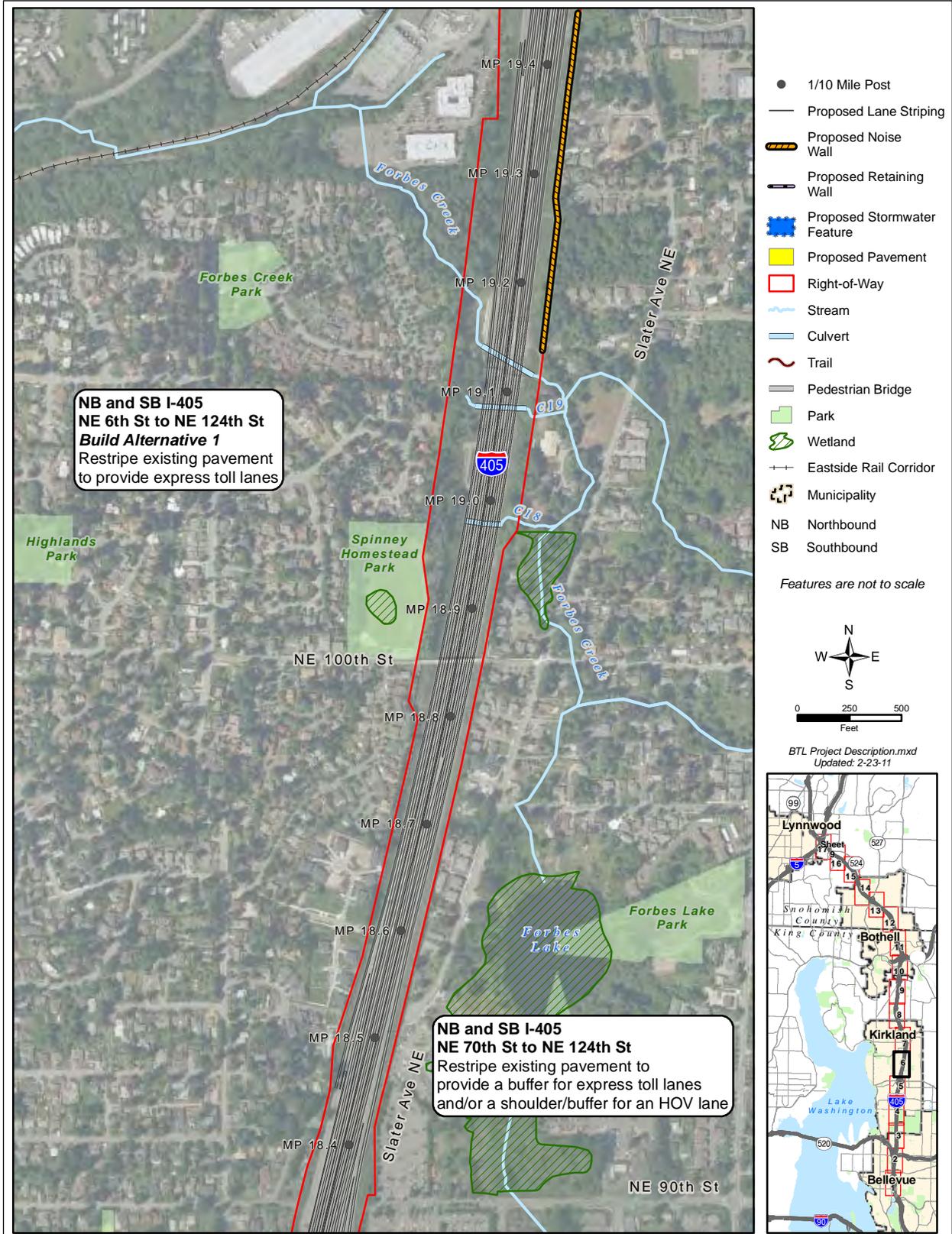


Exhibit 2: Project improvements – sheet 7 of 17

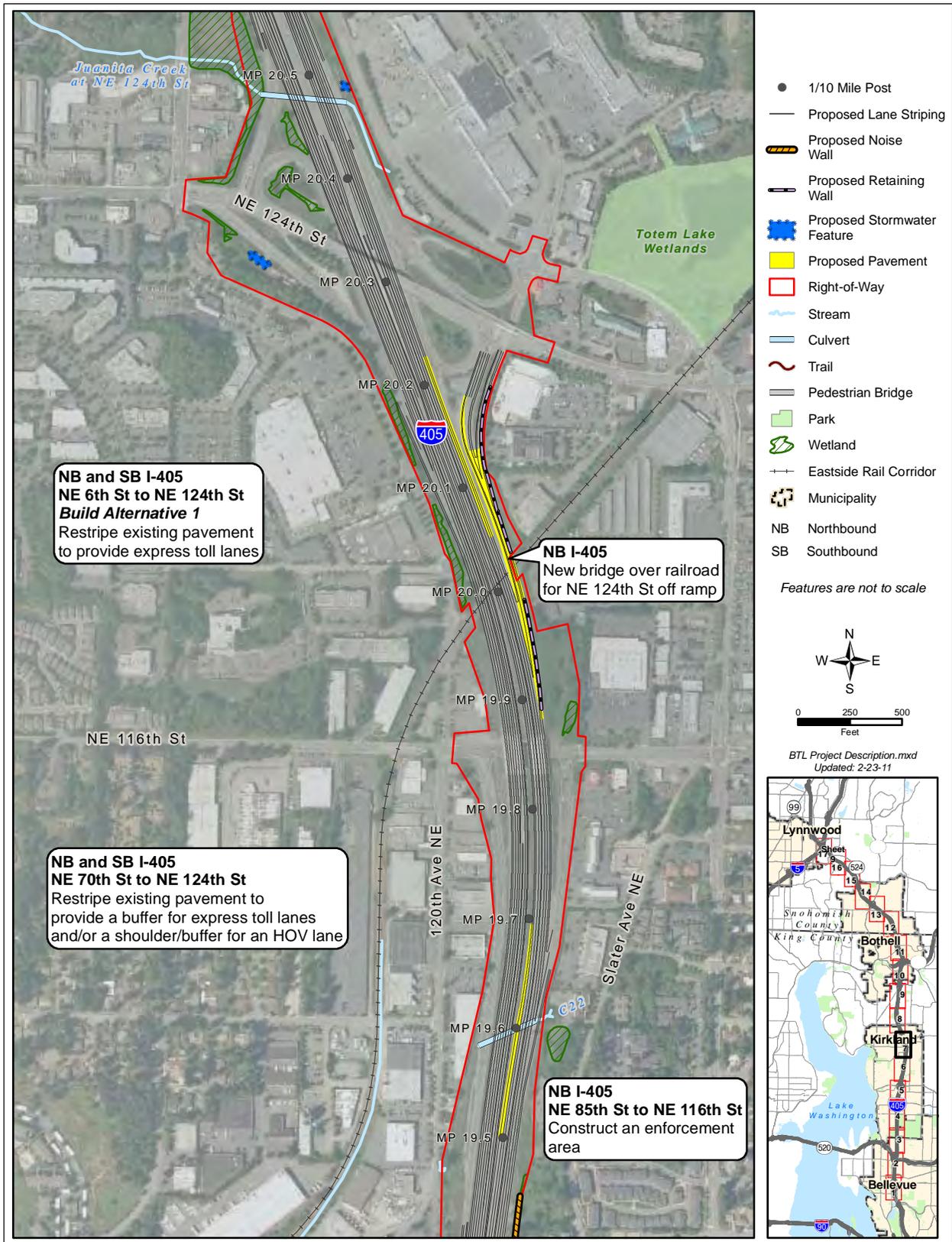


Exhibit 2: Project improvements – sheet 8 of 17

