

APPENDIX Q: UTILITIES TECHNICAL MEMORANDUM

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I-405, Bellevue to Lynnwood Improvement Project



Corridor Program

Congestion Relief & Bus Rapid Transit Projects

UTILITIES TECHNICAL MEMORANDUM

April 2011





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SUMMARY

Objective of this Analysis

The objective of this analysis is to evaluate, at a project level, the potential effects of the Interstate 405 (I-405), Bellevue to Lynnwood Improvement Project on local utilities. This analysis focuses on effects to drinking water, sewers, storm sewers, electric power, natural gas, fuel, telephone, and cable telecommunications. This technical memorandum describes the baseline conditions of the utilities within the study area, as established by reviewing available utility drawings and literature. It also compares the effects of the two Build Alternatives and a No Build Alternative on utilities to determine the potential effects associated with each alternative.

Study Approach

Communities in the study area¹ abutting the project are the cities of Bellevue, Kirkland, Bothell, and Lynnwood as well as unincorporated King and Snohomish counties (Exhibit 5). The study area width is defined as within one-quarter mile of the project corridor.

Utility information within the study area was gathered from existing utility providers and from previous analyses contained in the following reports: *I-405 Corridor Program Utilities Expertise Report* (Washington State Department of Transportation [WSDOT], 2001), *Social, Public Services, Utilities, and Environmental Justice Discipline Report* prepared for the *I-405, NE 8th Street to State Route (SR) 520 Improvement Project Environmental Assessment* (WSDOT, 2007), and *Public Services and Utilities Discipline Report* prepared for the *I-405, SR 520 to SR 522 Kirkland Nickel Project Environmental Assessment* (WSDOT, 2005). Based on the review of the previous analyses, major water and sewer lines, electric power, fiber optic/telecommunication cables, and fuel distribution pipelines within the study area are the main focus of this analysis.

The primary data source for this analysis was geographic information system (GIS) records used to identify types, sizes, and locations of utility lines, cables, and pipes within the study area. The existing WSDOT database of utility franchises and permits was reviewed as a secondary data source. Comprehensive plans or capital improvement plans from the cities, water and sewer districts, and various public and private utility entities were reviewed to compile utility information. Major utility installations such as King County's Brightwater Sanitary Sewer System and Puget Sound Energy (PSE) power transmission towers were identified throughout the study area based on agency GIS information.

¹ The study area is located along I-405 from NE 6th Street as the southern limit to approximately 17 miles north at I-5 as the northern limit (Exhibit 5). The project area is the footprint for the construction elements of the proposed project improvements.

The utility information was then compared with the proposed project footprint. Potential effects to utilities were confirmed through discussions with the WSDOT I-405 design team and local utility providers. Typical utility impacts include the relocation of existing utilities, utility conflicts, coordination with new utility projects, and the potential for utility service disruptions during project construction. Any potential conflicts were noted and described by type and quantity. Potential utility service disruptions and access restrictions were also documented. Consideration was given to the type of work proposed to distinguish between improvements requiring excavations, such as pavement widening and lane additions, and transportation demand management (TDM) measures which are restricted to restriping and/or new traffic control devices.

Summary of Build Alternatives Project Effects

Construction activities such as pile driving, excavation, fill placement, and other earth disturbances may affect underground utilities. Special construction techniques, pipe protection, or full relocation could be required if utility conflicts are confirmed. These activities could cause short-term disruption in services and inconvenience to customers.

Overhead utility lines and poles could also interfere with project improvements requiring relocation or extra safety measures when working in close proximity.

Identification of potential utility conflicts is based on known information available during the preliminary engineering stage of the project. Currently, there are approximately 68 possible utility conflicts identified as part of preliminary engineering. Of that total amount, 4 have been identified as confirmed utility conflicts. Confirmed conflicts will be resolved during construction by relocation or protection in place. In some cases relocation prior to construction may occur.

Mitigation measures will be applied where confirmed utility conflicts cannot be avoided through project design.

What measures are proposed to avoid or reduce effects?

The following measures can be taken to help offset potential effects during construction of the project:

- During preliminary design, WSDOT will coordinate with fire departments. During final design and prior to construction, WSDOT will notify fire departments: (1) if water line relocations are required that could temporarily cause a disruption in service or reduce flow, and (2) to establish alternative sources of water supply in case of emergency breaks in service.
- During preliminary and final design and prior to construction, WSDOT will closely coordinate with utility providers, as necessary, to confirm locations and depths of the utilities, and to determine whether lines can be protected during construction, or

if they will require relocation. If there are utility conflicts within the WSDOT right of way, the utilities will be relocated at the utility provider's expense unless the utility has prescriptive rights.

- Design Builder will coordinate scheduling with utility providers to minimize effects of utility relocations and provide them with ample time to schedule equipment and construction crews in advance of project construction.
- Design Builder will provide clear signage alerting workers to the presence of overhead wires, as necessary, to help prevent accidental interference or damage.

No measures are needed to mitigate effects to utilities during project operation.

What will happen if we adopt the No Build Alternative?

Because the No Build Alternative would not involve construction or operation, no effects to utilities are anticipated.

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, tolling equipment, 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:

Exhibit 1: Project vicinity



- 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 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, and 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 this analysis. 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 additional lane in both directions on I-405 between SR 520 and SR 522. 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 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