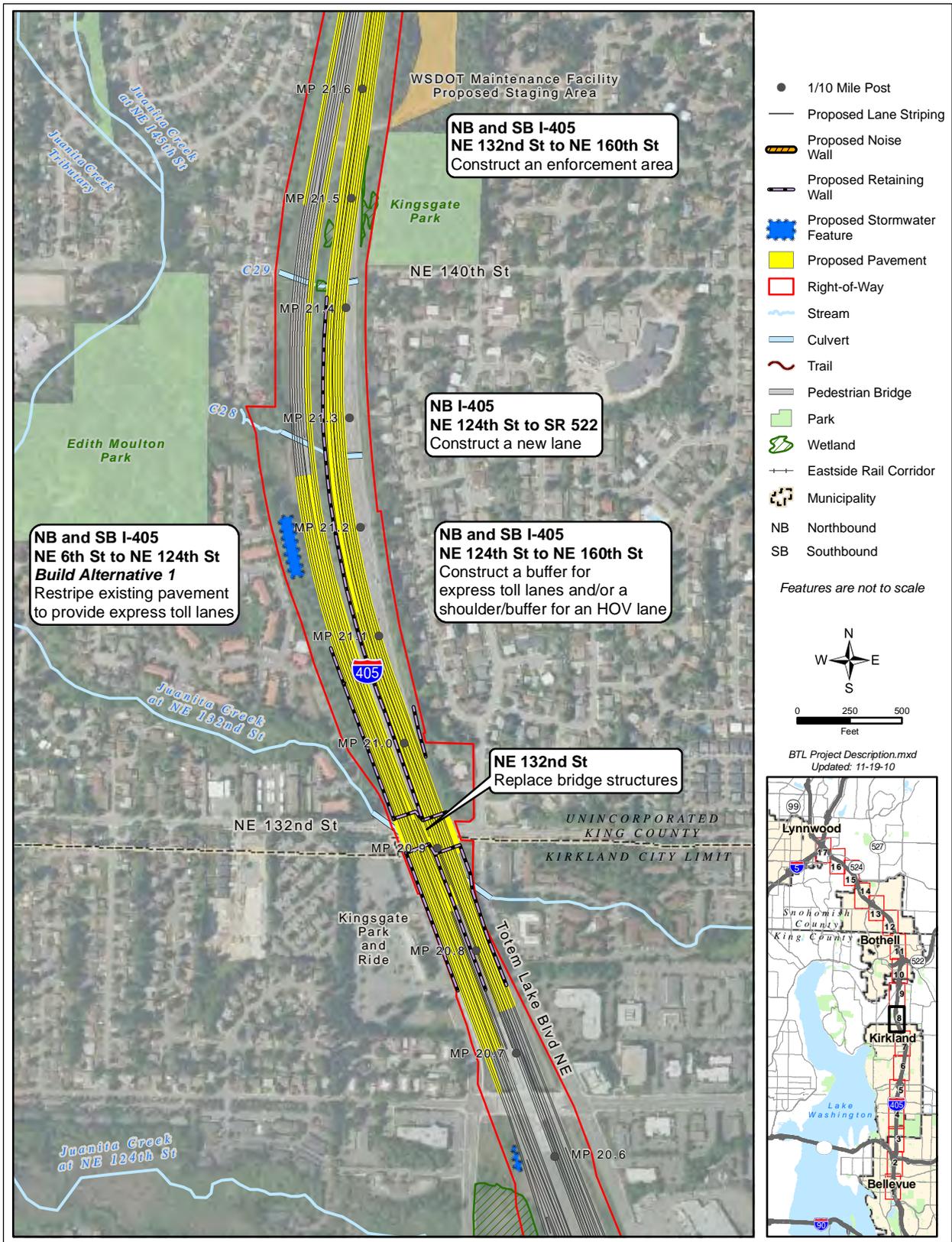


Exhibit 2: Project improvements – sheet 9 of 17

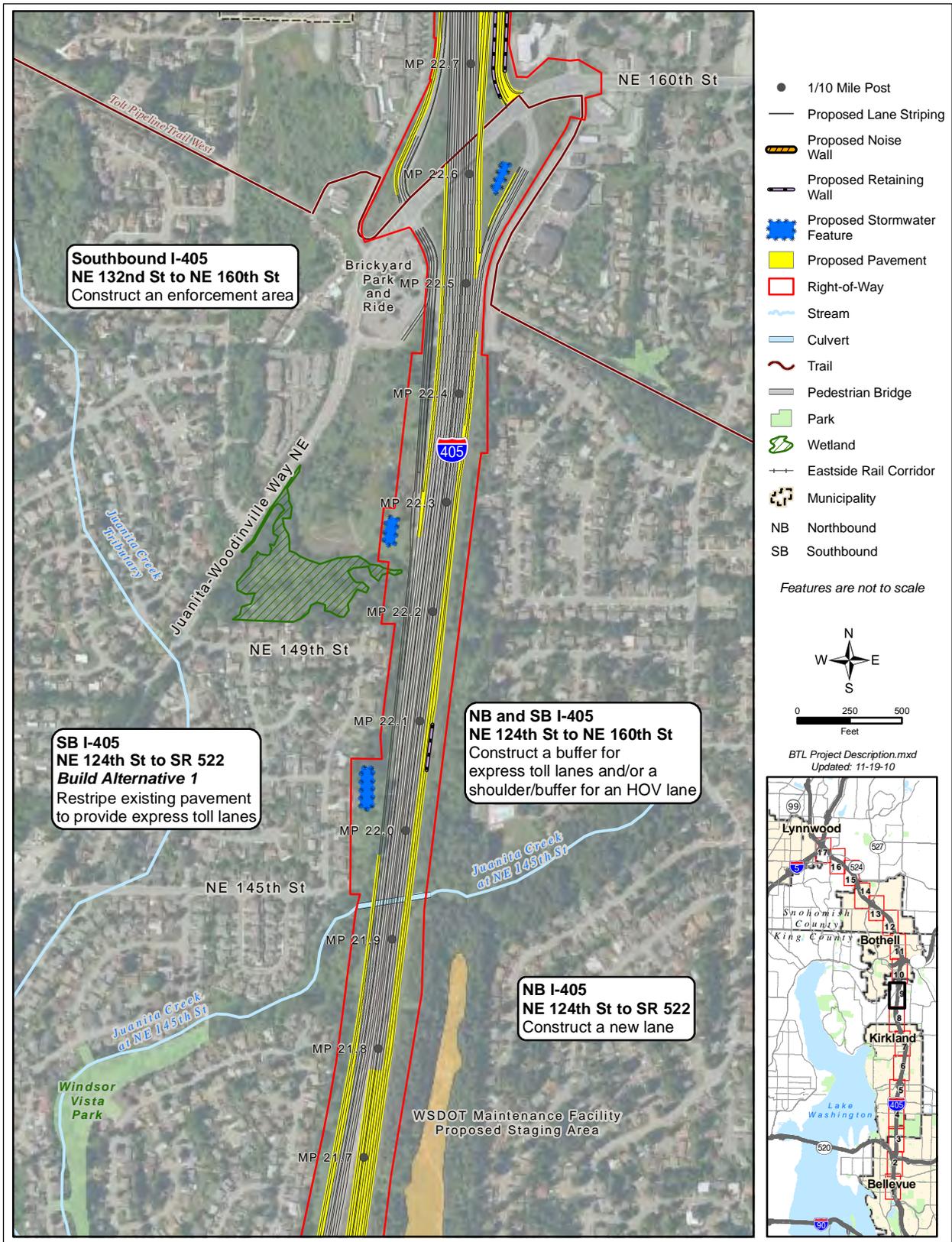
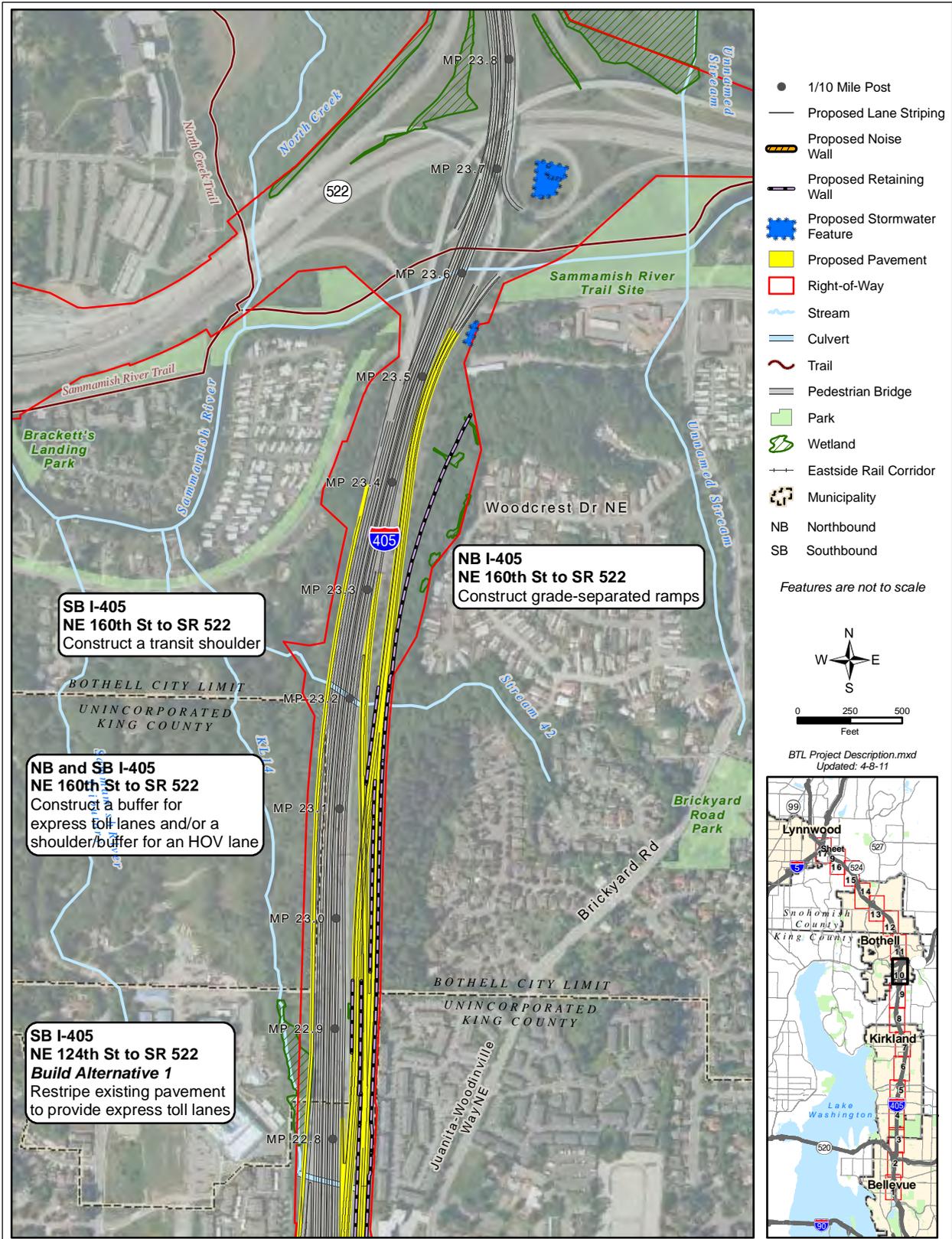


Exhibit 2: Project improvements – sheet 10 of 17



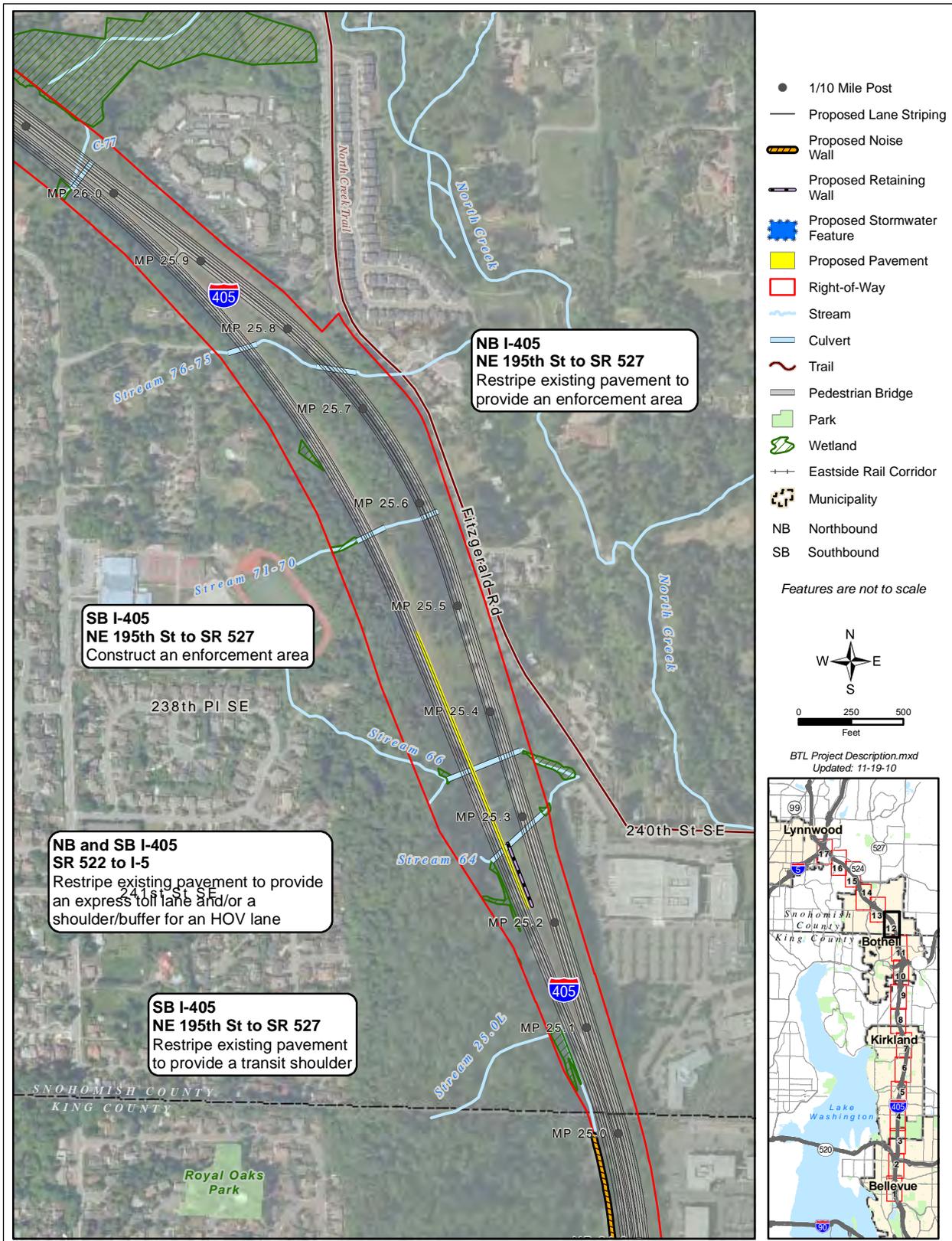


Exhibit 2: Project improvements – sheet 13 of 17

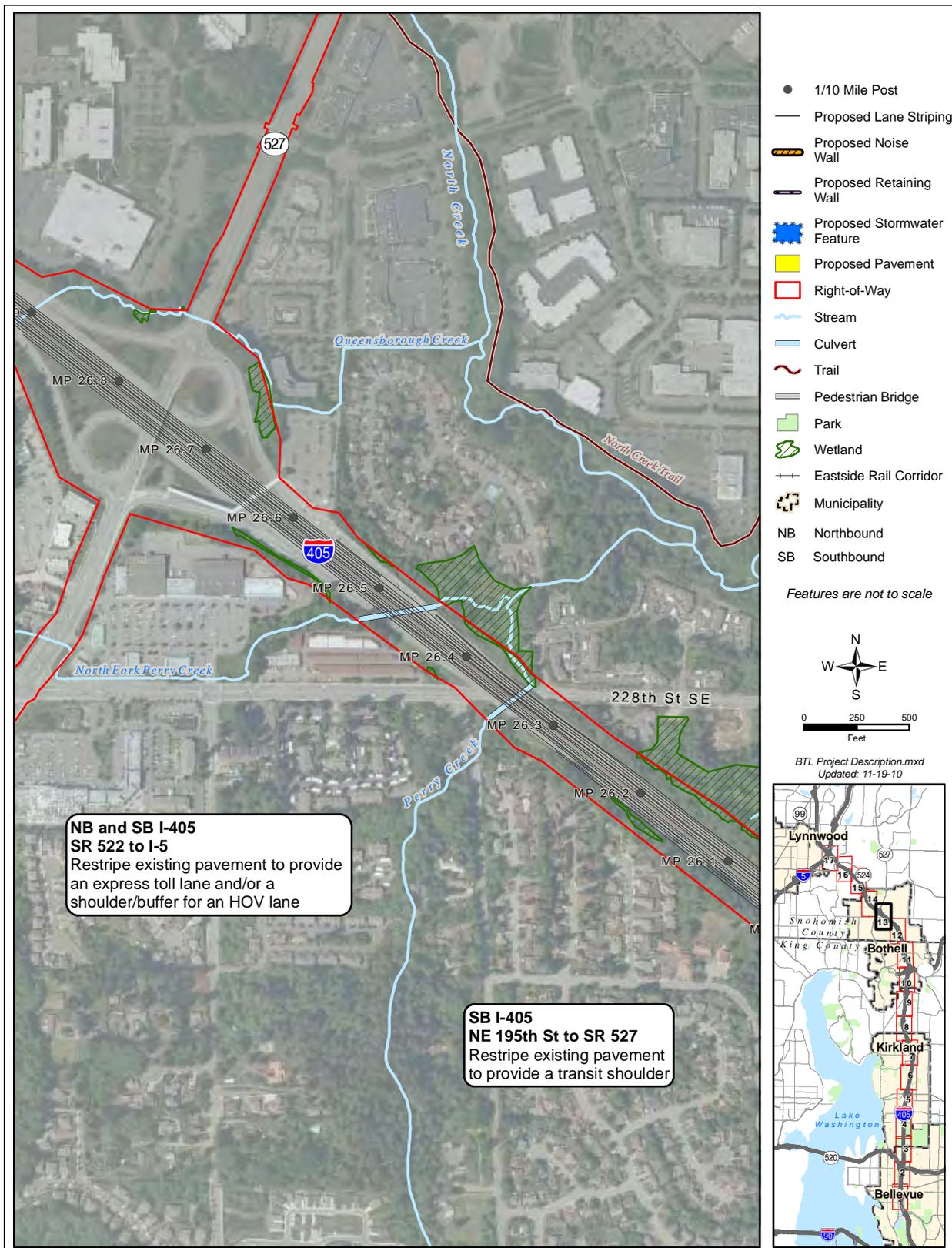


Exhibit 2: Project improvements – sheet 14 of 17

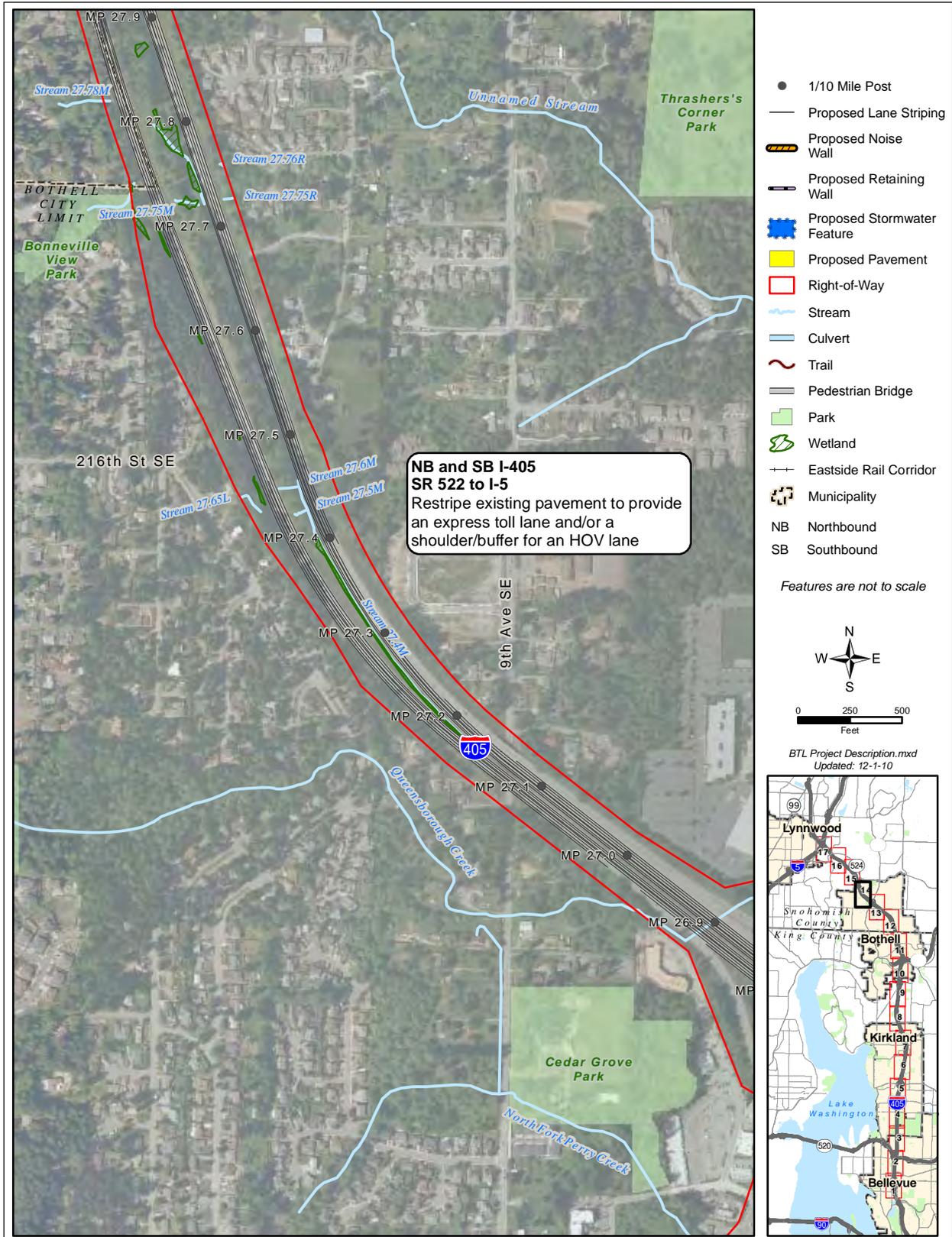