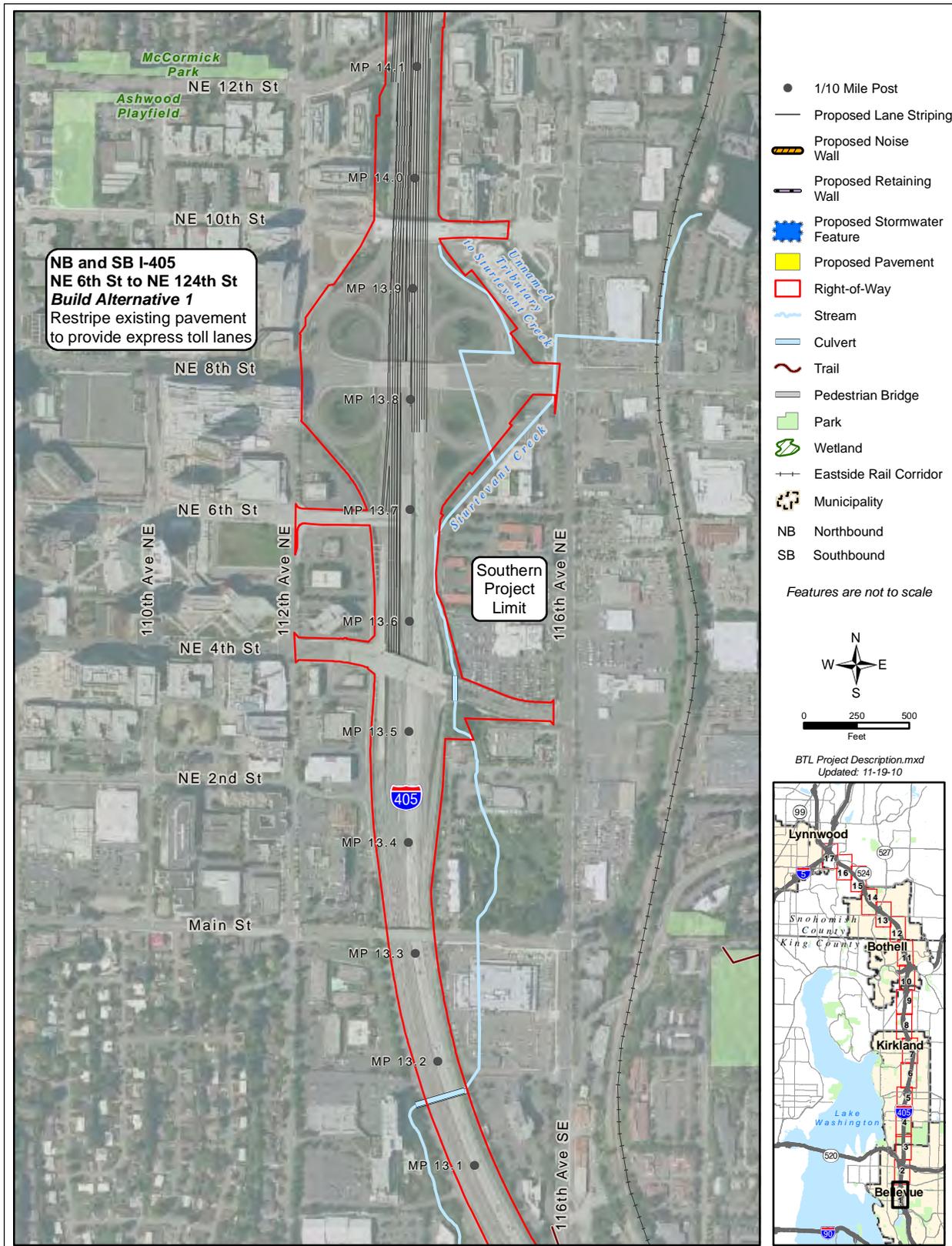


Exhibit 2: Project improvements – sheet 2 of 17

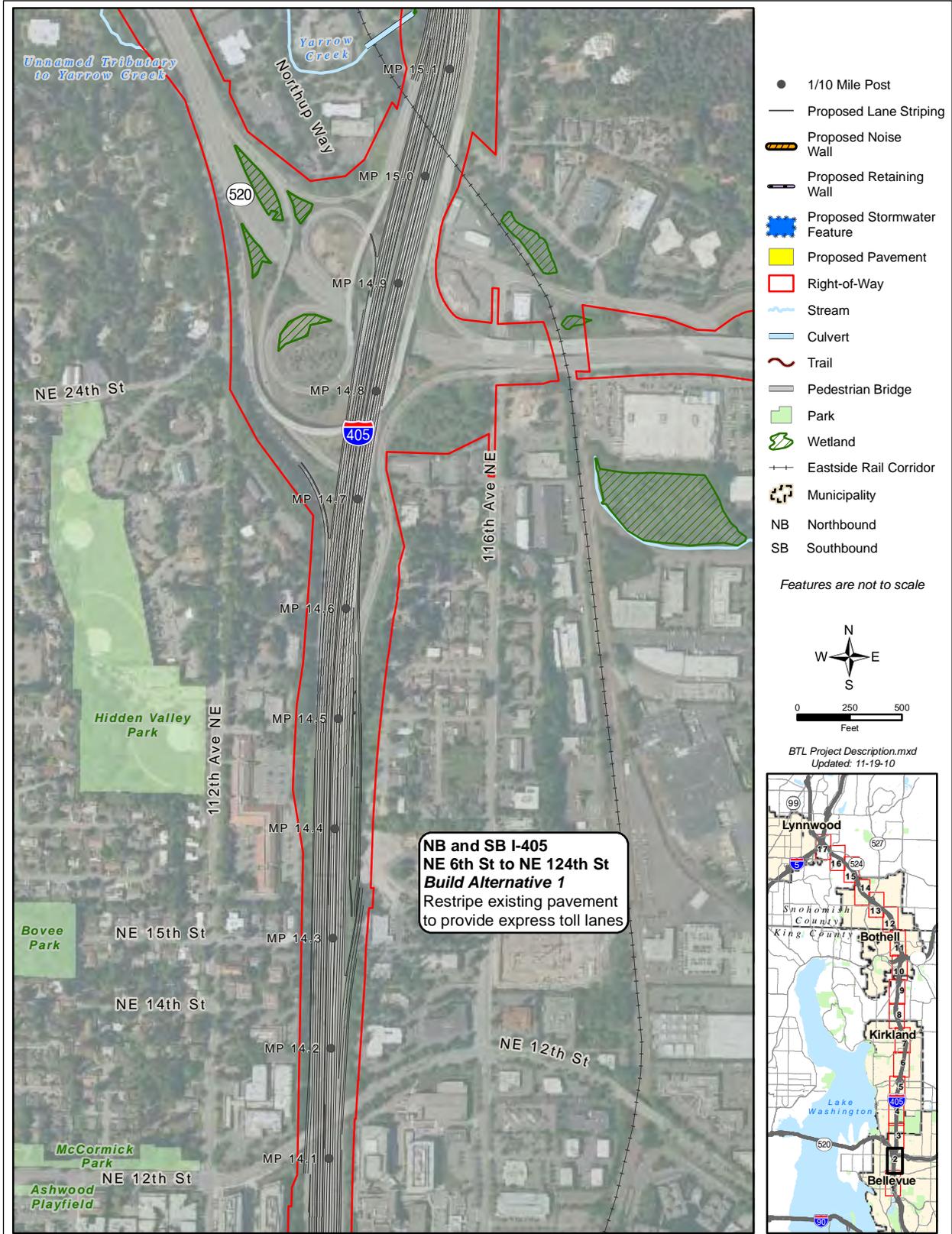


Exhibit 2: Project improvements – sheet 3 of 17

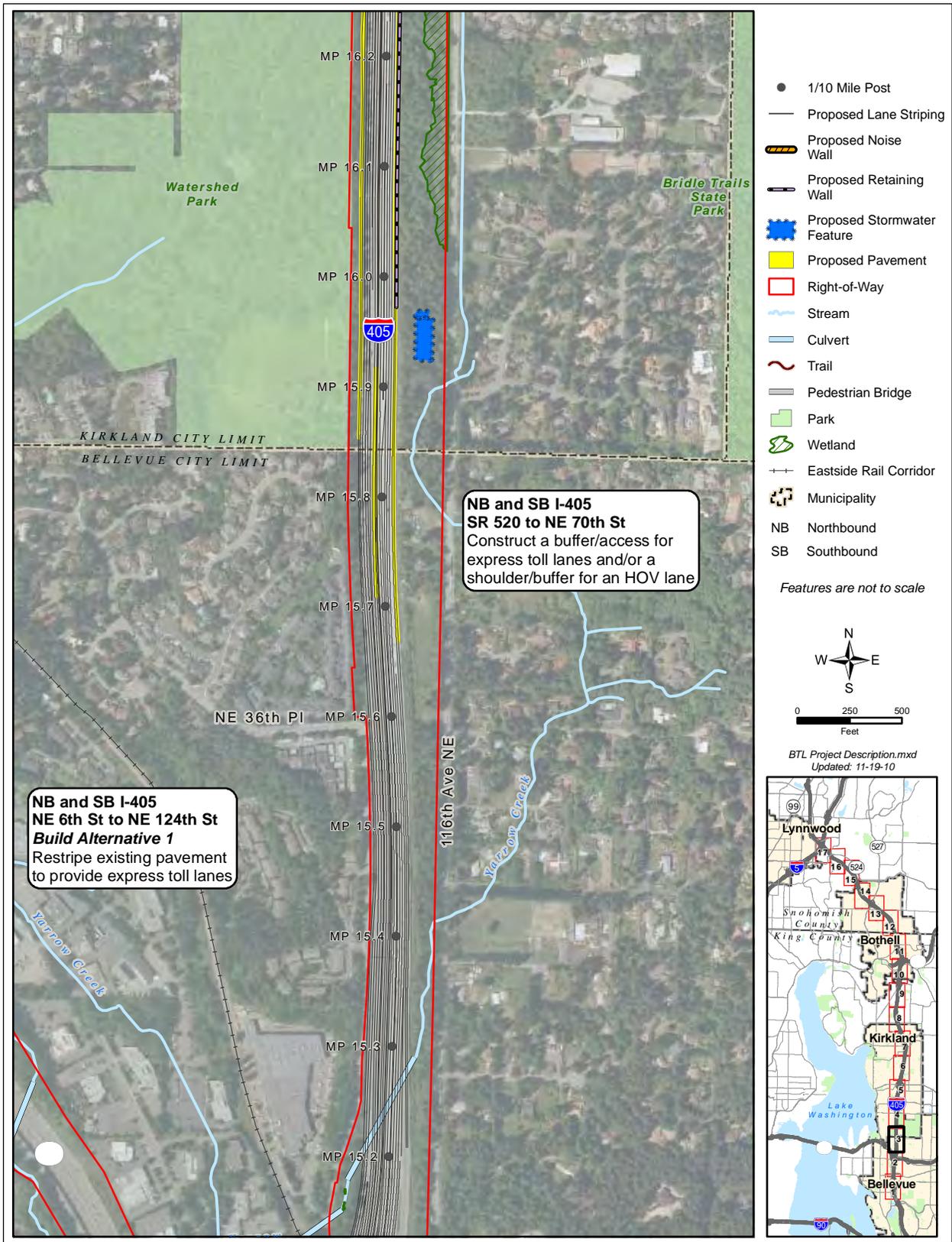


Exhibit 2: Project improvements – sheet 4 of 17

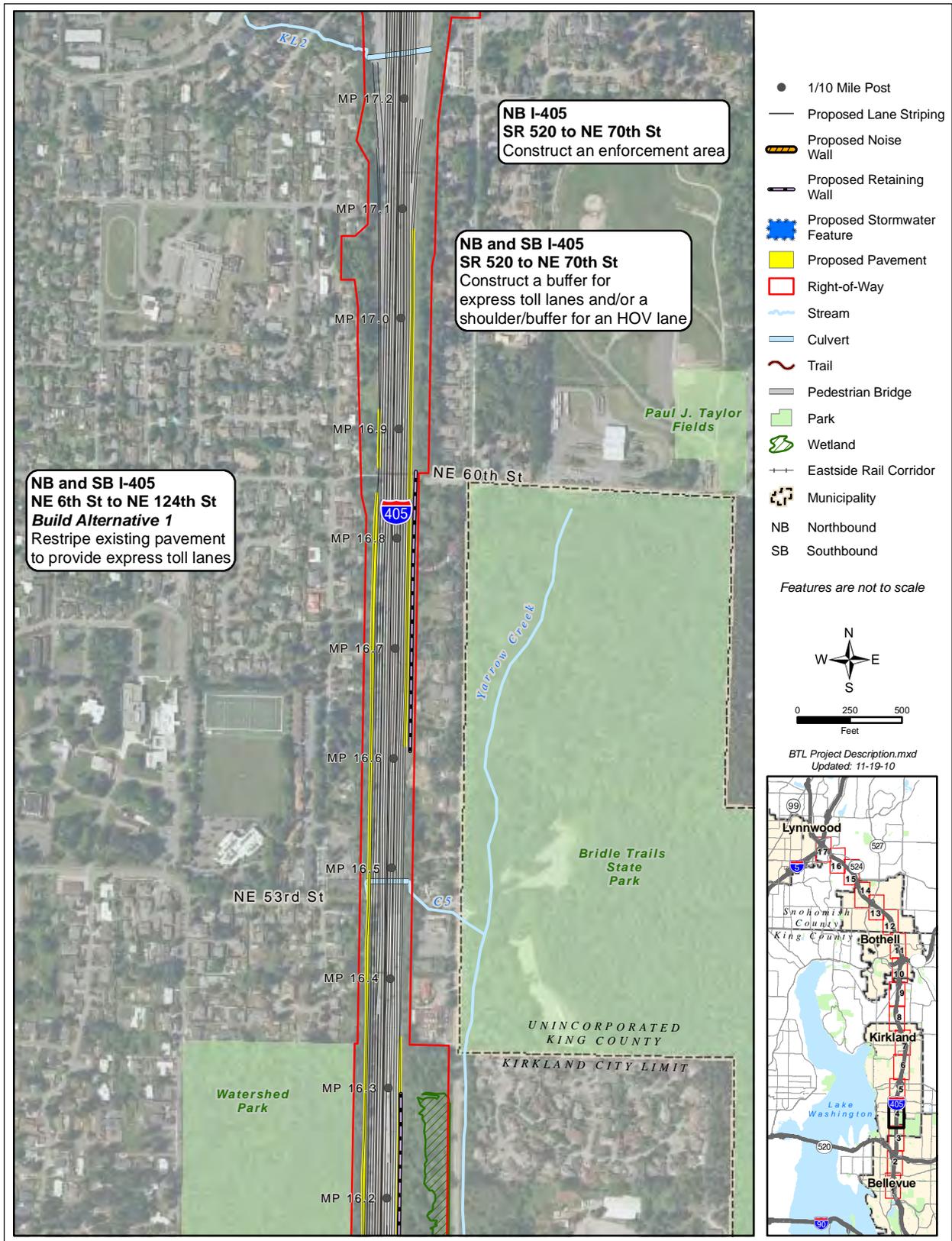


Exhibit 2: Project improvements – sheet 5 of 17

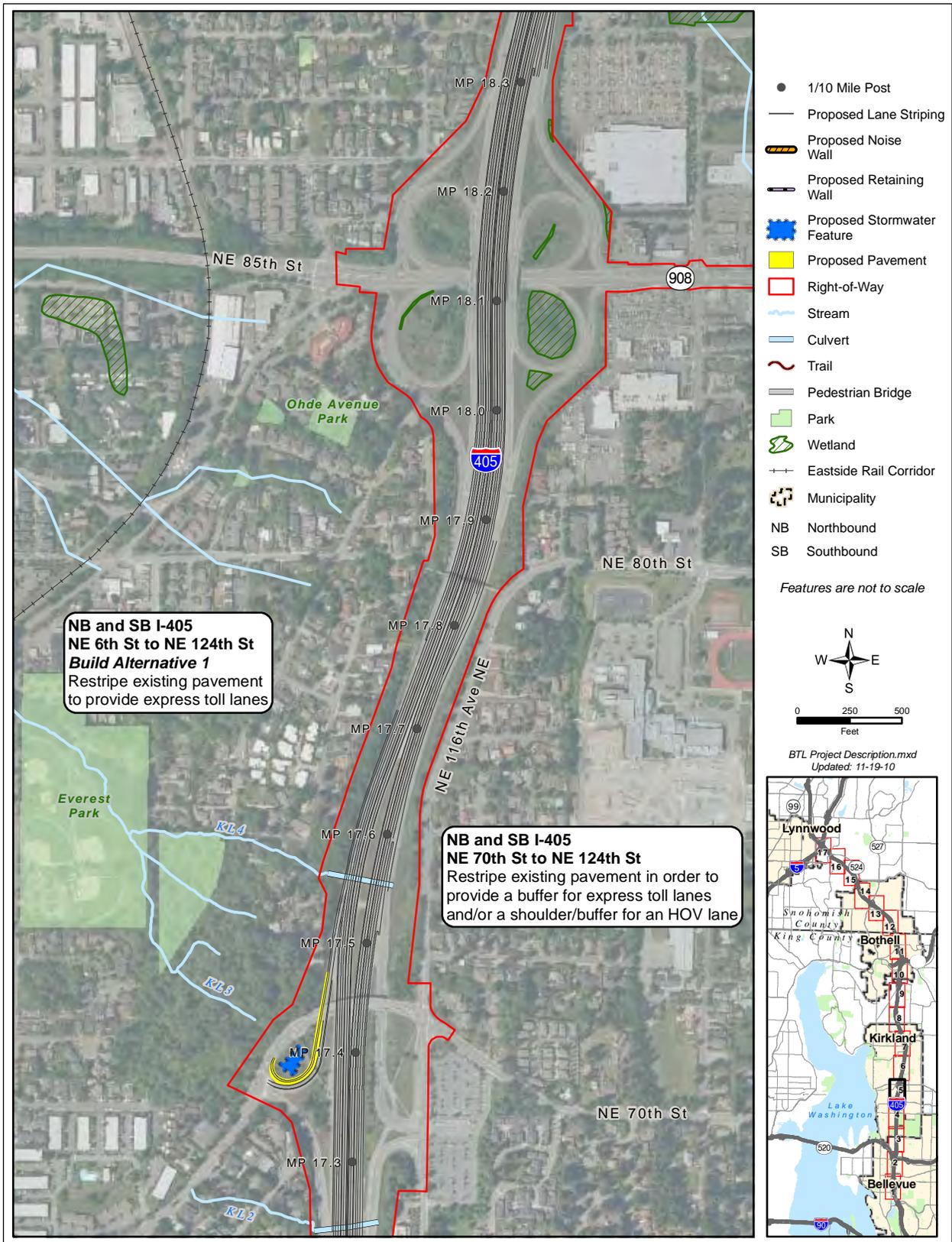