Exhibit 2: Project improvements – sheet 15 of 17

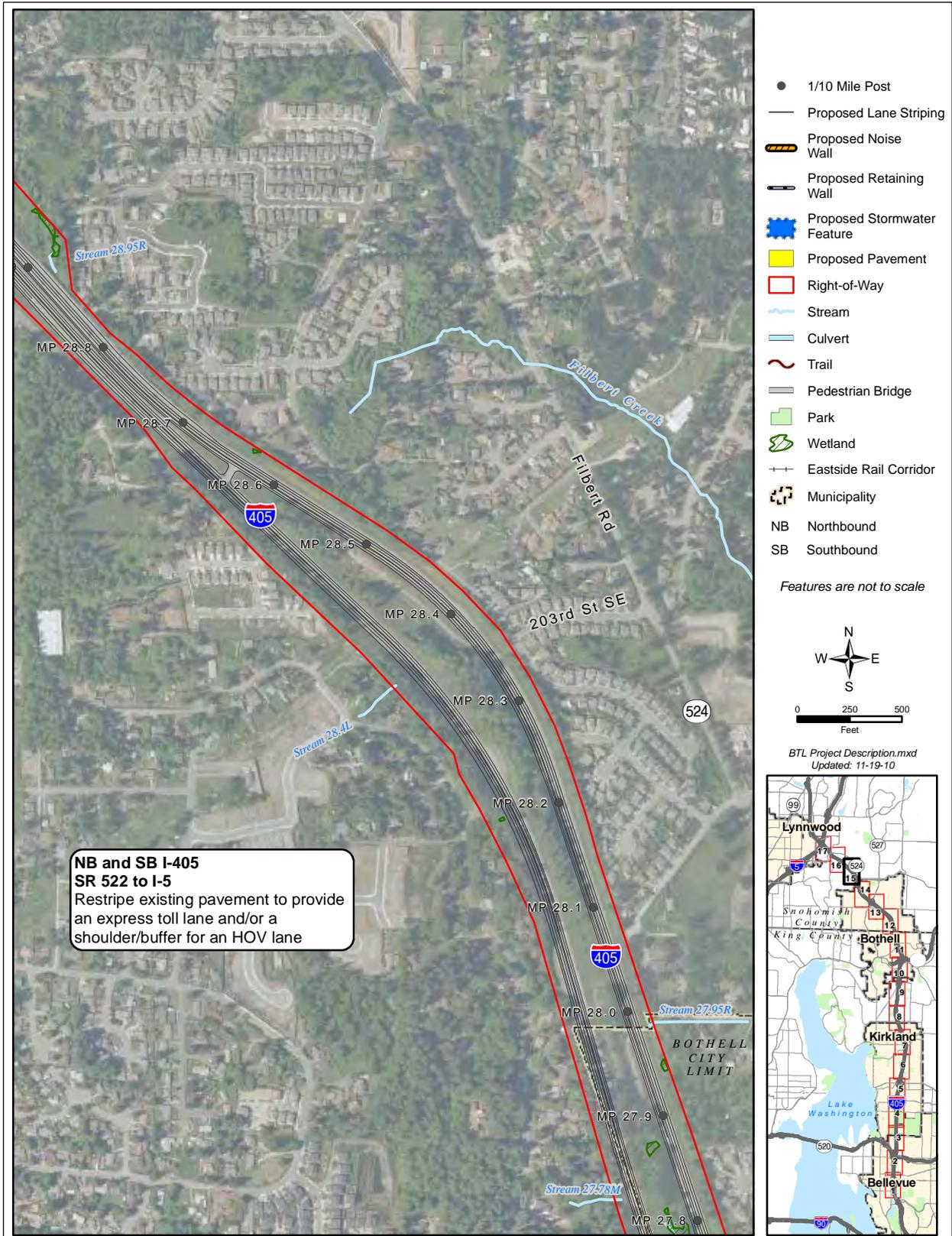


Exhibit 2: Project improvements – sheet 16 of 17

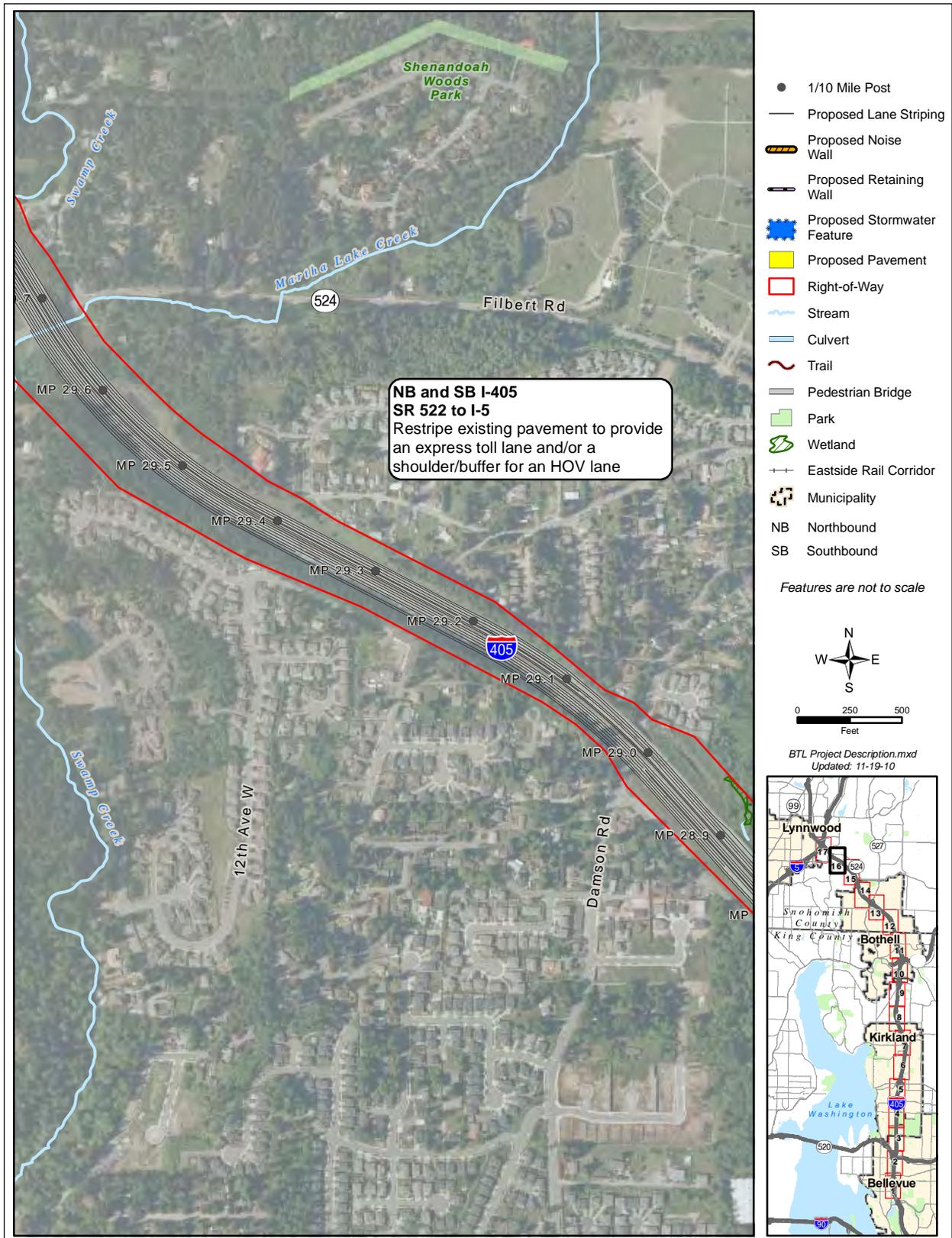
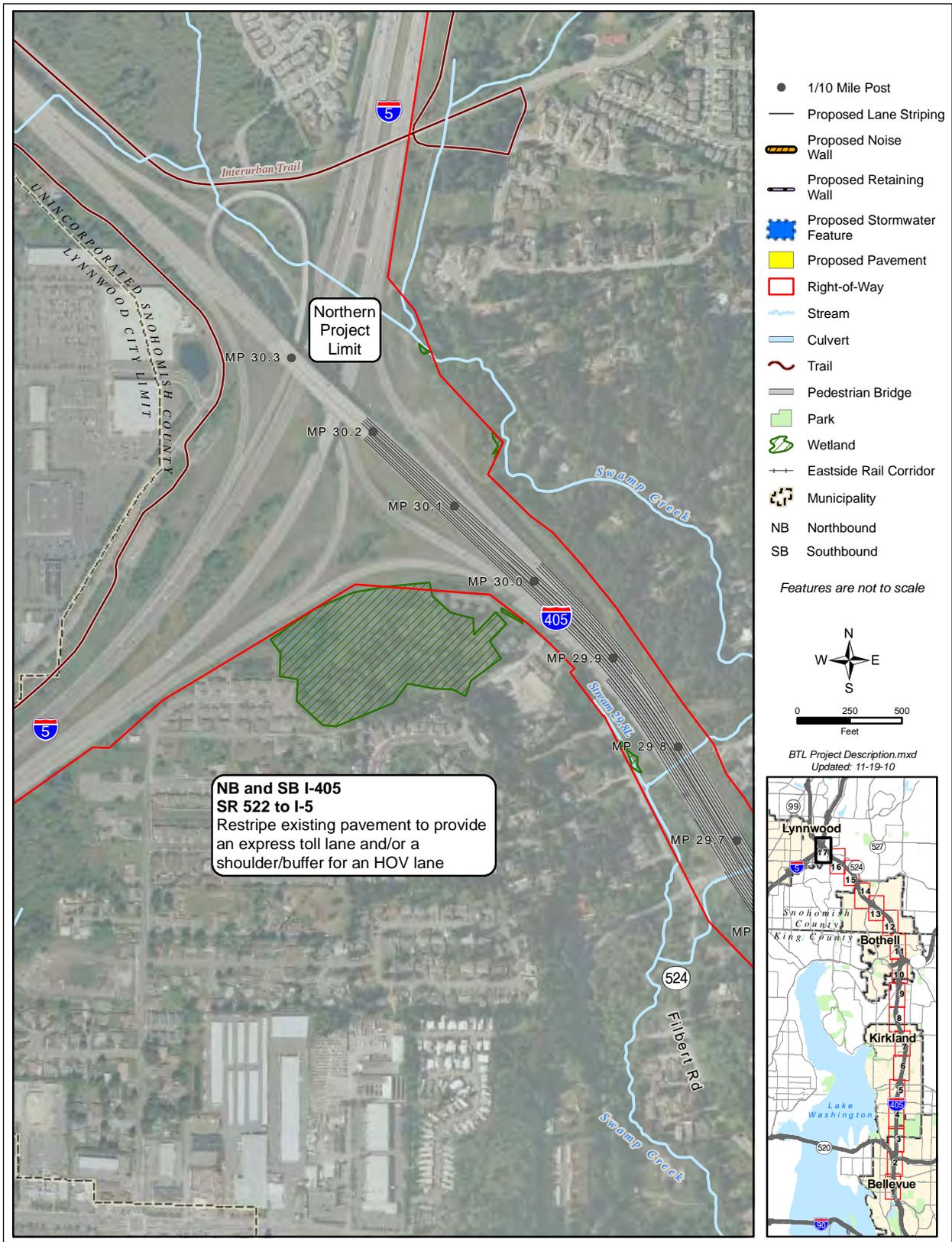
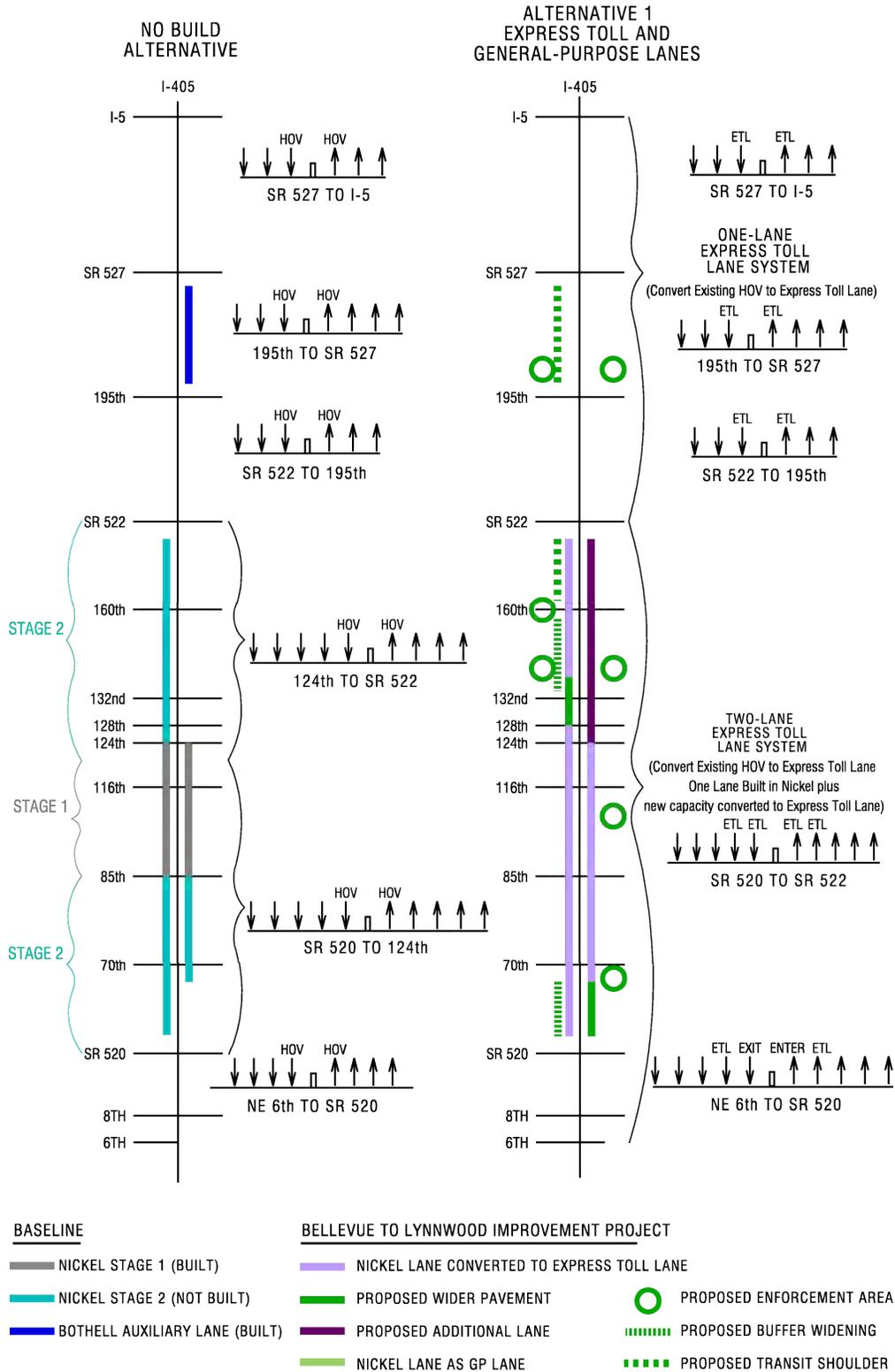


Exhibit 2: Project improvements – sheet 17 of 17





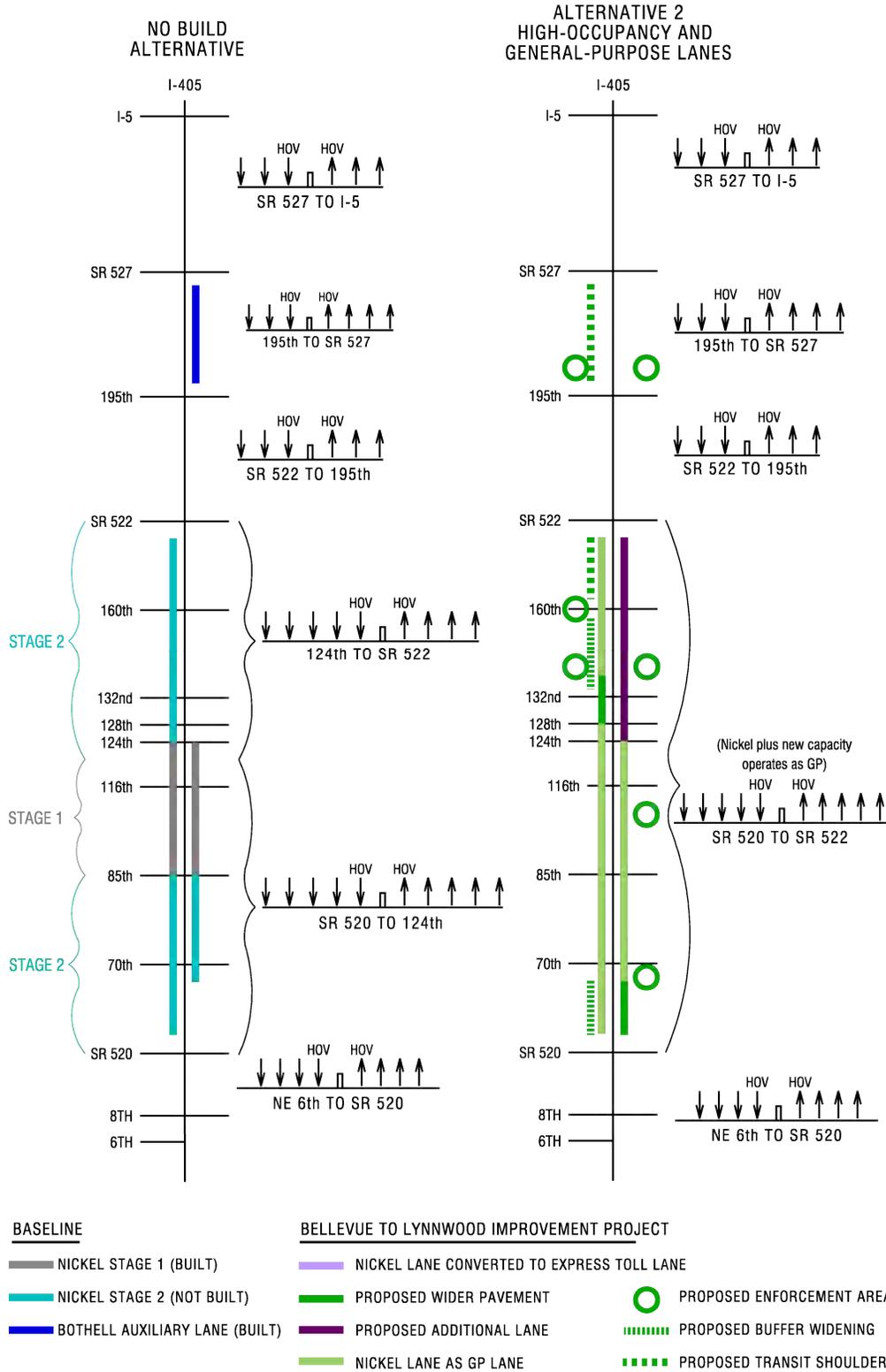
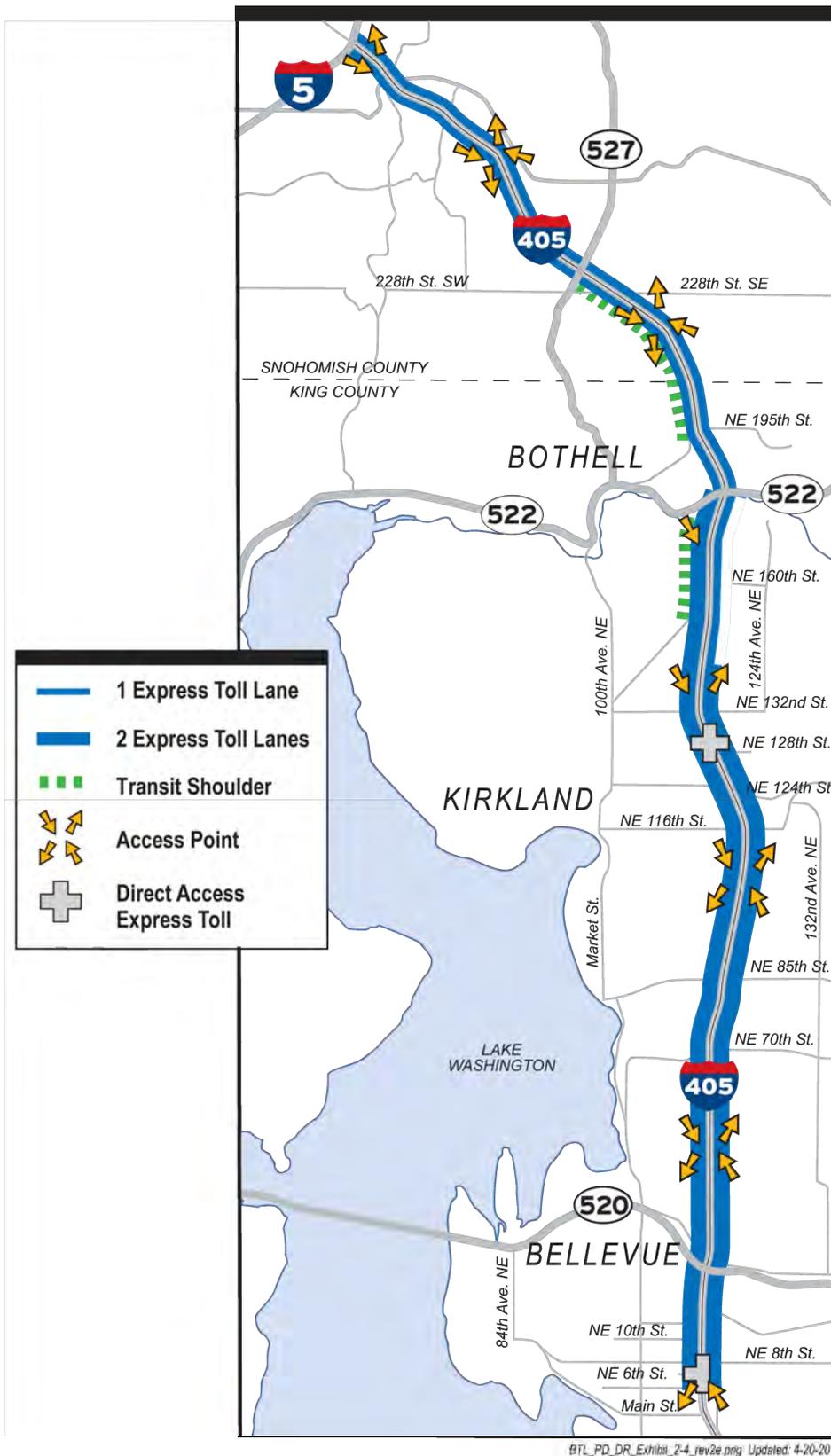


Exhibit 4: Express Toll Lanes access locations



BACKGROUND

Metropolitan Transportation Plan and Other Regional Actions

The following subsections briefly describe greater Seattle area transportation planning documents and projects that have a bearing on the I-405 Corridor Program.