Exhibit 2: Project improvements – sheet 6 of 17

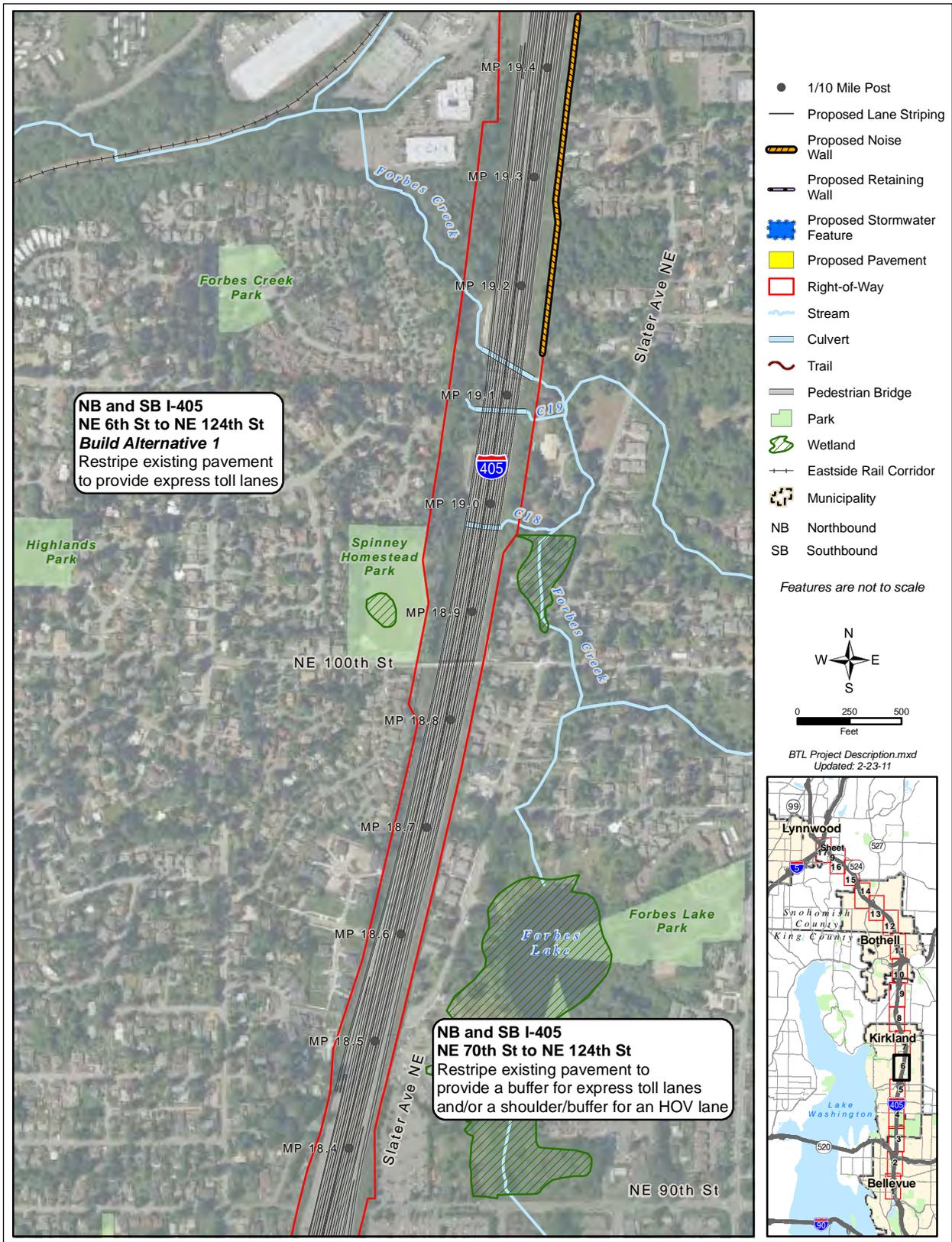


Exhibit 2: Project improvements – sheet 7 of 17

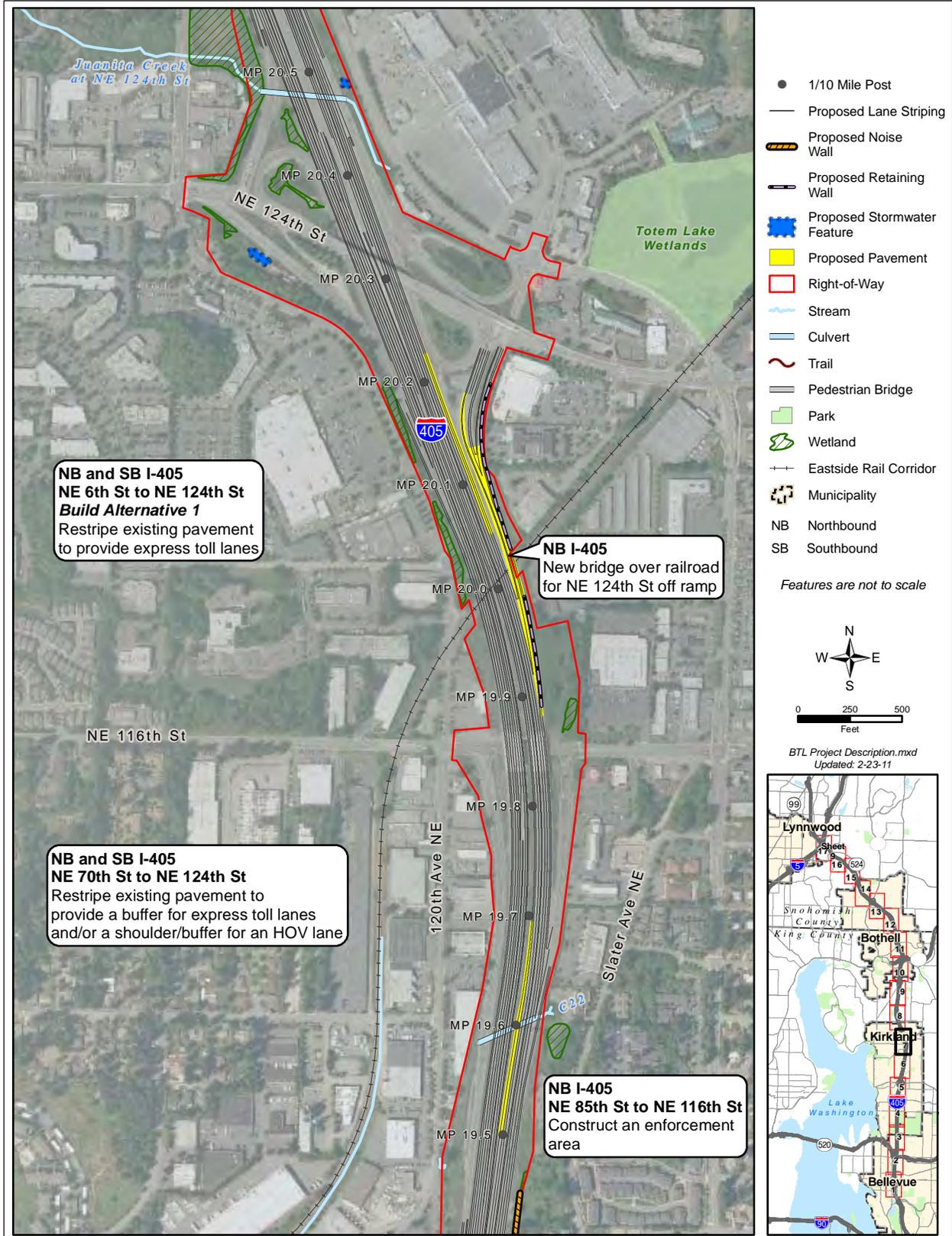


Exhibit 2: Project improvements – sheet 8 of 17

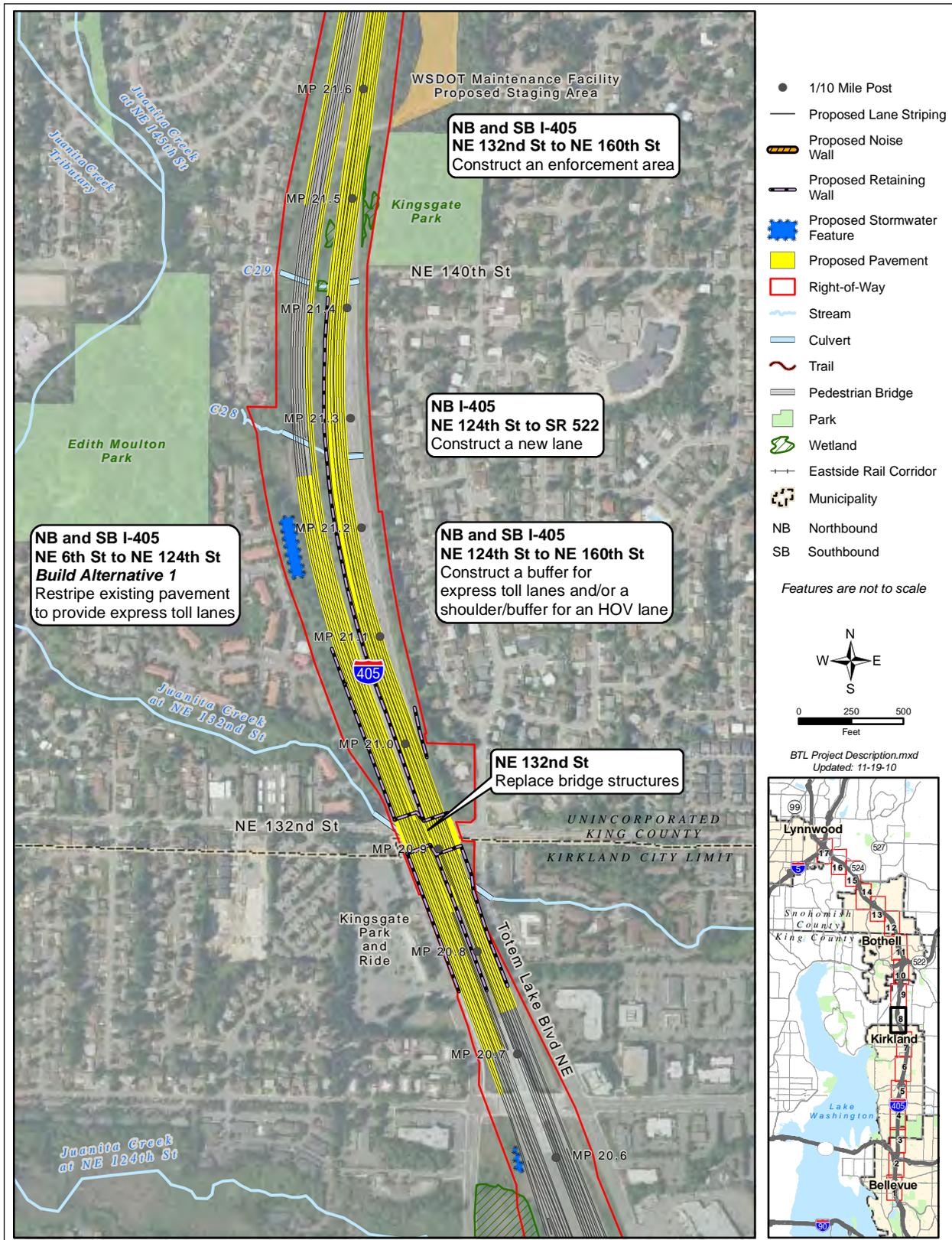


Exhibit 2: Project improvements – sheet 9 of 17

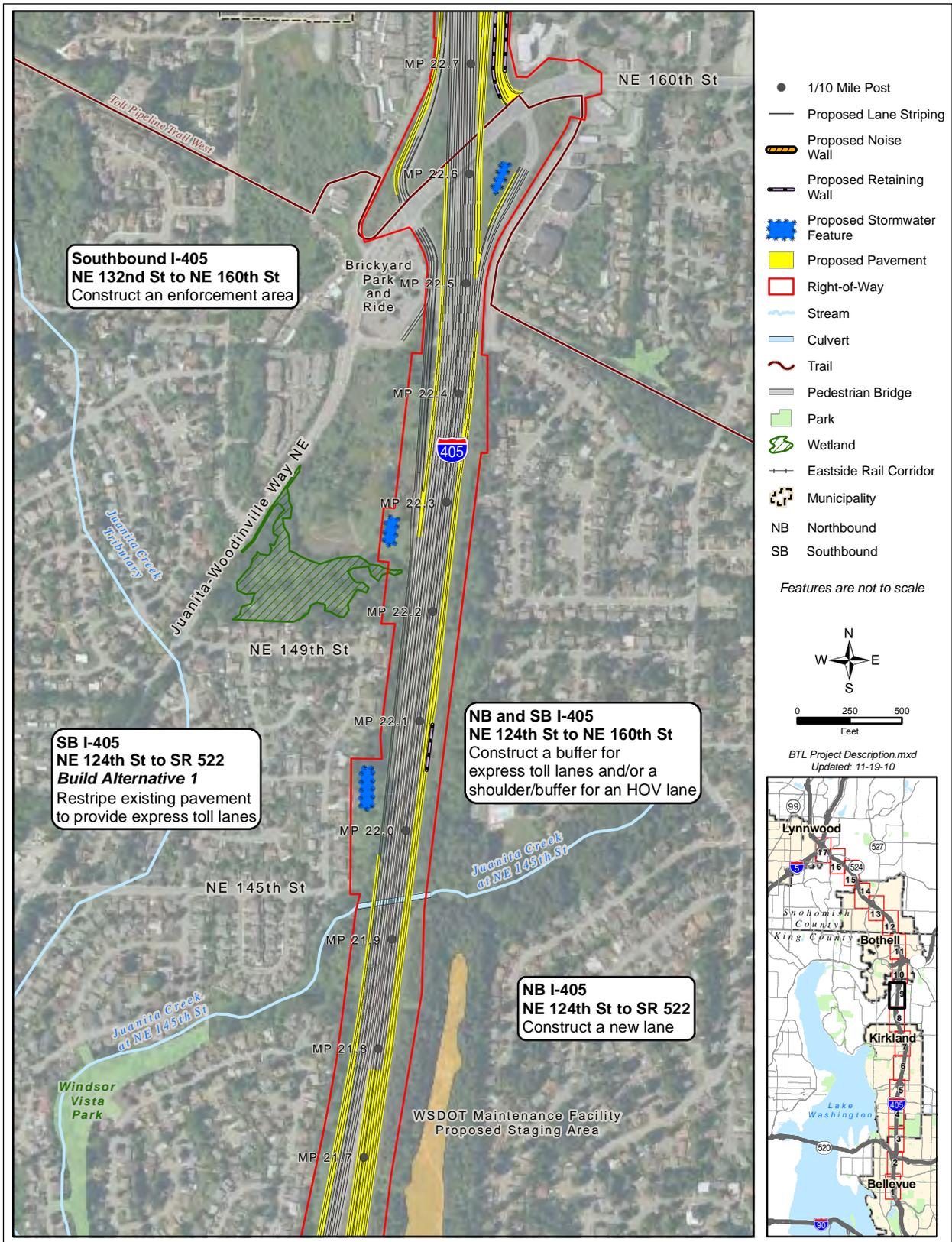
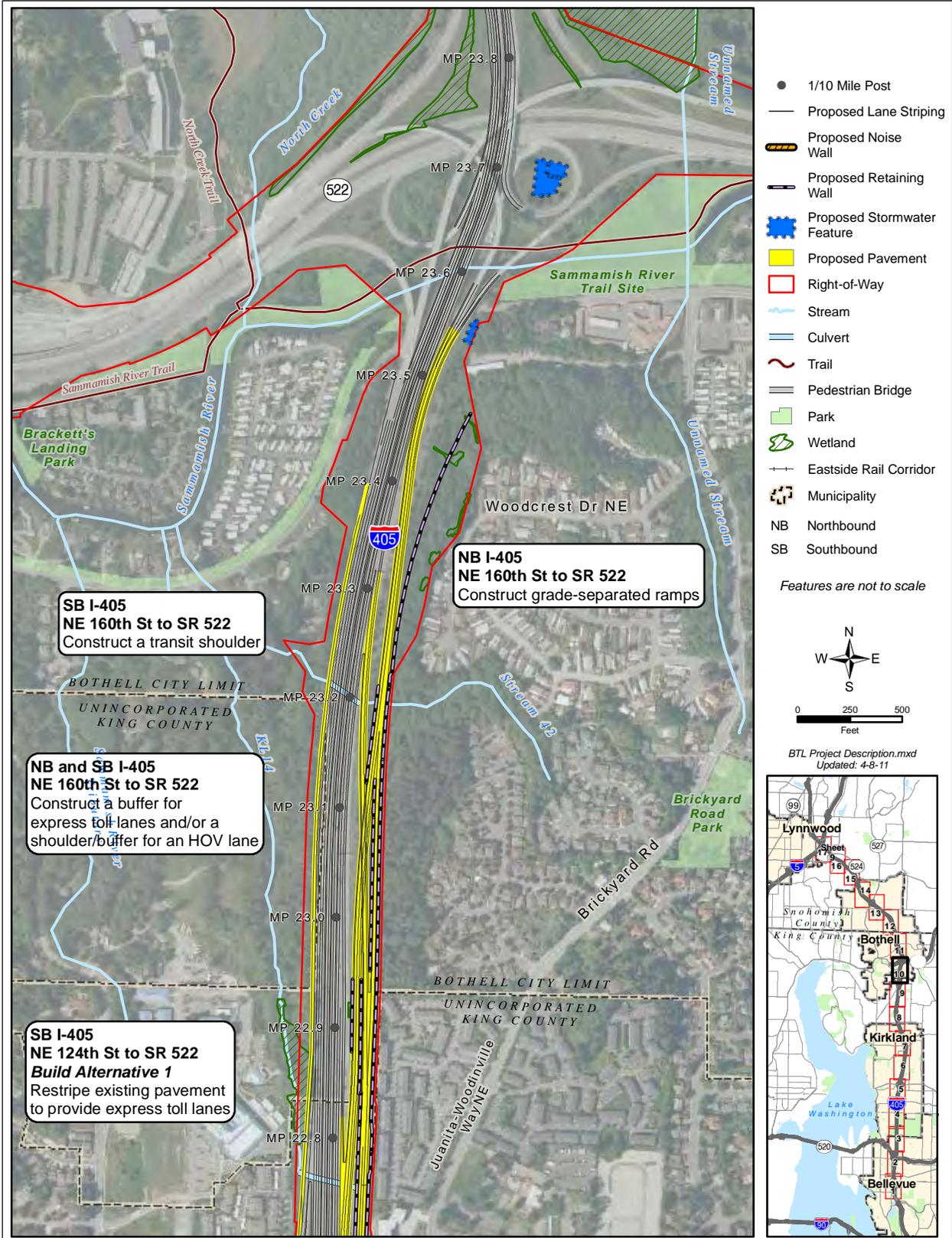