Transportation investments identified in these plans are discussed here because they are reasonably foreseeable and they relate to the CEA time period and geographic boundaries for the Bellevue to Lynnwood Improvement Project.

Metropolitan Transportation Plan

The *Metropolitan Transportation Plan* (MTP) was first adopted in 1995 and includes specific provisions that relate to the I-405 corridor. The Puget Sound Regional Council (PSRC) developed *Destination 2030*⁵, a 2001 update of the 1995 MTP that emphasizes an integrated multi-modal transportation system, describes the major regional components of the system, and acknowledges that capacity enhancements are needed to improve mobility on regional roadways. *Destination 2030* also identifies, analyzes, and develops solutions to regional transportation problems. According to *Destination 2030*, vehicle miles traveled (VMT) would increase by 45 percent and the population by 50 percent by 2030. To address these increases, the MTP calls for aggressive transportation investments and indicates that, with those investments, net effects on system performance should be relatively minor. *Destination 2030* takes into account different growth patterns in the region and calls for focused growth in urban centers. In 2002, the PSRC revised *Destination 2030* to incorporate the transportation improvements proposed in the I-405 Corridor Program selected alternative.

The PSRC adopted the Transportation 2040⁶ plan in May 2010. Transportation 2040 updates the regional facilities and services of the Metropolitan Transportation System initially identified in the 1995 MTP and later updates.

Sound Transit Future Investments

Since 1996, Sound Transit has implemented *Sound Move*, the first phase of a 10-year regional transit long-range vision. *Sound Move* includes regional bus service, high-occupancy vehicle (HOV) access improvements, park-and-ride lots, and commuter rail and light rail. All *Sound Move* commitments are included in *Destination 2030* and the I-405 Corridor Program alternatives. A variety of these regional high-capacity transportation (HCT) investments are being implemented along the I-405 corridor.

⁵ PSRC 2001.

⁶ PSRC 2010.

Some of the *Sound Move* commitments programmed for the I-405 corridor are under construction or have been completed. Sound Transit began Phase II planning in mid-2001 and voters of the Central Puget Sound Region approved the Sound Transit 2 (ST2) ballot measure in November 2008. The Bellevue to Lynnwood Improvement Project will support increased Regional Express bus service between Bellevue, Lynnwood and Everett included in ST2, and planning for expanded bus rapid transit (BRT) service.

Land Use, Population Growth, and Highways in the Region, the I-405 Corridor, and the Project Study Area

The following subsections provide a brief discussion of land use and population growth-oriented policies, documents, and trends that apply to the region, the I-405 corridor, and the Bellevue to Lynnwood Improvement Project.

Washington State Growth Management Act

During the late 1980s and early 1990s, policies, statutes, and regulations enacted at the state, regional, and local levels defined growth boundaries and population density for local jurisdictions over a 20-year period. Central to these efforts was Washington State's Growth Management Act (GMA).⁷

The GMA, a state law passed by the Legislature in 1990 and amended in 1991, addressed the negative consequences of unprecedented population growth and suburban sprawl. The law directed all the state's cities and counties to plan for growth, with more extensive requirements imposed on those cities and counties experiencing the largest amount of growth. The GMA defined urban growth areas, designated urban centers, established density targets in those urban centers, and identified minimum levels of services for statewide infrastructure. The GMA requirements also provide for consistency among transportation, capital facilities, and land use plans.

VISION 2020 and VISION 2040

VISION 2020 describes regional land use patterns consistent with GMA policies. Comprehensive plans for cities in the study area were developed within the framework of *VISION 2020*. *Destination 2030* describes the regional transportation system required to support planned growth. The I-405 Corridor Program action alternatives are consistent with the GMA in that they support implementing the envisioned regional land use patterns. *VISION 2020* focuses growth into the urban growth areas defined by each county, establishes a multi-center approach to development that promotes a jobs/housing balance, and plans for needed transportation improvements. It specifies that improvements should occur at the same time as employment growth to implement the infrastructure concurrency requirements of the GMA.

⁷ RCW 36.70A *Growth Management - Planning by Selected Counties and Cities*.

PSRC adopted the *VISION 2040*⁸ update to *VISION 2020* in April 2008. *VISION 2040* includes an environmental framework and regional growth strategy for accommodating forecast population growth of 1.7 million people from 2000 to 2040. Within the metropolitan and core cities, including Bellevue, Kirkland, Bothell and Lynnwood along the I-405 corridor, *VISION 2040* supports concentrating population and employment growth in regionally designated growth centers.

County-wide Planning Policies

King, Pierce, and Snohomish Counties worked with local cities and took the lead in developing and adopting County-Wide Planning Policies (CWPP). The CWPP integrates land use planning with transportation planning policies. Cities, including the Eastside cities (cities east of Lake Washington) within the study area, adopted the CWPP to help implement the GMA and *VISION 2020*. The CWPP supports the urban center concept. Some urban centers are within the I-405 project corridor. All the local jurisdictions in the study area adopted comprehensive plans in accordance with the requirements of the GMA, CWPP, and PSRC multi-county planning policies. The comprehensive plans include transportation elements that are certified by PSRC to conform to the transportation planning elements of the GMA, *VISION 2020*, and the MTP. The concurrency requirements of the transportation elements require key infrastructure be built or planned for within six years of any proposed development. The I-405 Corridor Program alternatives generally support the applicable local transportation plans.

Historical Land Use Changes and Trends

The central Puget Sound region has experienced substantial population growth since 1978 when the four-county region had 2.1 million people. The 2010 population of more than 3.7 million is expected to increase to five million by 2040. Eastside communities that were largely suburban in the 1970s were gradually transformed to suburban/urban. This land use change was made easier by major transportation improvements such as expansion of the I-90 corridor connecting Seattle to the Eastside via Mercer Island, and I-405 construction of HOV lanes. Establishing Microsoft and other technology businesses since the mid-1980s along the I-405 corridor also played a key role in land use change. Identifiable urban centers such as Bellevue, Kirkland, and Redmond, have emerged, increasing pressure to improve movement of goods and people along the I-405 corridor.

⁸ PSRC 2009.

Land Use Plans and Policies in the Bellevue to Lynnwood Improvement Project Study Area

The State of Washington Local Project Review Act⁹ and associated state-implementing rules¹⁰ provide ways for local governments to determine whether projects are consistent with the GMA-required comprehensive plans. The GMA contains a goal for each of the following topics:

- Urban Growth
- Transportation
- Economic Development
- Permits
- Open Space and Recreation
- Citizen Participation and Coordination
- Historic Preservation
- Reduction of Sprawl
- Housing
- Property Rights
- Natural Resource Industries
- Environment
- Public Facilities and Services
- Shorelines

The transportation-related goal is to “...encourage efficient multi-modal transportation systems that are based on regional priorities and coordinated with county and city comprehensive plans.”

In addition, the GMA identifies several planning requirements that apply to roads and highways:

- Adoption of concurrency regulations, ensuring that transportation strategies or improvements are in place at the time of development or within 6 years to meet local level of service (LOS) requirements. Local LOS requirements do not apply to “highways of statewide significance”, such as I-405 and SR 167. For highways of statewide significance, local jurisdictions are to evaluate the effects of land use

⁹ RCW 36.70B Local Project Review.

¹⁰ WAC 365-197 Washington State Department of Community, Trade, and Economic Development - Project Consistency.

on the state facility and the differences between local standards and the state LOS standard for urban facilities.

- Highways of statewide significance are considered to be one type of “essential public facility”. Essential public facilities are typically difficult to site. Local comprehensive plans are required to address such facilities and may not prohibit their siting.
- Local governments are encouraged to coordinate or consolidate their processes for reviewing permitting and environmental planning requirements for major transportation projects.

An additional primary consideration is consistency with local zoning and shoreline master programs.

The Bellevue to Lynnwood Improvement Project is located within the jurisdictions of the unincorporated King and Snohomish Counties, and the Cities of Bellevue, Kirkland, and Bothell. Local land use plans and policies address cooperation among jurisdictions; transit and multimodal systems; compatibility and policies that influence design; and essential public facilities. According to the conclusions presented in the *Land Use Patterns, Plans, and Policies Discipline Report*,¹¹ the Bellevue to Lynnwood Improvement Project is consistent with local jurisdictions’ plans and policies, and the local jurisdictions’ plans and policies are generally supportive of the project improvements.

Regulatory Considerations

Air Quality

Air quality in the project area is regulated by the U.S. Environmental Protection Agency (EPA), Washington State Department of Ecology (Ecology), and the Puget Sound Clean Air Agency (PS Clean Air). Under the Clean Air Act (CAA), the EPA has established the National Ambient Air Quality Standards (NAAQS), which specify maximum concentrations for carbon monoxide (CO), particulate matter (PM) less than 2.5 micrometers in size (PM_{2.5}) and 10 micrometers in size (PM₁₀), ozone (O₃), sulfur dioxide (SO₂), lead, and nitrogen dioxide (NO₂).