Exhibit 2: Project improvements – sheet 10 of 17



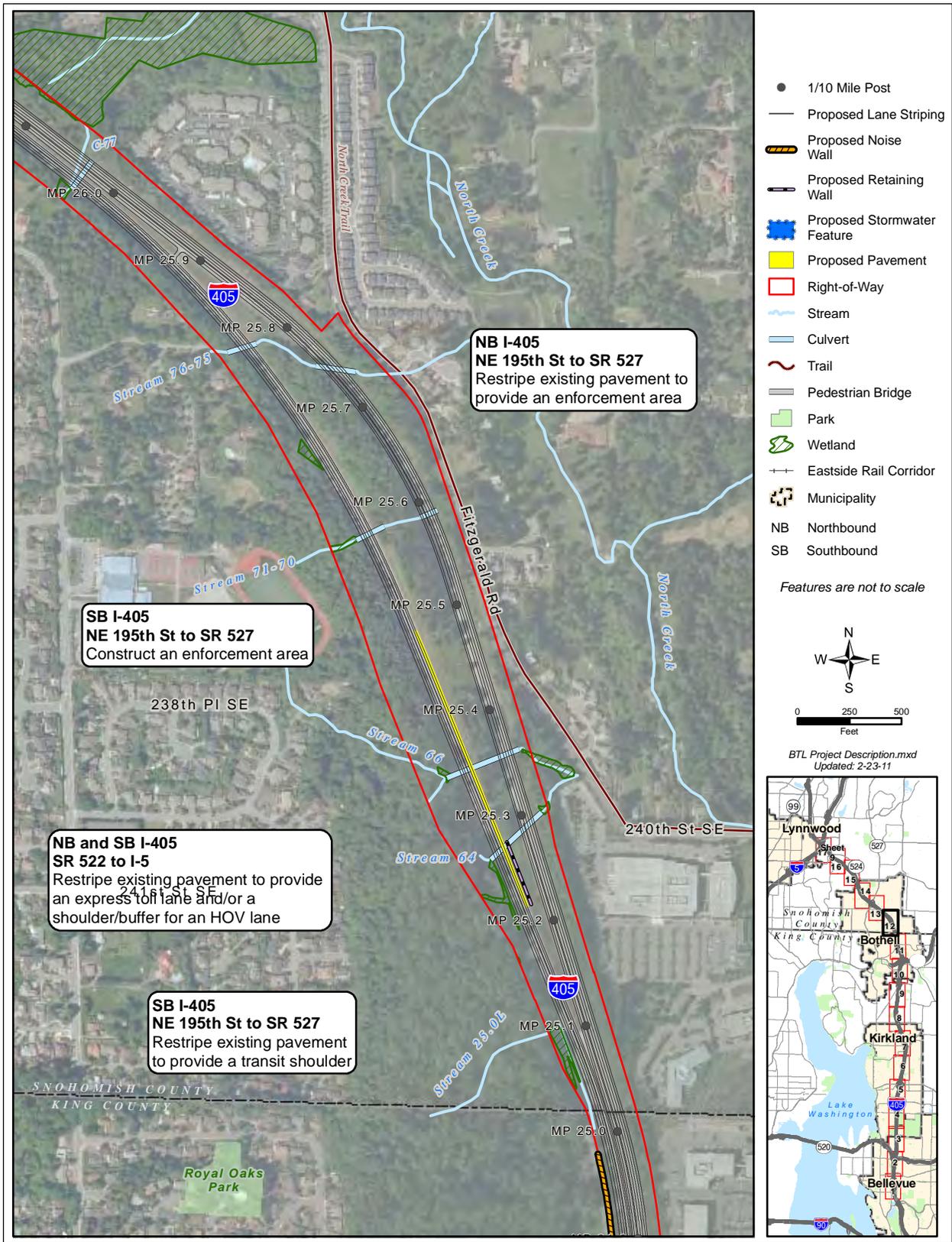


Exhibit 2: Project improvements – sheet 13 of 17

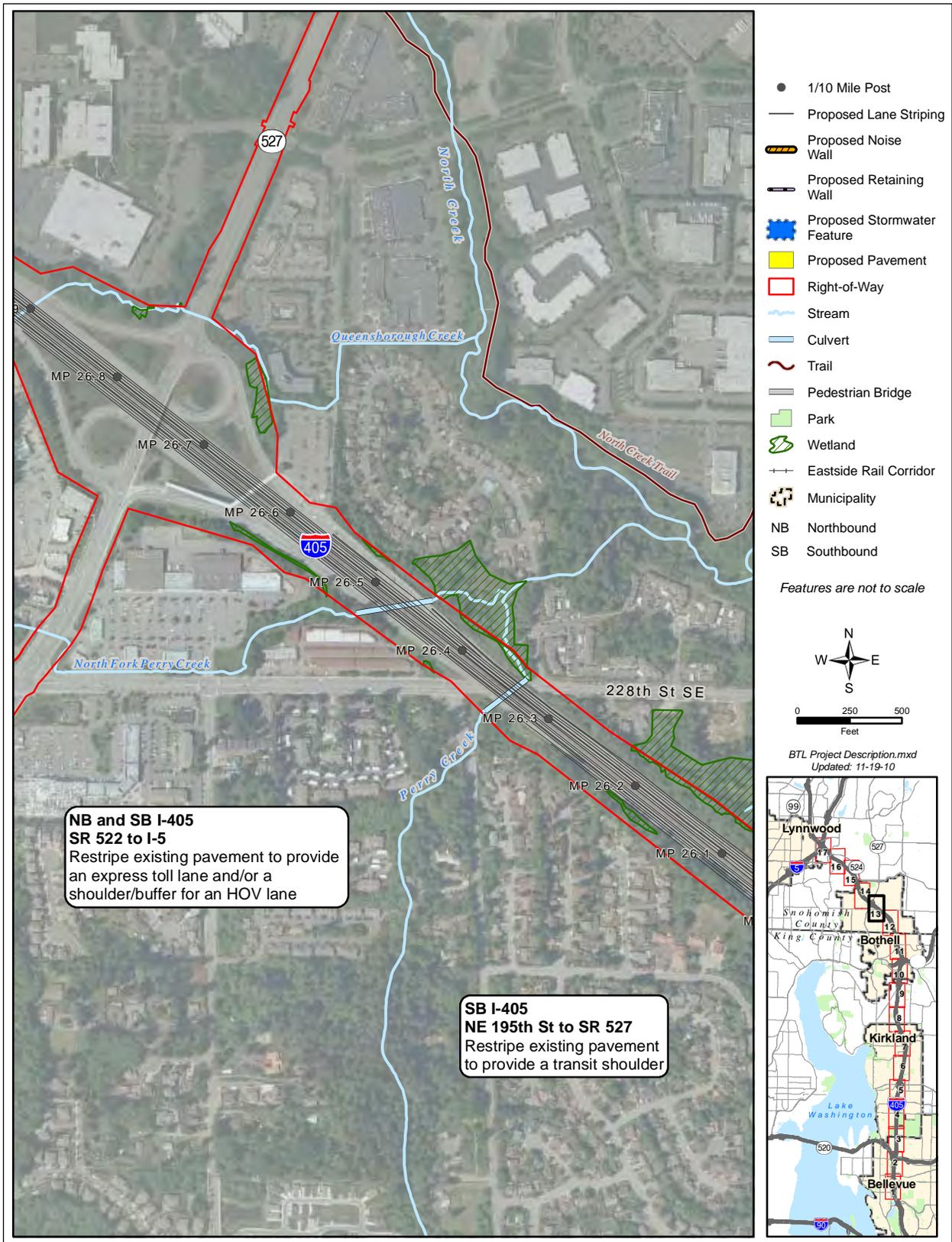


Exhibit 2: Project improvements – sheet 14 of 17

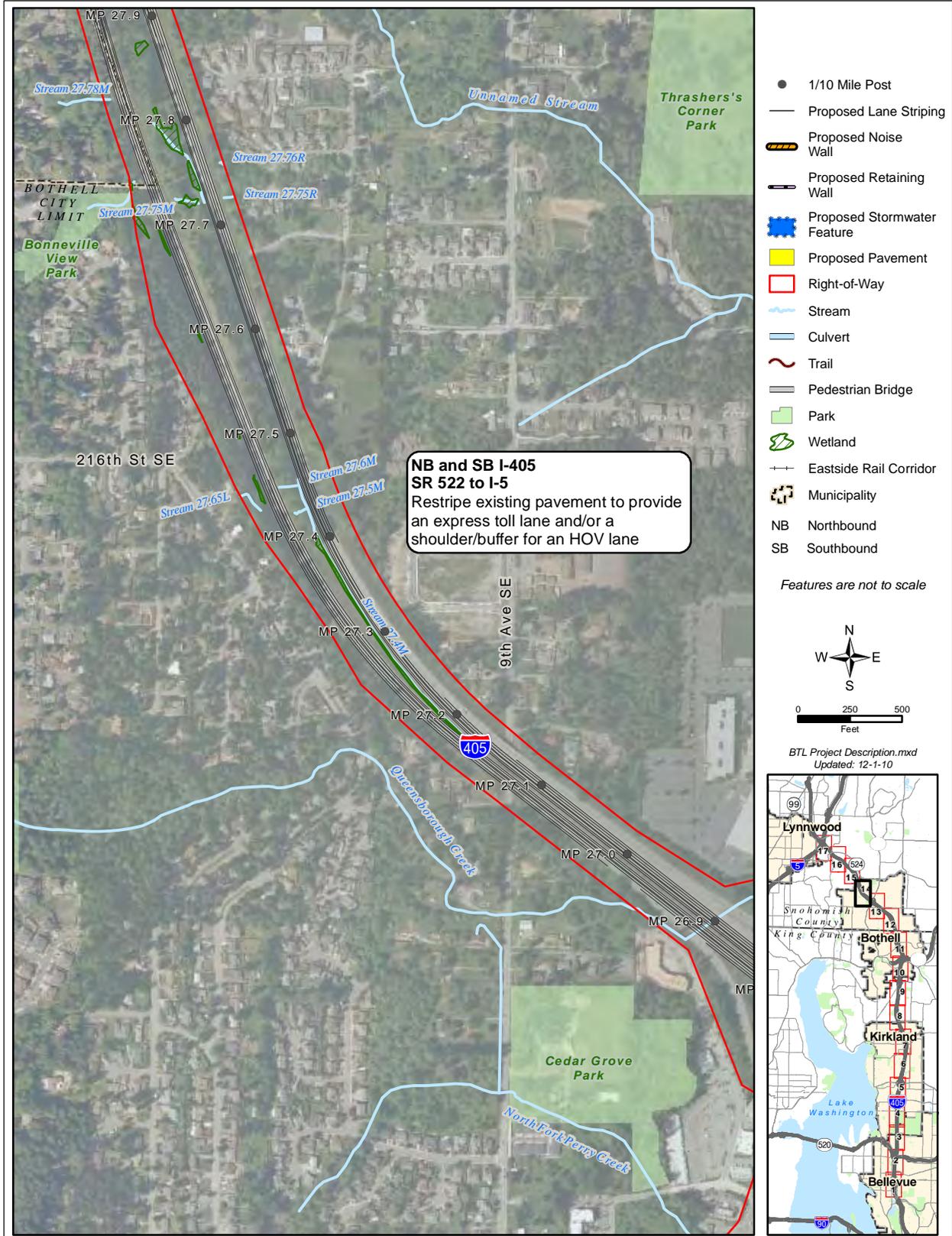


Exhibit 2: Project improvements – sheet 15 of 17