Transportation conformity ensures that transportation activities (for example, plans, programs, and projects) are reviewed and evaluated for their effects on air quality prior to funding or approval. Such plans, programs, and projects may not cause or contribute to new air quality violations, worsen existing violations, or interfere with the timely

¹¹ *WSDOT 2011a*.

attainment of air quality standards or the required interim emissions reductions toward attainment.¹²

Transportation plans must provide for the timely implementation of Transportation Control Measures (TCMs) from an applicable maintenance plan. TCMs are projects, programs, and actions that will help reduce or eliminate the severity or number of NAAQS violations and that will help attain and maintain NAAQS standards. TCMs can be strategies to increase the efficiency of existing transportation facilities, reduce travel demand, or lower the amount of emissions in vehicles, leading to measurable vehicle emissions reductions.¹³

A State Implementation Plan (SIP) is required under the CAA and provides a blueprint for how maintenance and non-attainment areas will meet NAAQS. Positive findings of conformity are required under the CAA, the Transportation Equity Act (TEA) for the 21st Century (TEA-21), and the Clean Air Washington Act (CAWA), and will allow the Central Puget Sound Region to proceed with implementation of transportation projects in a timely manner.¹⁴

The I-405 project corridor lies within a CO maintenance area. Air quality emissions in the Puget Sound Region are currently managed under the provisions of an Air Quality Maintenance Plan (AQMP) for CO. The current plan was developed by PS Clean Air and Ecology and was approved by the EPA in 2004. Any regionally significant transportation project in the Puget Sound air quality maintenance areas must conform to the AQMP. As noted previously, conformity is demonstrated by showing that the project will not cause or contribute to any new violation of any NAAQS, not increase the frequency or severity of any existing violation of any NAAQS, and not delay timely attainment of the NAAQS.¹⁵

Water Quality

The federal Water Pollution Control Act, better known as the Clean Water Act (CWA), regulates discharges of pollutants to surface waters of the United States. The CWA is codified in 33 U.S. Code (USC) 1251 et seq. which states that the goal of the CWA is “to restore and protect the chemical, physical, and biological integrity of the nation’s waters.” The EPA has delegated the authority to Ecology to administer provisions of the CWA in Washington State Revised Code of Washington ([RCW] 90.48.260). In turn, Ecology establishes water quality standards (WQS) under its delegated CWA authority. Ecology uses those standards to protect and maintain beneficial uses of water bodies

¹² *PSRC 2004.*

¹³ *PSRC 2004.*

¹⁴ *PSRC 2004.*

¹⁵ *WSDOT 2011b.*

when issuing discharge permits, and in reviewing proposed projects to ensure that the quality of surface waters is protected.

During construction the primary method used to ensure that water bodies meet WQS is the National Pollutant Discharge Elimination System (NPDES) permit program, established under CWA Section 402 (33 USC 1342). Under the NPDES program, any person responsible for the discharge of a pollutant or pollutants above a certain threshold directly into surface waters of the United States from any point source must apply for and obtain a permit. CWA Section 402 requires the EPA to review and grant permits for any point-source discharge of designated pollutants, which include 126 priority toxic pollutants as well as various “conventional” pollutants.

Any activity that requires a federal license or permit and that might result in the discharge of a pollutant into waters of the United States is required to obtain a Water Quality Certification under Section 401 of the CWA. Section 401 certification is administered by the state in which the discharge originates. Certification ensures that the discharge complies with applicable standards of the CWA. Ecology administers this program in Washington State (RCW 90.48.260).

Wetlands

Numerous federal, state, and local laws, regulations, ordinances, and orders govern activities in or near wetlands. The National Environmental Protection Act’s (NEPA’s) passage in 1969 required agencies to evaluate the effects of their projects on the environment, including wetlands. Federal Executive Order 11990, issued in 1978, required all federal agencies to provide for wetland protection in their policies. The U.S. Department of Transportation (DOT) complies¹⁶ with that mandate during the planning, construction, and operational phases of transportation facilities and projects. Activities in wetlands are also regulated by CWA Section 404 permitting requirements administered by the U.S. Army Corps of Engineers. Additionally, legislation at the state level, such as the State Environmental Protection Act (SEPA), adopted in 1971 and the Growth Management Act (GMA), adopted in 1990, as well as county and municipality ordinances, now regulate wetlands. The local ordinances governing wetlands and other sensitive/critical areas continue to evolve. The required mitigation and compensatory measures have become more stringent.

Aquatic Resources

Prior to 1966, authority for wildlife protection rested primarily with the states, except where the wildlife was highly migratory or where wildlife taken in violation of state or federal law was transported across state boundaries. In response to a concern that various species had become or were in danger of becoming extinct, the federal

¹⁶ DOT Order 5660.1A.

government began to enact legislation protecting endangered and threatened fish, wildlife, and plants. Congress' efforts culminated with the passage of the Endangered Species Act (ESA) of 1973 (Public Law 93-205, 16 USC 1531 et seq.). Under the ESA, the Secretary of the U.S. Department of Interior, through the U.S. Fish and Wildlife Service (USFWS) has responsibility for plants, wildlife, and inland fishes. The Secretary of Commerce through the National Marine Fisheries Service (NMFS) is responsible for implementing the ESA with respect to ocean-going fish and marine animals. The USFWS and the NMFS are collectively referred to as the "Services."

The 1996 Sustainable Fisheries Act amended federal fisheries management regulations to require identification and conservation of habitat that is "essential" to federally-managed fish species. Essential habitat is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The Pacific Fishery Management Council (PFMC) is the body responsible for reviewing relevant habitat issues in the Pacific Northwest. The PFMC has designated Essential Fish Habitat (EFH) for the Pacific salmon fishery, federally-managed groundfish, and coastal pelagic fisheries. Federal agencies must consult with NMFS on all activities, or proposed activities, authorized, funded, or undertaken by the agency that may adversely affect EFH. The Pacific salmon management unit includes Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), and pink (*O. gorbuscha*) salmon. In odd-numbered years, the Council may manage special fisheries near the Canadian border for pink salmon. Sockeye, chum and steelhead are rarely caught in the Council's ocean fisheries. The designation is not limited to ESA-listed species. The EFH designation for the Pacific salmon fishery includes all those streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except above the impassible barriers identified by the PFMC.¹⁷

On March 24, 1999, NMFS listed the Puget Sound Chinook salmon as a threatened species.¹⁸

On November 1, 1999, the USFWS listed the Coastal-Puget Sound distinct population segment (DPS) of bull trout (*Salvelinus confluentus*) as a threatened species. The Coastal-Puget Sound bull trout population encompasses all Pacific Coast drainages within Washington, including Puget Sound. Because bull trout and Dolly Varden (*S. malma*) are virtually impossible to differentiate visually, the Washington State Department of Fish and Wildlife (WDFW) manages the two species together as "native char." Bull trout exhibit resident and migratory life-history strategies throughout much of their range. Resident bull trout complete their life cycles in the tributary (or nearby) streams in which they spawn and rear. Migratory bull trout spawn in tributary streams where

¹⁷ *WSDOT 2002.*

¹⁸ *NMFS 1999.*

juvenile fish rear from one to four years before migrating to either a lake, river, or to saltwater (in certain coastal areas) to mature. Water bodies must have specific physical characteristics to provide habitat requirements for bull trout to successfully spawn and rear. Bull trout primarily favor colder streams. Water temperatures above 15 degrees Celsius (59 degrees Fahrenheit) are believed to limit bull trout distribution.

On February 22, 2001, the EPA and the Services published a final notice of a Memorandum of Agreement (MOA)¹⁹ between the three agencies that addresses coordination under the CWA and the ESA. The MOA prescribes regional coordination review teams to ensure interagency coordination. The MOA sets up a process for elevating issues that cannot be resolved at the regional level. The MOA encourages the agencies to integrate more effectively national level activities such as water quality standards (WQS) rulemakings. The MOA provides for communication and consultation between EPA and the Services regarding both state and tribal WQS. Finally, the MOA establishes a structure for the EPA and the Services to coordinate on actions related to the issuance of NPDES permits.

On September 2, 2005, the NMFS published (50 CFR 226) the rules (effective January 2, 2006) designating critical habitat for Pacific salmon and steelhead in Washington, Oregon, Idaho, and California. This designation included the Puget Sound evolutionary significant unit (ESU) of Chinook salmon. Critical habitat is designated for areas containing the physical and biological habitat features, or primary constituent elements (PCEs), essential for conservation of the species or which require special management considerations. PCEs include sites that are essential to support of one or more life stages of the ESU and which contain physical or biological features essential to conserve the ESU. Chinook salmon critical habitat within the project aquatic resources study area includes the Sammamish River.

On September 26, 2005, the USFWS published (70 Federal Register 56212) the final rule (effective October 26, 2005) designating critical habitat for the Coastal-Puget Sound population of bull trout²⁰. For an area to be included as critical habitat, it must provide one or more of the following functions for bull trout: spawning, rearing, foraging, or over-wintering habitat to support essential existing bull trout local populations; movement corridors necessary for maintaining essential migratory life history forms; or suitable habitat that is considered essential for recovering existing local populations that have declined or that need to be re-established to achieve recovery. The critical habitat includes Lake Washington and associated tributaries of the lake, the Cedar River from Boulder Creek upstream to Chester Morse Lake, the Sammamish River, Lake Union, and the Ship Canal.

¹⁹ *Federal Register, Volume 66, Number 36.*

²⁰ *USFWS 2005.*

On June 11, 2007, NMFS listed the Puget Sound steelhead as a threatened species.²¹

Additionally, local regulations, ordinances, and policies provide for the protection of aquatic resources through shoreline management and sensitive/critical areas requirements.

²¹ <http://www.nwr.noaa.gov/ESA-Salmon-Listings/upload/snapshot0607.pdf>

BASELINE CONDITIONS

The baseline conditions for the Bellevue to Lynnwood Improvement Project assume completion of the improvements that have already been environmentally cleared and permitted as a part of the Kirkland Nickel Project (Kirkland Nickel Stage 1 is currently under construction and Kirkland Nickel Stage 2 will be constructed later concurrent with the Bellevue to Lynnwood Improvement Project), the NE 195th Street to SR 527 Northbound Auxiliary Lane Project completed in 2010, and the I-405, NE 8th Street to SR 520 Braided Ramps Project scheduled for 2012 opening. The study areas described and referenced in the following subsections for air quality, surface waters, wetlands, and aquatic resources are those utilized by the respective discipline report authors in evaluating the effects of the Bellevue to Lynnwood Improvement Project. The geographic boundaries for the CEA are described in Appendix A, Methodology.

Air Quality

The *Air Quality Technical Memorandum*²² provides the results of the air quality analyses that were conducted at the three intersections along NE 128th Street that will be affected by the Bellevue to Lynnwood Improvement Project.

Air Quality in Central Puget Sound Region Since 1978

Air quality in the Central Puget Sound Region has varied since 1978. In 1978, air quality had degraded to the point that the Central Puget Sound Region was classified by the EPA as a “non-attainment area” for CO and O₃. The degradation was largely a result of the rise in vehicle travel associated with increasing population and urbanization.