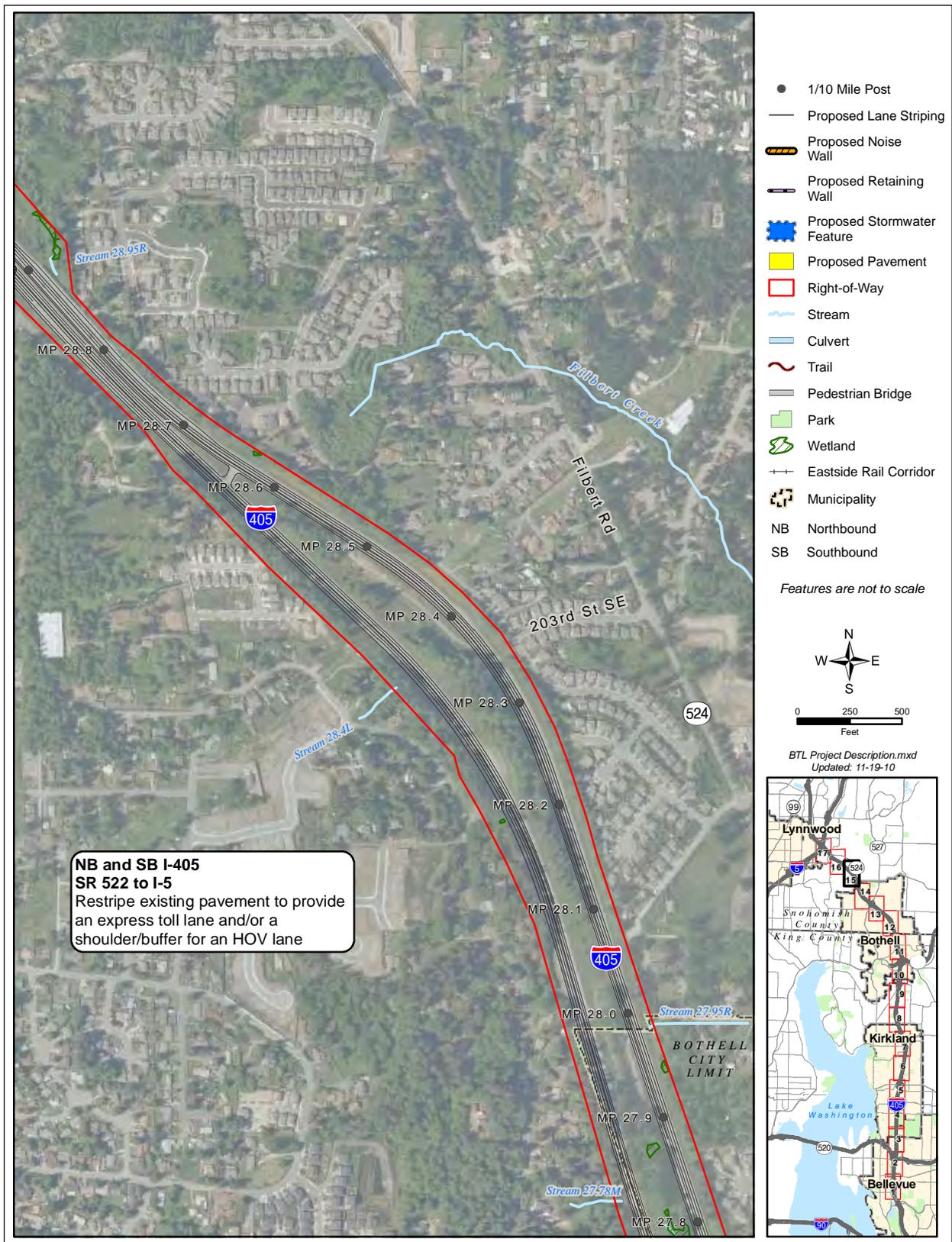


Exhibit 2: Project improvements – sheet 16 of 17

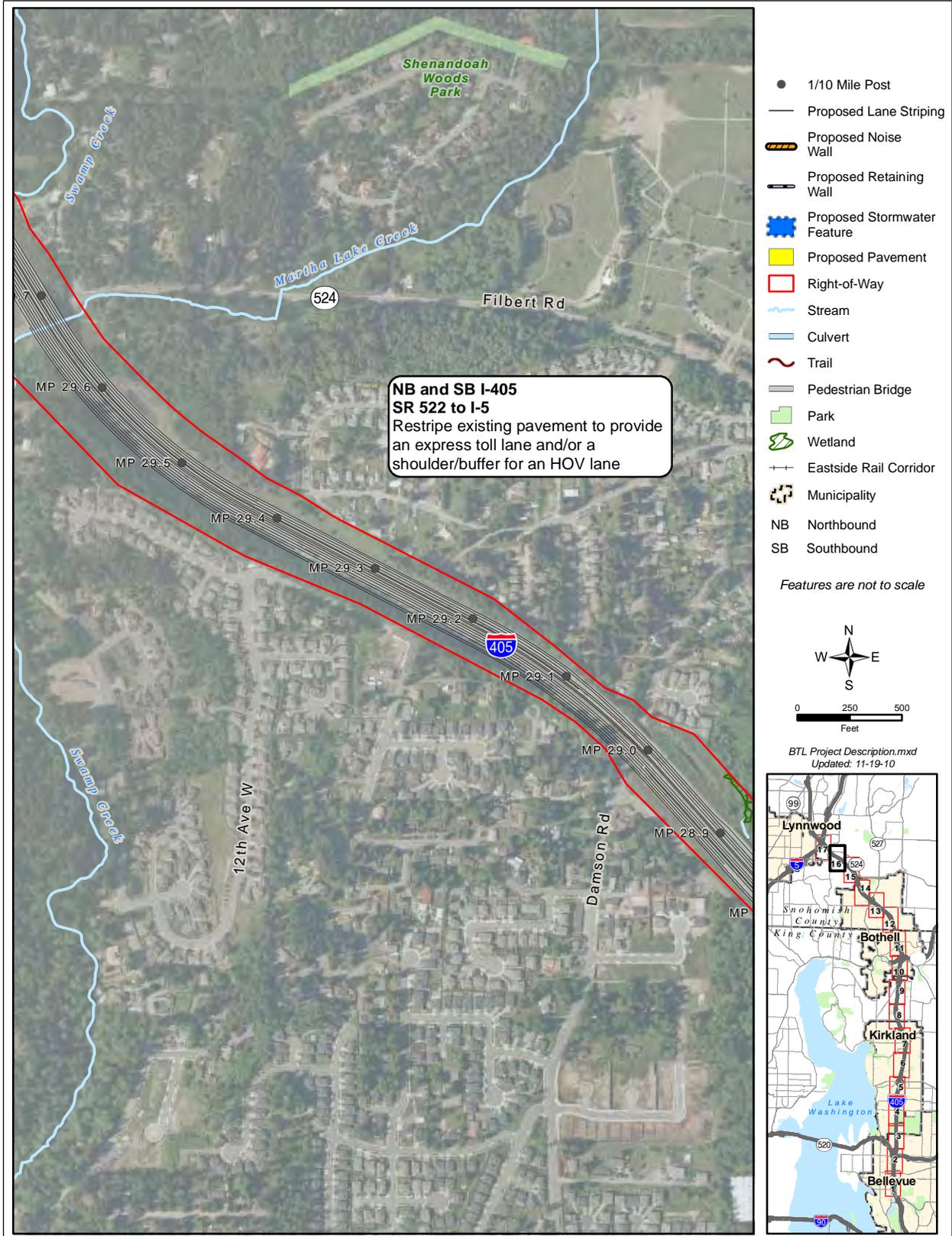
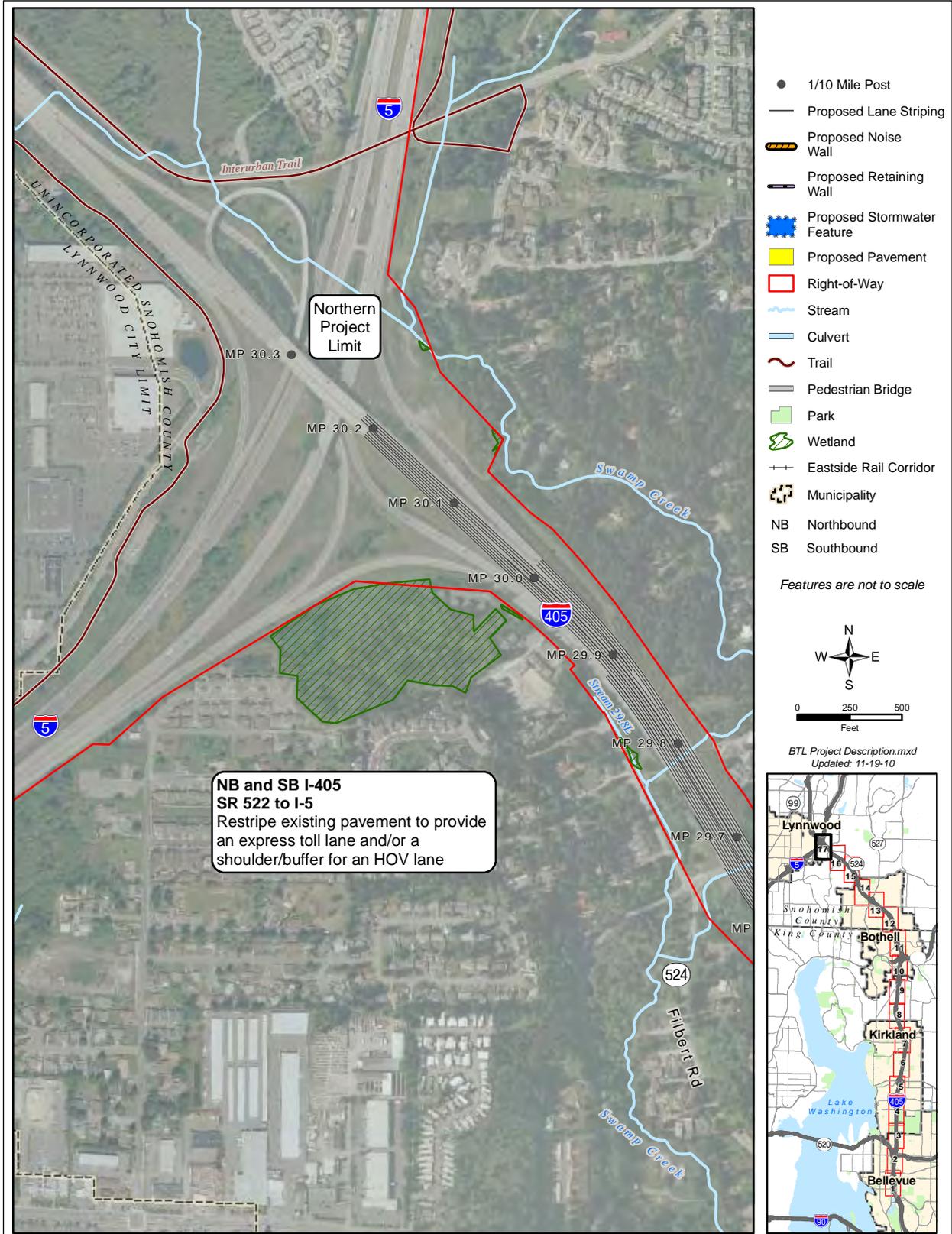
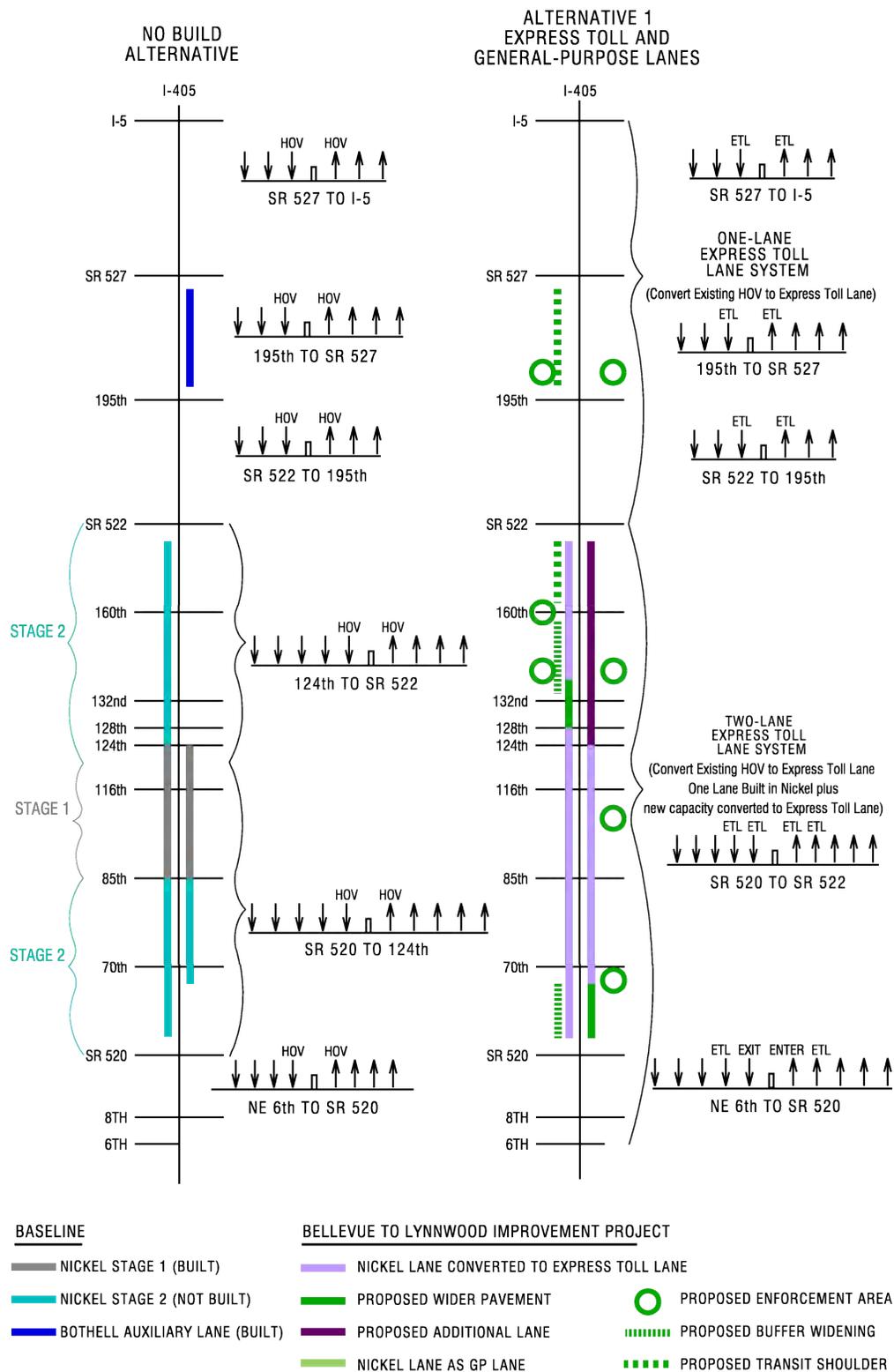


Exhibit 2: Project improvements – sheet 17 of 17





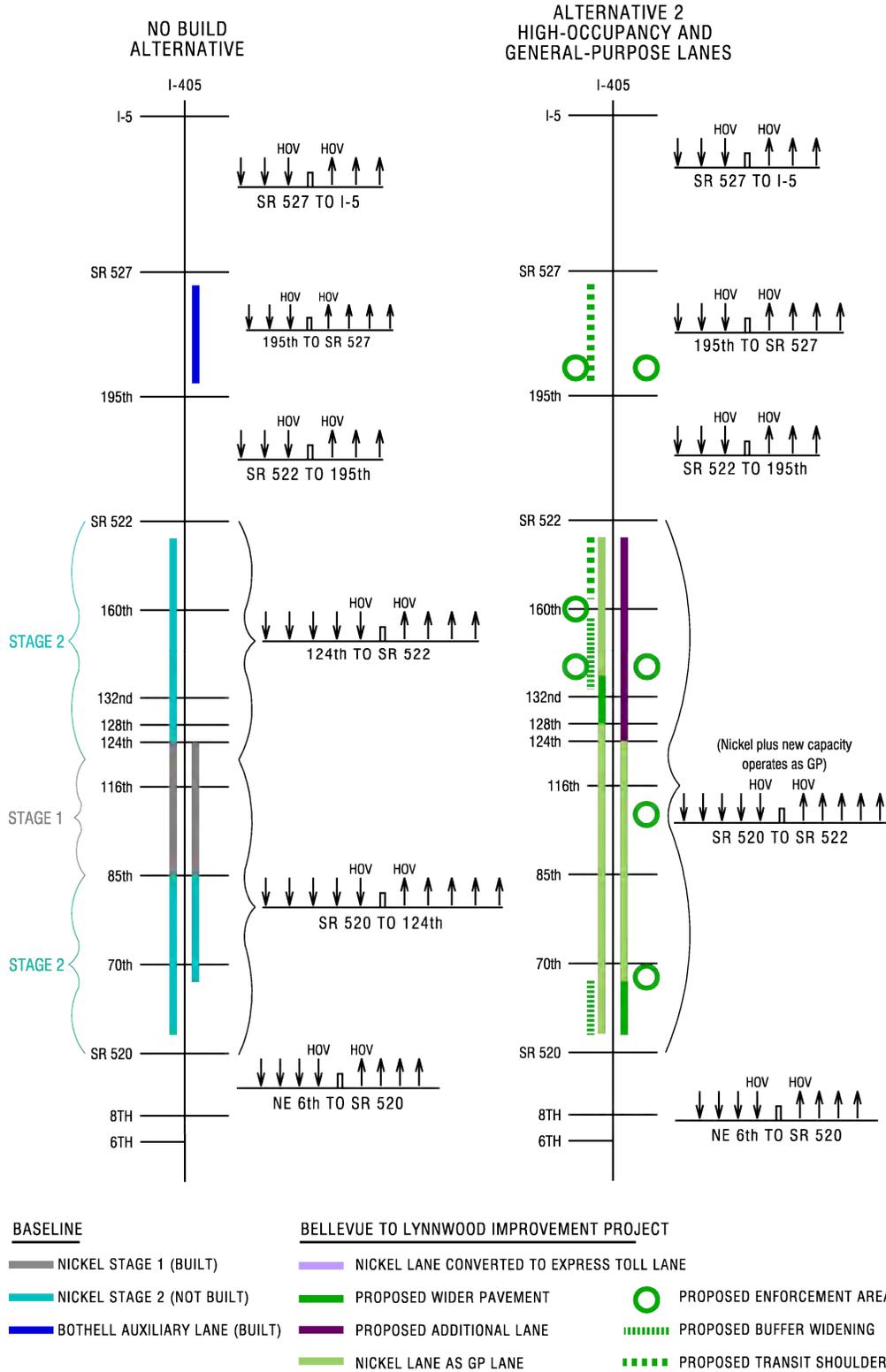
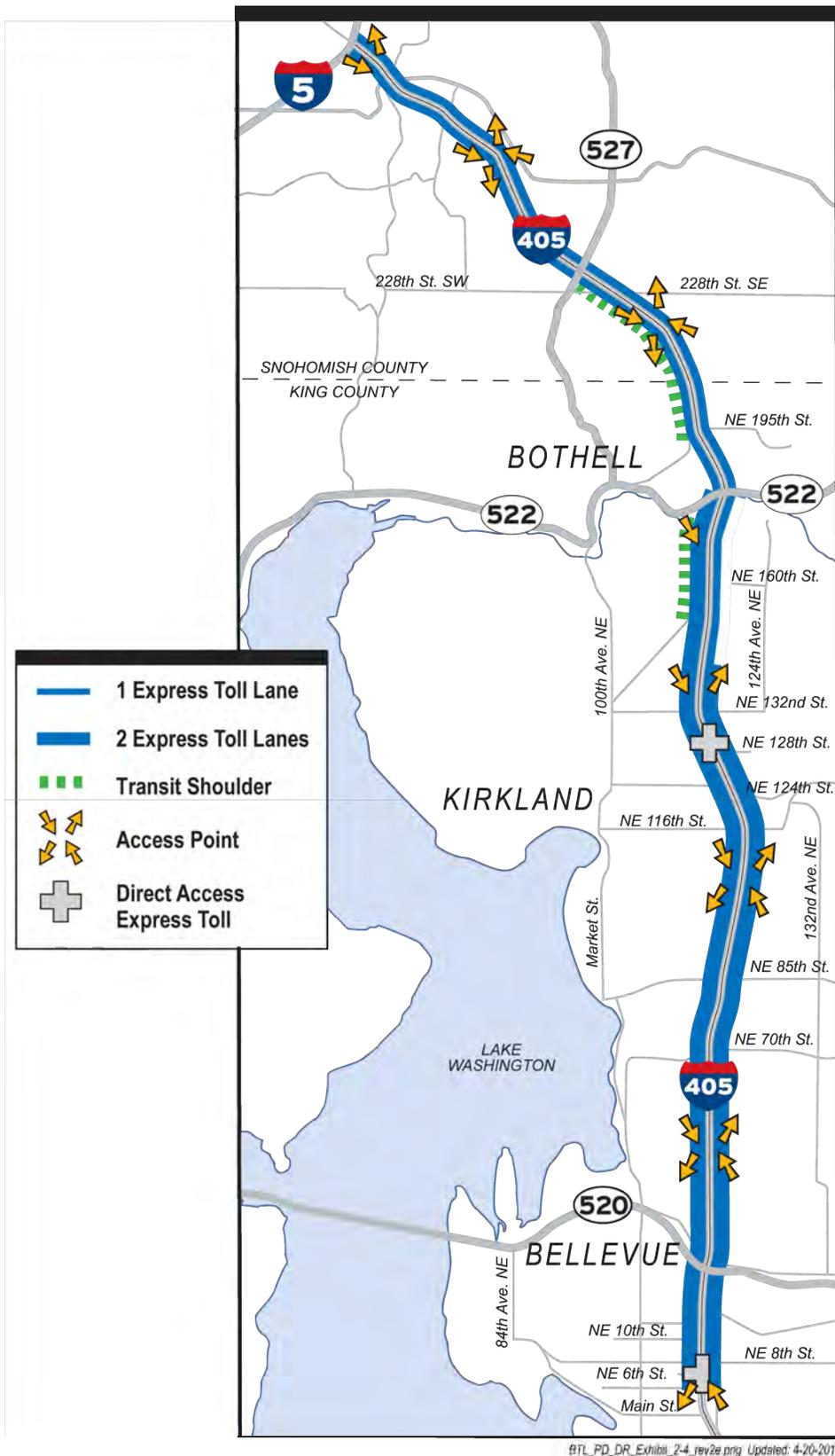