Air quality improved over the next two decades due to technological improvements in emissions control equipment and more stringent regulations. This improvement enabled the EPA to designate the region as a “maintenance area” for CO and O₃ in 1996. As described in the *I-405 Corridor Program Final EIS*, during that same two-decade period, freeway lane miles increased by approximately 50 percent, while the region-wide vehicle travel grew by approximately 200 percent. The O₃ maintenance area designation was dropped on June 15, 2005, because the region was in attainment for the new 8-hour O₃ standard and the 1-hour standard was revoked.

Because travel demand has exceeded the capacity of the roadway and transit network, congestion continues to worsen on all highways, including I-405. Transportation improvements, such as the Bellevue to Lynnwood Improvement Project, will help decrease congestion and emissions.

²² *WSDOT 2011b*.

While motor vehicle emissions are expected to decline in the future due to new regulations and technologies, growth in vehicle travel will eventually result in an overall increase in emissions.²³

Air Quality in the Project Study Area

Existing CO concentrations, and those predicted for baseline conditions, in the project study area do not and will not exceed NAAQS.

Surface Waters

The I-405 Team identified areas where surface waters could be affected from the project's construction and operation. These areas were designated as the study area. The study area is limited to the areas from SR 520 to one mile north of NE 195th Street because the project proposed no new pavement or earthwork activities beyond those limits.

Quality of Surface Waters in the Project Study Area

I-405 intersects and/or discharges stormwater runoff to the following river and primary perennial streams within the project study area (from south to north):

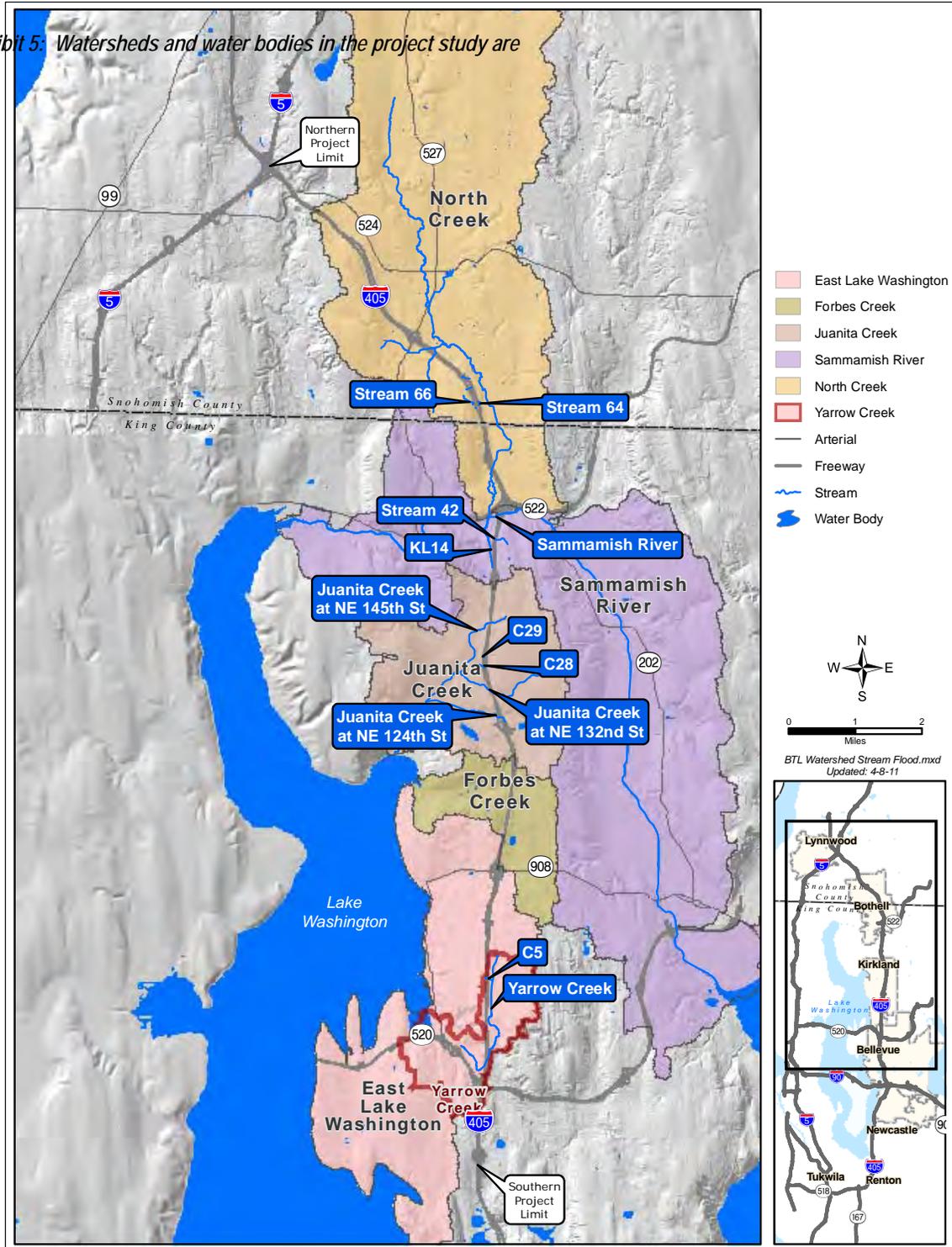
- Yarrow Creek
- Forbes Creek
- Juanita Creek
- Sammamish River
- North Creek

North Creek discharges to the Sammamish River, a tributary to Lake Washington. The remaining streams listed above are tributaries to Lake Washington. Exhibit 5 shows the location of these water bodies and their associated watersheds. The surface waters are located within the urbanized and suburban areas of King and Snohomish counties and have been extensively modified as a result of development.

The study area creeks and the Sammamish River are designated as Core Summer Salmonid Habitat under Chapter 173-201A-600 of the Washington Administrative Code (WAC), as adopted by Ecology. Water quality criteria have been established by Ecology to support the Core Summer Salmonid Habitat Use.

²³ *PSRC 2004.*

Exhibit 5: Watersheds and water bodies in the project study area



The 2009 Statewide Water Quality Assessment 303(d) List²⁴ indicates that Yarrow Creek, Forbes Creek, Juanita Creek, the Sammamish River, and North Creek are water quality limited within the study area because of elevated levels of fecal coliform. Forbes Creek, Juanita Creek, the Sammamish River, and North Creek are also listed on the 303(d) list because of elevated temperatures and low levels of dissolved oxygen (DO). Water bodies that are water quality limited do not meet state water quality standards for one or more parameters, and technology-based controls are not sufficient to achieve water quality standards. The purpose of the 303(d) list is to allow the State to prioritize water bodies for protection. A water body on the 303(d) list is required to undergo a “total maximum daily load” (TMDL) study that leads to an allocation of the allowable input of the pollutants so that water quality standards can be achieved. No TMDL studies have been conducted for the water bodies in the study area, with the exception of the fecal coliform TMDL study completed for North Creek.²⁵

Watersheds and Streams in the Project Study Area

All the water bodies within the project study area are part of water resource inventory area (WRIA) 8, Cedar - Sammamish. The WRIA boundaries represent the administrative basis for Ecology’s regulatory activities and were established by Ecology, the Washington Department of Natural Resources (WDNR), and the Washington Department of Fish and Wildlife (WDFW) in 1970.

Yarrow Creek originates in Bridle Trails State Park at an elevation of 400 feet above mean sea level (MSL) and flows about three miles before entering Lake Washington. Much of the stream is channeled through pipes, although several straight sections of the creek flow in open channels between culverts. Land use in the Yarrow Creek watershed (one square mile in size) includes recreational, commercial, and multi- and single-family residential development.

Forbes Creek originates at an elevation of 240 feet above MSL and flows approximately two miles through the City of Kirkland including a large wetland area before entering Lake Washington on the south side of Juanita Bay. Although portions of the stream remain in a natural condition, several segments flow through pipes. Land use in the Forbes Creek watershed (about 1.6 square miles in size) is urban/suburban, commercial, and industrial.

Juanita Creek originates east of I-405 and flows for approximately five miles west and south eventually entering Lake Washington near the western edge of Juanita Beach Park. Channel complexity and connectivity with the Juanita Creek floodplain have been

²⁴ *Ecology 2006.*

²⁵ *Ecology 2002.*

reduced by stream bank armoring. Land use in the 6.6-square-mile watershed is mostly residential and commercial.

The Sammamish River is the primary outlet of Lake Sammamish. The river's floodplain varies in width along its length from 1,000 feet to about one mile. Much of the river has been dredged, straightened, and levied for flood protection. A large portion of the floodplain is developed to within 100 feet of the river's edge with some areas covered with impervious surfaces immediately adjacent to the channel.

The North Creek watershed drains approximately 28.5 square miles. The creek originates south of Everett and flows south approximately 12.6 miles to its confluence with the Sammamish River. Land use within the watershed is primarily urban or suburban, with some remaining areas of rural and forested land. The watershed is becoming more urbanized.²⁶

Effect of Development on Surface Water Quality

When natural landscapes are developed, the natural drainage processes can be radically altered. In a natural forested landscape, vegetation, forest duff, and the upper soil layers capture rain and slowly release the rainwater to groundwater, or release it as stream base flow. When impervious surfaces such as roofs, driveways, sidewalks, and streets replace the soils and vegetation, much less water soaks into the ground, decreasing groundwater recharge and stream base flows. Also, the increased impervious surface generates more stormwater, which runs off much more quickly and results in more erosion, sedimentation, and flooding.

Stormwater runoff in urban areas also carries more pollutants, including: sediment from erosion; oil and grease from roads and parking lots; metals from tires, brakes, and roofs; and pesticides, herbicides, and fertilizers from lawns and landscaping. Some of these pollutants dissolve in stormwater, but most become attached to small particles and thereby increase the cloudiness (turbidity) of the water. Vehicle traffic generates several types of pollutants. These include metals such as copper, zinc, and cadmium; oil and grease; turbidity from wearing tires and brakes; and dirt that is washed off vehicles.

All of these changes decrease the habitat value of streams due to the hydrologic effects and the reduced water quality. Nutrients in surface water, such as those from fertilizers, can lower the amount of dissolved oxygen available to aquatic life. Turbidity, copper, and zinc can harm fisheries and aquatic insects. Removing the particles that cause turbidity is the primary strategy of many stormwater treatment systems.²⁷

²⁶ *WSDOT 2011c.*

²⁷ *WSDOT 2011c.*