Exhibit 4: Express Toll Lanes access locations



BACKGROUND

Why are utilities important to consider?

The Washington State Department of Transportation's (WSDOT) *Environmental Procedures Manual* (EPM) defines utilities as follows: "Privately, publicly, or cooperatively owned lines, facilities, and systems for producing, transmitting, or distributing communications, cable television, electric power, light, heat, gas, oil, crude products, water, steam, waste, stormwater not connected with highway drainage, and other similar commodities" (WSDOT, 2010). According to the EPM, transportation projects may affect utilities by increasing demand beyond the capability of service providers or by disrupting service. Construction effects may include the need to relocate or adjust utility lines or facilities (WSDOT, 2010). In addition, the State Environmental Policy Act (SEPA) and its implementing regulations (WAC 197-11) require addressing the cost and effects on public services and utilities that may result from the project.

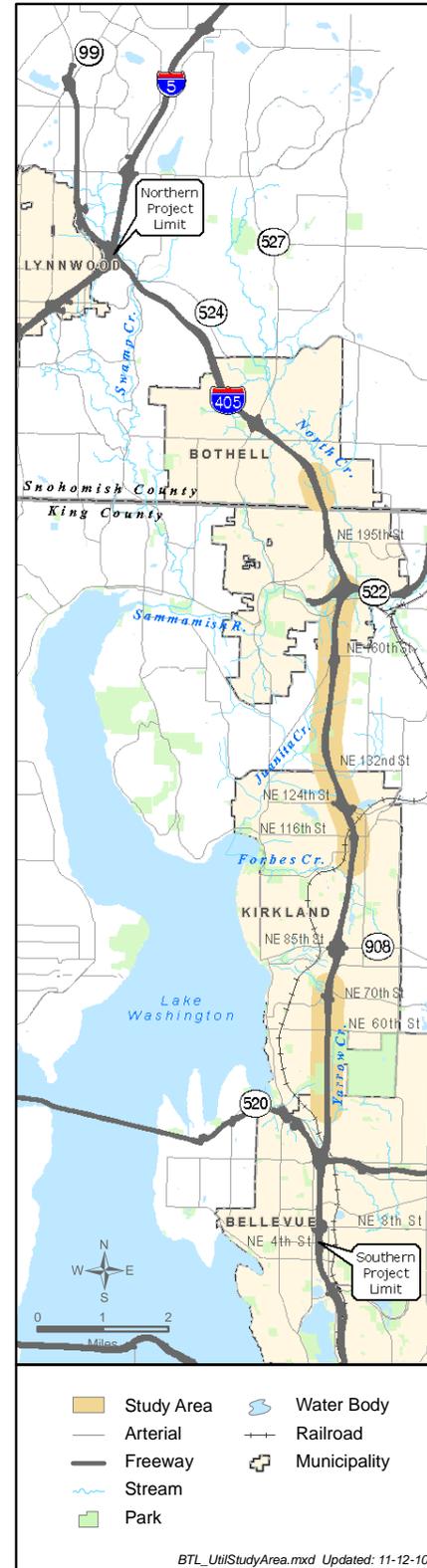
What studies were completed to support the utilities analyses?

Studies used as references for the utilities analyses include the following:

- *I-405 Corridor Program Utilities Expertise Report* (WSDOT, 2001)
- *Public Services and Utilities Discipline Report* prepared for the *I-405, SR 520 to SR 522 Kirkland Nickel Project Environmental Assessment* (WSDOT, 2005)
- *Social, Public Services, Utilities, and Environmental Justice Discipline Report* prepared for the *I-405, NE 8th Street to SR 520 Improvement Project Environmental Assessment* (WSDOT, 2007)

Preliminary engineering drawings and known utility locations were consulted. The I-405 Team reviewed these Bellevue to Lynnwood Improvement Project

Exhibit 5: Utility study area



discipline reports: Transportation; Social, Public Services, and Environmental Justice; and Land Use. A literature review of the capital facility and utility elements of the Bellevue, Kirkland, Bothell, Lynnwood, King County, and Snohomish County comprehensive plans was completed.

BASELINE CONDITIONS

City of Bellevue

Utility service in the City of Bellevue is provided by a combination of City-managed and non-City-managed providers. City-managed utilities include water, sewer, storm, and surface water. Examples of non-City-managed utilities are electricity, natural gas, cable, telephone, and personal wireless communications.

The City of Bellevue water utility purchases water from the Cascade Water Alliance, a regional water provider made up of eight jurisdictions. The Bellevue water system is comprised of 27 reservoirs and 616 miles of water mains (4-inch to 24-inch-diameter pipes) serving over 132,000 customers in Bellevue's service area (City of Bellevue, 2006). Water mains cross I-405 at the NE 8th and NE 12th Street Bridges, and along Northrup Way. Water mains also cross SR 520 east of the I-405/SR 520 interchange. The sewer utility collection system discharges into interceptors owned and operated by King County. The interceptors transport sewage to the Metro Wastewater South Treatment Plant for treatment and disposal. The City of Bellevue maintains 46 sewer pump stations and 519 miles of sewer pipe for a population of approximately 132,000 (City of Bellevue, 2006). City of Bellevue and King County sewer lines cross I-405 within the study area.

City of Bellevue storm and surface water utility functions include flood control, maintenance, and enhancement of surface water quality protection of sensitive areas. Specific locations of facilities within the study area are included in the *I-405, Bellevue to Lynnwood Improvement Project Water Resources Discipline Report* (Washington State Department of Transportation [WSDOT], 2011).

Puget Sound Energy (PSE) provides electric power and natural gas service to Bellevue residents and businesses. PSE is a private, investor-owned utility with the responsibility for providing service to over 750,000 customers in a nine-county service area. The system serving Bellevue is part of a larger service area called the Greater Bellevue Area, which is roughly an area located between Lake Washington and Lake Sammamish (City of Bellevue, 2006). The main natural gas distribution pipeline for the region is located near Lake Sammamish. PSE maintains an existing natural gas main located in an area east of I-405 within the study area (approximately 124th Avenue NE). PSE gas mains cross I-405 south of the SR 520 interchange and south of the NE 12th Street Bridge.

There is an existing 115-kilovolt (kV) PSE electrical power transmission line east of I-405 in the vicinity of 124th Avenue NE. Future planned power infrastructure investment by PSE includes an electric switch station in the southeast quadrant of the I-405 and SR 520 interchange. There are multiple underground and overhead PSE power lines crossing I-405 within the study area.

Bellevue customers are served by two telephone providers, Qwest and Verizon, and several cable providers. Telephone facilities include switching stations, trunk lines, and distribution lines. These lines may be buried or overhead, and they may be made of copper or fiber optic. In addition, several companies operate underground fiber optic telecommunication cables that cross I-405 at the NE 8th and NE 12th Street Bridges and Northup Way. Several cables also cross SR 520 at the eastern section of the interchange. Liquid petroleum distribution pipelines do not cross the project area.

City of Kirkland

The City of Kirkland provides drinking water service to all residents and businesses south of NE 116th Street. Those users north of NE 116th Street are served by the Northshore Utility District or the Woodinville Water District. Water is currently supplied to the City of Kirkland by Seattle Public Utilities (SPU). Kirkland is a member of the Cascade Water Alliance, which is planning and developing future water supply sources. The city's water system is primarily a gravity system consisting of 181 miles of water lines and 19.5 million gallons of storage capacity (City of Kirkland, 2004). The water pipeline infrastructure crosses I-405 in several locations: NE 60th Street, NE 85th Street, and NE 116th Street. There are also numerous locations where conveyance lines run parallel to I-405 right of way. The Northshore Utility District water lines do not cross I-405 in the District's Kirkland service area.

Similar to the drinking water service, sanitary sewer service is provided by the City of Kirkland south of NE 116th Street, with the Northshore Utility District servicing the north end of the city. Sewage collected by the city and the Northshore Utility District is treated at King County Metro's West Point and Renton Treatment Plants. The city's collection system consists of 35 wastewater collection basins, 88 miles of sewer pipe, nine lift stations and force mains, and approximately 2,200 manholes (City of Kirkland, 2004). The sewer pipeline infrastructure crosses I-405 in several locations: NE 70th Street, NE 80th Street, and NE 112th Street (City of Kirkland, 2004). There are also numerous locations where sanitary sewer lines run parallel to the I-405 right of way.

The surface water utility at the City of Kirkland includes maintenance of conveyance lines, detention, and water quality treatment systems within the right of way. City of Kirkland stormwater conveyance pipes cross I-405 in numerous places. Specific locations of these facilities within the study area are described in the *I-405, Bellevue to Lynnwood Improvement Project Water Resources Discipline Report* (WSDOT, 2011).

Electricity and natural gas service to Kirkland residents and businesses is provided by PSE. Kirkland is part of the Eastside and Northshore Electrical Subareas. Power is delivered on 230-kV transmission lines to substations in Redmond and Renton, where the voltage is transformed to 115 kV. Several distribution stations in Kirkland further transform the voltage to 12.5 kV, which is then distributed to customers (City of Kirkland, 2004). A double-circuit 230-kV Seattle City Light transmission line runs through the city of Kirkland near 124th Avenue NE (outside the study area). The

Northwest distribution pipeline and gas station are located east of the Kirkland city limits. Existing 4-inch to 8-inch-diameter gas lines in Kirkland, as well as currently anticipated extensions, will service Kirkland's growth (City of Kirkland, 2004).

Several companies provide telephone, cellular telecommunication, and cable services in the City of Kirkland. With two exceptions, there are no known telephone lines, cellular telecommunications facilities, or cable provider infrastructure located within the study area. The first exception refers to one identified existing fiber optic network that crosses I-405 immediately north of the NE 85th Street interchange. This existing fiber optic network is called the "Kirkland, Bellevue, University of Washington, and Lake Washington School District" fiber optic line (City of Kirkland, 2004). The second exception is Verizon communication lines along with PSE lines located along NE 116th Street and west of the East Side Rail Corridor. These lines are outside of the WSDOT limited access, but are located within project limits.

Liquid petroleum distribution pipelines do not cross the project area.

City of Bothell

The City of Bothell residents and businesses are served by four water purveyors: the City of Bothell; Alderwood Water and Wastewater District; Woodinville Sewer and Water District; and the Northshore Utility District. The City of Bothell's water system planning area also serves populations within unincorporated King County and in a small portion of unincorporated Snohomish County. The City and the Northshore Utility District purchase their water from the City of Seattle from the Tolt Pipeline. The populations in the westernmost and southernmost portions of Bothell are served by the Northshore Utility District. Almost all of Bothell that lies within Snohomish County is served by the Alderwood Water and Wastewater District (Alderwood Water). Alderwood Water receives its water from the City of Everett (City of Bothell, 2004).

There are several water main crossings of I-405 in the study area. A Northshore Utility District water main crosses I-405 south of the NE 160th Street interchange. The Bothell water system crosses I-405 along East Riverside Drive, south of the I-405/SR 522 interchange, and there are three crossings of I-405 in the North Creek Business Park area. The Alderwood Water system serves the areas north of the county boundary line. According to the City of Bothell's 2004 Capital Facilities Plan, Alderwood Water's main lines cross I-405 in six locations.

Sanitary sewage collection in the City of Bothell is handled by the same purveyors that handle water: the City of Bothell; Alderwood Water and Wastewater District; Woodinville Sewer and Water District; and the Northshore Utility District. Sewage treatment is provided by King County's West Point Treatment Plant in Seattle, but flows can also be diverted to the Renton Treatment Plant.

The Northshore Utility District does not have any sanitary sewer main line that cross I-405 in the study area. The city has three crossings between the SR 522 interchange and the county boundary line. The conveyance tunnels for the Brightwater Regional Wastewater Treatment Plant cross I-405 immediately north of the NE 195th Street interchange. Alderwood Water and Wastewater District has two main line crossings of I-405 in the study area at 228th Street SE, and at 9th Avenue SE.

Surface water management for the City of Bothell includes maintenance of the large, open-channel drainage system (over 50 percent of the city) as well as piped conveyance lines, detention, and water quality treatment systems within the right of way (City of Bothell, 2004). More detail about the locations of these facilities within the study area is included in the *I-405, Bellevue to Lynnwood Improvement Project Water Resources Discipline Report* (WSDOT, 2011).

Electricity is provided by PSE in the King County portions of Bothell, and by Snohomish County Public Utility District for portions of Bothell located in Snohomish County. There are two 115-kV crossings of I-405 by PSE lines: south of the NE 160th Street interchange; and at the NE 195th Street interchange. In the future, PSE plans a 230-kV transmission line crossing the I-405 main line in the proximity of the existing 115-kV line. Snohomish County Public Utility District has two transmission lines that cross I-405 (City of Bothell, 2004): one 115-kV line crossing east-west at approximately 212th Street SE and the other line running north-south along 9th Avenue SE.

Natural gas lines, liquid petroleum pipelines, cable and phone line infrastructure, or facilities are not issues within the project area.

City of Lynnwood

The City of Lynnwood operates its water utility, providing service to residential, commercial, and industrial users within the city. The potable water is from the headwaters of the Sultan River, and is purchased from the Alderwood Water District. The City of Lynnwood water service area includes all of the area located within the corporate city limits, which now totals approximately 4,900 acres (City of Lynnwood, 2004). There are no crossings of I-405 by City of Lynnwood water main lines within the project area.

The City of Lynnwood is also responsible for collection, treatment, and disposal of sanitary sewer service. The sanitary sewer collection system discharges to the City-owned wastewater treatment plant, which is located on the shores of Puget Sound and is surrounded by the City of Edmonds (City of Lynnwood, 2004). There are no crossings of I-405 by the City of Lynnwood sewer main line within the project area.

Surface water runoff management in the City of Lynnwood is comprised of several drainage systems throughout the city. The entire drainage system has approximately 4,200 catch basins and manholes; 130,000 feet of storm lines; 48,000 feet of ditches;

20 detention ponds; underground detention tanks; and several miles of streams (City of Lynnwood, 2004).

The Snohomish County Public Utilities District provides electric power service in Lynnwood. Power is distributed by 115-kV lines from the Bonneville Power Administration's SnoKing station before it is transformed down to 12.5 kV and distributed throughout the city (City of Lynnwood, 2004). No electrical infrastructure facilities are located within the Lynnwood portion of the project area.

PSE provides natural gas service to Lynnwood. Natural gas is supplied to the Lynnwood area through two supply mains owned and operated by the Williams Company. Together, these supply mains are known as the North Seattle Lateral (City of Lynnwood, 2004). No natural gas lines are in close proximity to the project area.

Liquid petroleum pipelines, cable, and phone line infrastructure and facilities providing service to the City of Lynnwood do not cross the project area.

King County

Residents of unincorporated King County living near the study area receive water and sanitary sewer service from the Northshore Utility District. The Northshore Utility District is a special purpose water and sewer utility located at the northeast end of Lake Washington in King County. The district encompasses more than 11,000 acres in parts of Kenmore, Bothell, Juanita, Totem Lake, Kingsgate, Finn Hill, and Kirkland and serves more than 60,000 people (Northshore Utility District, 2006). Within the study area, a 12-inch-diameter water line crosses the study area near the NE 160th Street interchange with I-405. Two Tolt River water pipe lines (54-inch and 60-inch-diameter) owned by Seattle Public Utilities cross I-405 at NE 160th Street. There are six sanitary sewer conveyance pipelines that either cross or are within the WSDOT right of way.

King County owns, maintains, and operates the storm and surface water management facilities within its right of way. An inventory of the current stormwater facilities is included in the *I-405, Bellevue to Lynnwood Improvement Project Water Resources Discipline Report* (WSDOT, 2011).

Franchise utility providers in the unincorporated King County portion of the study area are similar to those in the adjacent jurisdictions described in this document. There are no known franchise utility facilities, infrastructure, or service lines within the project area.

Snohomish County

Snohomish County populations are served by the local cities or public water districts for water supply and distribution. The primary source of water is the Spada Lake/Lake Chaplain complex in the Sultan River basin. The water supply system and filtration is operated by the City of Everett, which then resells the finished water to the cities or

districts for distribution. Alderwood Water and Wastewater District provides service to the portion of Snohomish County located within the study area (Snohomish County, 2006). Several Alderwood Water and Wastewater District lines cross I-405 in the Swamp Creek area between SR 524 and I-5.

Wastewater collection and treatment is a decentralized public service in Snohomish County which relies on the local cities or wastewater districts to provide those functions (Snohomish County, 2006). Alderwood Water and Wastewater District provides service to the portion of Snohomish County located within the study area; however, there are no crossings of I-405 by wastewater conveyance main lines within the project area.

Snohomish County owns, maintains, and operates the storm and surface water management facilities within its right of way. An inventory of the current stormwater facilities is included in the *I-405, Bellevue to Lynnwood Improvement Project Water Resources Discipline Report* (WSDOT, 2011).

Snohomish County Public Utility District provides electric power to customers in Snohomish County. There are no major 115-kV transmission lines within the project area. Natural gas lines, liquid petroleum pipelines, cable and phone line infrastructure, and facilities providing service to Snohomish County do not cross the project area.

PROJECT EFFECTS

How will utilities be affected during construction?

In general, utilities are most affected by a transportation improvement project during construction. Pile driving, excavation, fill placement, and other earth disturbing activities may affect underground utilities. Special construction techniques, pipe protection, or relocation could be required if utility conflicts are identified during planning and design of the project. These activities could cause short-term disruption in service. The outages could cause temporary inconveniences to customers. Overhead lines and poles could interfere with the improvements to ramps, bridges, roadway widening, and noise walls. The utility franchise holder permit agreements stipulate that potential utility conflicts within the WSDOT right of way are to be relocated at the utility provider's expense.

Overall, the footprint of additional impervious surface is the same for both build alternatives in the project area; therefore, the potential utility conflicts do not differ. Exhibit 6 shows the utility conflicts identified as of December 2010 by the I-405 design team. The numbers shown on Exhibit 6 relate to the identification number column of Exhibit 7. The table, compiled by the I-405 design team, provides details about utility disruptions and conflicts. A more detailed spreadsheet of confirmed and potential utility conflicts is provided in Appendix A. Probable utility conflicts will be resolved typically during construction by relocation or protection in place. In some cases, relocation prior to construction may occur.

How will an improved transportation system affect utilities?

Build Alternative 1 will require additional power usage due to the electronic equipment, signage, and lighting needed for the express toll lane operations. The amount of additional electricity will not be a drain on the regional power supply. In general, it is anticipated that the build alternatives will have little to no effect on utilities in the project area once construction is completed.

Were potential cumulative effects for utilities considered?

The team did not evaluate cumulative effects for this technical memorandum. A report of cumulative effects is not needed for every discipline studied for NEPA and SEPA documentation. The disciplines that were studied for cumulative effects are Air Quality, Surface Water and Water Quality, Fisheries and Aquatic Habitat, and Wetlands. The cumulative effects for these disciplines are presented in the *I-405, Bellevue to Lynnwood Improvement Project Cumulative Effects Analysis Technical Memorandum* (WSDOT, 2011).

Exhibit 6: Confirmed utility conflicts

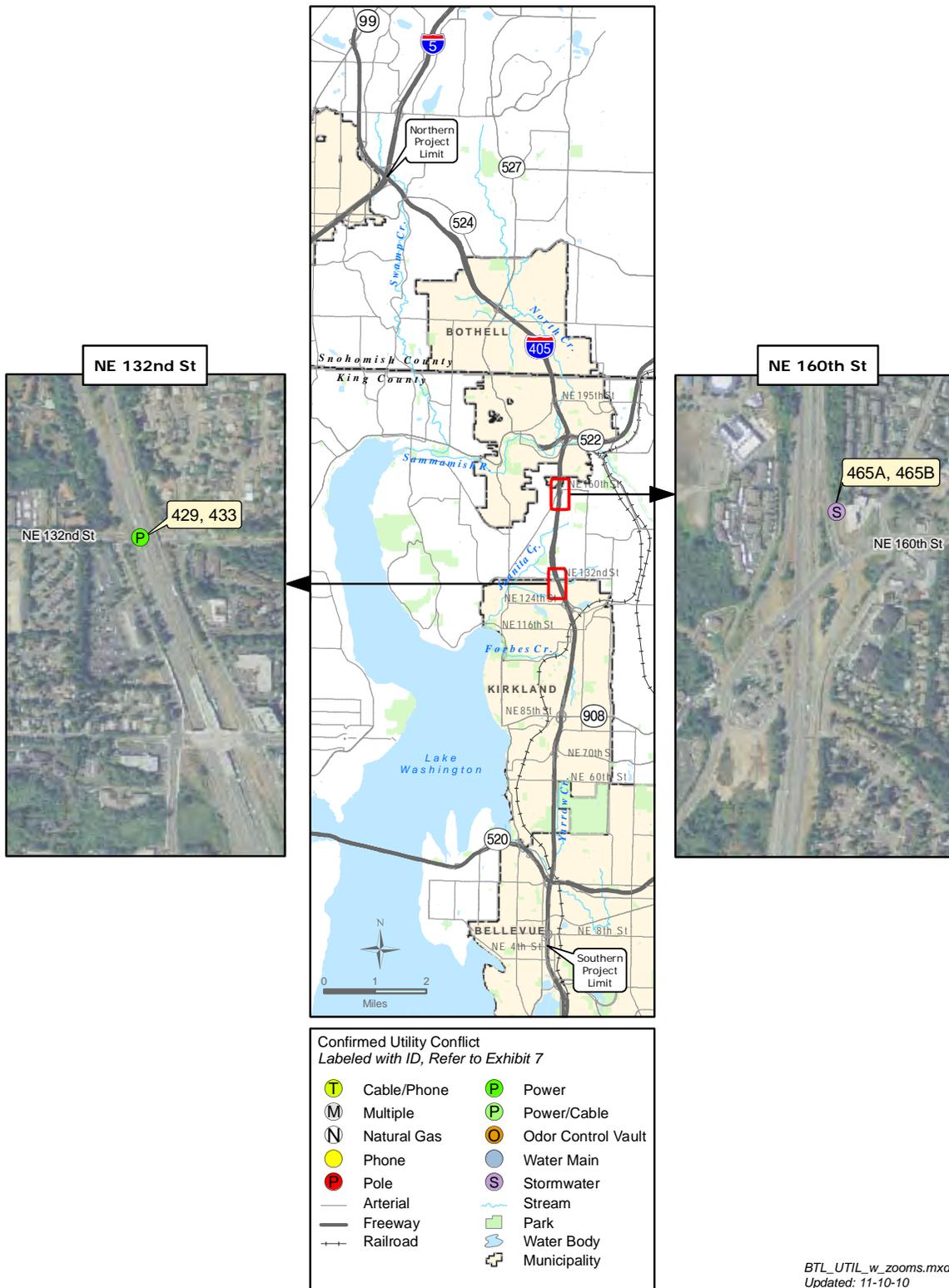


Exhibit 7: Summary of utility conflicts

Utility Type	Utility Owner	Identification Number	Description
Electric Power	PSE	429	Overhead 12.5 kV powerline crossing I-405 at 132nd, Milepost (MP) 20.89
Electric Power	PSE	433	Overhead 12.5 kV powerline crossing I-405 at 132nd, MP 20.90
Storm Drain	Pride Apt.	465A	2 storm drains in right-of-way, MP 22.74 to 22.79
Storm Drain	Pride Apt.	465B	10' section of a 15" storm drain in right-of-way, MP 22.92

Source: Bruce Dibert, WSDOT, 2010

How would the Build and No Build Alternatives cause indirect effects?

Indirect effects are those that are caused by the proposed project; but they occur later in time or are distant from the project. No indirect effects on utilities are anticipated for the build alternatives or the No Build Alternative.

What effects will occur under the No Build Alternative?

The No Build Alternative assumes the permitted project that resulted from the Kirkland Nickel Project is constructed. The No Build Alternative assumes that no new improvements would be made beyond those that are part of the Kirkland Nickel Project, and does not include any improvements that would increase roadway capacity, reduce congestion, or improve safety on I-405. Only routine road maintenance, repair, and minor safety improvements would take place. No effects to utilities are anticipated, because no construction or changed operation of the project would occur.

MEASURES TO AVOID OR MINIMIZE EFFECTS

What measures will be taken to mitigate effects to utilities during construction?

WSDOT will notify and coordinate with fire departments if water line relocations are required that could temporarily cause a disruption in service or reduce flow. WSDOT will establish alternative sources of water supply in case of both accidental and/or unanticipated breaks in service.

During final design and prior to construction, WSDOT will closely coordinate with utility providers to confirm the locations and depths of utilities and to determine if lines can be protected during construction or if they will require relocation. Potential utility conflicts within the WSDOT right of way will be relocated at the utility provider's expense.

The Design Builder will coordinate scheduling with utility providers to minimize effects of utility relocations and provide them with ample time to schedule equipment and construction crews in advance of project construction.

The Design Builder will provide clear signage alerting workers to the presence of overhead wires, as necessary, to help prevent accidental interference or damage.

What measures will be taken to mitigate effects to utilities during operation?

No measures are needed to mitigate effects to utilities during operation.

UNAVOIDABLE ADVERSE EFFECTS

Will the project cause any substantial adverse effects on utilities that cannot be avoided?

The project will not cause any unavoidable adverse effects on utilities.

ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
EPM	<i>Environmental Procedures Manual</i> (WSDOT)
FHWA	Federal Highway Administration
kV	kilovolt
GIS	geographic information system
HOV	high-occupancy vehicle
PSE	Puget Sound Energy
SEPA	State Environmental Policy Act
SPU	Seattle Public Utilities
TDM	transportation demand management
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation

GLOSSARY

Term	Meaning
acquisition	The purchasing of property, residences, or businesses for right of way necessary to construct or support a project.
bus rapid transit (BRT)	An express, or limited-stop, rubber-tired transit system operating predominately in roadway managed lanes such as high-occupancy vehicle (HOV) lanes.
duration	The length of time of an event.
effect	Something brought about by a cause or agent; a result. This may include ecological, aesthetic, historic, cultural, economic, social, health, or other effects, whether direct, indirect, or cumulative. Effects may include those resulting from actions that may have both beneficial and detrimental effects.
electrical distribution line	A line that carries high-voltage electricity and is used to distribute power to end-use customers.
emergency vehicle	Any vehicle used to respond to an incident or accident. Examples include police, fire, ambulance, maintenance vehicles, and incident response tow trucks.
energized	The condition when a utility system is fully operational and delivering its intended commodity.
enforcement area	A paved 14-foot lane and shoulder extending approximately 1300 feet along the median side of the freeway and reserved as a refuge for monitoring and enforcement of restrictions on managed lanes use by the State Patrol.
environmental impact statement (EIS)	A document prepared under the National Environmental Policy Act and/or the State Environmental Policy Act that identifies and analyzes, in detail, environmental effects of a proposed action. As a tool for decision-making, the EIS describes positive and negative effects and examines reasonable alternatives for an undertaking.
express toll lane	A limited-access freeway lane that is actively managed through a variable toll system to regulate its use and thereby maintain express travel speeds and reliability. Toll prices rise or fall in real time as the lane approaches capacity or becomes less used. This ensures that traffic in the express toll lane remains flowing at express travel speeds of 45 to 60 miles per hour. Transit and carpo ols do not pay a toll. See also: "managed lane."
franchise	A legal agreement between WSDOT and a municipality or a service provider describing how a utility will work within WSDOT's right of way.
general-purpose lane	A freeway or arterial lane available for use by all traffic.
geographic information system (GIS)	A digital computer mapping system that can overlay a wide variety of data such as land use, utilities, and vegetative cover, and provide a spatial analysis.

Term	Meaning
High-occupancy vehicle (HOV)	High-occupancy vehicle is a special designation for a bus, carpool, or vanpool provided as an encouragement to increase ride-sharing. Specially designated HOV lanes and parking are among the incentives for persons to pool trips, use fewer vehicles, and make the transportation system more efficient. HOV lanes are generally inside (left-side) lanes, and are identified by signs and a diamond on the pavement. Currently, two or more (2+) occupants are required to use the I-405 HOV lanes. Motorcycles are allowed to use freeway HOV lanes as well.
Metro Transit mitigation	The King County public transit agency. An effort to: (1) avoid the impact altogether by not taking a certain action or parts of an action; (2) minimize the impact by limiting the magnitude of the action and its implementation, by using technology or by taking affirmative steps; (3) rectify the impact by repairing, rehabilitating, or restoring the affected environment; (4) reduce or eliminate the impact over time by preservation and maintenance operations; (5) compensate for the impact by replacing, enhancing or providing substitute resources or environments; and/or (6) monitor the impact and take appropriate corrective measures.
National Environmental Policy Act (NEPA)	Federal legislation adopted in 1970 that established a national environmental policy intentionally focused on federal activities and the desire for a sustainable environment balanced with other essential needs of present and future generations. NEPA also established federal agency responsibility and created the basic framework for integrating environmental considerations into federal decision-making. The fundamentals of the NEPA decision-making process include: an interdisciplinary approach in planning and decision-making for actions that affect the human environment, interagency coordination, consideration of alternatives, examination of potential environmental consequences and mitigation, documentation of the analysis, and making the information available to the public for comment prior to implementation.
park-and-ride	A facility where individuals can park their vehicle for the day and access public transportation or rideshare for the major portion of their trip.
purveyor	A person or company that provides a service such as electricity, water, sewer, etc.
Record of Decision (ROD)	A document prepared by the federal lead agency that presents the basis for the decision reached after completion of the Final EIS. The ROD summarizes any mitigation measures that will be incorporated into the project, and documents any required Section 4(f) or other approvals.
service boundary	The area that a specific service (e.g., police, fire, transit) or utility (e.g., gas, electricity) serves.

Term	Meaning
Sound Move	The Central Puget Sound Regional Transit Authority (Sound Transit) ten-year (1996 to 2006) regional transit system plan for implementing commuter rail, light rail, and regional express bus service and HOV facilities in parts of King, Pierce, and Snohomish counties.
State Environmental Policy Act (SEPA)	Washington State legislation adopted in 1974, that establishes an environmental review process for all development proposals and major planning studies prior to taking any action. SEPA includes early coordination to identify and mitigate any substantial issues or significant effects that may result from a project or study.
stormwater	The portion of precipitation that does not naturally percolate into the ground or evaporate, but flows overland, in channels, or in pipes into a defined surface water channel or a constructed stormwater facility.
study area	The area specifically evaluated for environmental effects within ¼ mile of the project corridor.
electrical transmission line	The cable carrying electricity from producer to consumer. Transmission lines are identified by voltages of 115 kilovolt, and above.

REFERENCES

GIS data sources

Exhibit 5

HDR. 2010. Study Area Boundary.

Exhibit 6

WSDOT (Washington State Department of Transportation). 2010. I-405 Staff; Utility Locations, Project Limits.

Base Data

All GIS exhibits contain one or more of the following as base layers:

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2005. Trails in King County. Data updated by I-405 staff to match fieldwork, 2002 LiDAR and orthorectified aerial photography.

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- WSDOT (Washington State Department of Transportation). 2011. I-405 Bellevue to Lynnwood Improvement Project Transportation Discipline Report. January 2011.
- WSDOT (Washington State Department of Transportation). 2011. I-405 Bellevue to Lynnwood Improvement Project Social, Public Services, and Environmental Justice Discipline Report. January 2011.
- WSDOT (Washington State Department of Transportation). 2011. I-405 Bellevue to Lynnwood Improvement Project Land Use Discipline Report. January 2011.

APPENDIX A UTILITY TRACKING SUMMARY FOR PARTIAL CONFLICT AND CONFLICT CATEGORIES

I-405, Bellevue to Lynnwood Improvement Project - UI Tracking Summary for PC and C conflict categories

October 14, 2010 By: Bruce Dibert

UI	PERMIT FRANCH	ESMT	CONFLICT TYPE	POTHOLE DATA PROVIDED	PROFILE WITH PERMIT	UI PROFILE PREPARED	CONFLICT CONFD	DESCRIPTION	UTILITY OWNER	REMARKS	ESTIMATE D COST	UTILITY CONTACTED		UTILITY OWNER		CAT 1	CAT 2	PAYEE	SCHEDULE ISSUE NOC	SCHEDULE ISSUE MOU	RELOCATE BEFORE AWARD
												YES	NO	PUBLIC	PRIVATE						
KIRKLAND																					
CONFIRMED CONFLICTS																					
429	5106		C	*	*			OH 12.5kV crossing 405 at 132nd. MP 20.89	PSE												
433	7-0598		C	*	*			OH 12.5kV crossing 405 at 132nd. MP 20.90	PSE												
465A	16935		C					2 ST drains in ROW. MP 22.74 to 22.79	Pride Apt.												
465B	16932		C					10' section of 15" ST in ROW. MP 22.92	Pride Apt.												
POTENTIAL CONFLICTS																					
389	17585		PC		YES			UG cable in 116th	All Stream												
371	17234		PC		YES			ST drain into ROW. MP 19.39 NE 116th St	CamWest Dev												
313	10109		PC					2-8" WM crossing 405. MP 16.85 NE 80th St	City of Kirkland				X								
390	5007		PC					8" WM at 116th & 124th. MP 19.84	City of Kirkland				X								
407	3397		PC					8" WM in ROW between 116th & 124th	City of Kirkland				X								
321A& B	7-0307		PC		YES			8" SS crossing 405. MP 17.35 South of 70th	City of Kirkland				X								
332B			PC					12" SS crossing 405. MP 17.82 NE 80th St	City of Kirkland				X								
308			PC					Water main. MP 16.84 NE 60th St	City of Kirkland	Not shown on plan			X								
449	7-0500		PC		YES	YES		60" WM Tolt pipeline. MP 22.48 NE 160th St	SPU	DB will design around it			X					NA	NA	NA	NA
450	7-0532		PC		YES	YES		60" WM Tolt pipeline. MP 22.49 NE 160th St	SPU	DB will design around it			X					NA	NA	NA	NA
301	N2461		PC					UG fiber crossing 405. MP 16.45 NE 53rd St	Comcast				X	X							
338	N2454		PC	*	*			OH TV cable. MP 17.85 NE 80th St	Comcast				X								
431	16896		PC	YES	*			2-4" PVC ducts crossing in Totem Lake Blvd and then OH-attached to underside of bridge	Comcast				X								
339	16590		PC	*	*			FOC crossing on poles NE 80th st	MCI Metro				X								
430	7-0535		PC		YES	YES		12" SS at 132nd St. MP 20.90	NUD				X								
438	4078		PC		YES	YES		15" SS at NE 132th. MP 20.77 -20.92	NUD				X								
444	7-0456		PC					12" SS crossing 405. MP 21.93 NE 145th St	NUD				X								
464			PC		YES			8" WM from 128th to 132nd. MP 20.90	NUD				X								
447	12613		PC					16" WM crossing 405. MP 22.46 NE 160th St	NUD				X								
307	18192		PC	*	YES			12" ST under barrier wall. MP 16.49 NE 53rd St	Northwest Univ.				X								
428	N2119		PC					8" SS in 116th Wey NE. MP 20.82 to 20.90	KC WLRD				X								
465A	16935		PC					2 ST drains in ROW. MP 22.74 to 22.79	Pride Apt.				X								
465B	16932		PC					10' section of 15" ST in ROW. MP 22.92	Pride Apt.				X								
303			PC					4" gas main at NE 53rd St. MP 16.45	PSE				X								
309	5109		PC					UG 12.5kV cable. MP 16.84 NE 60th St	PSE				X								
310	11622		PC					12.5kV crossing I-405. MP 16.84 NE 60th St	PSE				X								
340	14357		PC					1/2" OH FOC. MP 17.85 NE 80th St	PSE				X								
342	5106		PC					115 & 12.5kV OH @NE 80th St. MP 17.86	PSE				X								
424	11653		PC					2" gas line to 4" line. MP 20.46 NE 124th St	PSE				X								
429	5106		PC	*	*			OH 12.5kV crossing 405 at 132nd. MP 20.89	PSE				X								
432	18425		PC	YES	YES	YES		12" gas crossing 405 at 132nd. MP 20.90	PSE				X								
433	7-0598		PC	*	*			OH 12.5kV crossing 405 at 132nd. MP 20.90	PSE				X								
434	7-0602		PC	YES		YES		4" gas in 132nd. MP 20.90	PSE				X								
436	5106		PC					OH power crossing 405 at 132nd. MP 20.91	PSE				X								
454	3928		PC					UG 12.5kV east of 116th Ave NE. MP 22.51	PSE				X								
632			PC					12.5kV crossing 405 at NE 140th. MP 21.40	PSE				X								
633			PC					4" gas crossing 405 at NE 60th. MP 16.34	PSE				X								
302A	7-0574		PC					UG 12.5kV crossing 405 at 53rd. MP 16.45	PSE				X								
302B	7-0610		PC					UG 12.5kV crossing 405 at 53rd. MP 16.45	PSE				X								
442	N2594		PC					12" ST overflow in ROW. MP 21.12 NE 132nd St	KC WLR				X								
443	14157		PC					Juanita Creek flow control fac. MP 21.80 NE 145th St	KC WLR				X								
445	10674		PC					Storm inlet in ROW. MP 21.94 NE 145th St	KC WLR				X								
304			PC					UG telephone cables. MP 16.45 NE 53rd St	Unknown	Comcast & All Stream checking											

I-405, Bellevue to Lynnwood Improvement Project - UI Tracking Summary for PC and C conflict categories

October 14, 2010 By: Bruce Diberf

UI	PERMIT FRANCH	ESMT	CONFLICT TYPE	POTHOLE DATA PROVIDED	PROFILE WITH PERMIT	UI PROFILE PREPARED	CONFLICT CONFD	DESCRIPTION	UTILITY OWNER	REMARKS	ESTIMATE D COST	UTILITY CONTACTED		UTILITY OWNER		CAT 1	CAT 2	PAYEE	SCHEDULE ISSUE NOC	SCHEDULE ISSUE MOU	RELOCATE BEFORE AWARD	
												YES	NO	PUBLIC	PRIVATE							
305			PC					UG FOC in abandoned water pipe. MP 16.45 NE 53rd St	City of Kirkland					X								
341	7-0965		PC	YES	YES	YES		24- 3.5" conduits under 405. MP 17.85 NE 80th St	Verizon NW						X							
405	N1881		PC					1 BT(4OH lines, 2 UG lines from 116th to 124th. MP 20.02	Verizon NW						X							
437	SUA582		PC	YES		YES		4-6" ducts w/ cables in 132nd. MP 20.91	Verizon NW	With fish passage work					X							
453			PC	YES				6-4" ducts crossing in 2 sections. MP 22.49V NE 160th St	Verizon NW						X							
415	17403		PC	Requested 4/5/07	YES			1-4" PVC conduit from 120th Ave NE to On Ramp SB 405, south of NE 124th St.	Integra/Electric Lightwave	Proposed detention pond and drainage ditches may be in conflict.					X							
BOTHELL																						
POTENTIAL CONFLICTS																						
514	17607		PC	Requested 4/2/07	YES			12" WM at 223rd Place SE MP 25.79	Aldenwood Water					X								
500	12773		PC					8" SS at 195th St MP 24.53	City of Bothell					X								
501	7-0533		PC					12" WM north of NE 195th St MP 24.62	City of Bothell					X								
507			PC					12" WM north of NE 195th St MP 25.79	City of Bothell					X								
510	15762		PC		YES			12" WM at 223rd Place SE MP 25.12 at Fortin Farm	City of Bothell	Both lines, the 12" and 1 1/2" are in the same 30" casing				X								
511	7-0035		PC					1.5" PVC water line north of NE 195th St MP 25.12	Fortin Farm					X								
468	7-1496		PC	*	*			OH pole & BP on Woodinville Dr. MP 23.49	PSE					X								
472	7-0545		PC						PSE					X								
473	13967		PC					1" connected to 4" gas in Woodinville Dr. at MP 23.57	PSE					X								
495	3916		PC	*	*			12.5 OH power north of NE 195th St at MP 24.51	PSE					X								
480			PC					BT in Woodinville Dr. at MP 23.52	Comcast					X								
470	7-0508		PC	YES		YES		6-3.5" ducts from Manhole to risers Woodinville Dr. at MP 23.53	Verizon NW					X								
503	3853		PC	YES		YES		UG 6-3.5" telephone ducts north of NE 195th St MP 25.01	Verizon NW					X								
504	11866		PC					UG 16-4" telephone ducts north of NE 195th St MP 25.03	Verizon NW					X								
505	N2326		PC					UG 16-4" telephone ducts north of NE 195th St MP 25.04	Verizon NW					X								
TOTAL		PC	64																			
		C	4																			
		LEGEND: UI = Unique Identifier																				
		UO = Utility Owner																				
		NOC = Notice of Conflict Letter																				
		CAT = Category																				
		MOU = Memorandum of Understanding																				
		MOA = Memorandum of Agreement																				
		* = Not Applicable or Required																				

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