SECTION 5 PROJECT EFFECTS

For the I-405, Bellevue to Lynnwood Improvement Project, we compared the effects that will occur with the two build alternatives to the No Build Alternative. We evaluated the year 2015 and 2035 conditions for each alternative. Our analysis of 2035 conditions for both build alternatives and the No Build Alternative assumes construction of a new I-405 half-interchange at NE 132nd Street with a northbound on-ramp and a southbound off-ramp. This half-interchange is not part of the Bellevue to Lynnwood Improvement Project. It is a separately funded project scheduled for construction prior to 2035.

How will the project affect I-405 travel demand in the study area?

Transportation analysis defined weekday traffic volumes as two-directional totals with northbound and southbound traffic added together. We expect the two build alternatives to have similar weekday travel demand for the years 2015 and 2035, and both build alternatives will have higher (7 percent or less) weekday travel demands compared to the No Build Alternative. Weekday I-405 travel demand will be greater with the build alternatives because of the added freeway lanes and the new braided ramps from NE 160th Street to SR 522, which will help to improve traffic flow. By carrying higher volumes on the I-405, both build alternatives will reduce traffic on parallel local streets used to bypass the freeway.

For the section of I-405 between SR 520 and NE 70th Street, we estimate the 2015 daily demand with the build alternatives will be 216,000 vehicles, compared to 204,000 daily vehicles forecast for the No Build Alternative. For the section of I-405 between NE 85th Street and NE 116th Street, we estimate the 2015 daily demand with the build alternatives will be 213,000 vehicles, compared to 200,000 daily vehicles forecast for the No Build Alternative. The daily demand for the northern section of I-405 between SR 527 and I-5 will be 124,000 vehicles with the build alternatives, and 121,000 vehicles with the No Build Alternative.

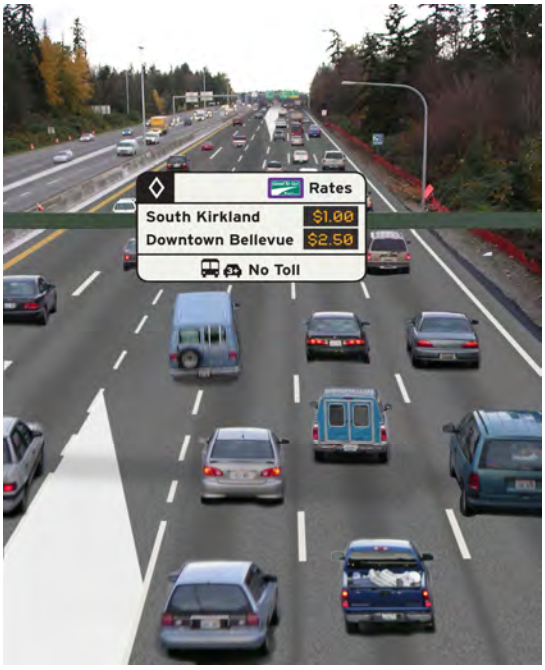
How would express toll lanes work?

Express toll lanes are tolled lanes that operate alongside existing general-purpose lanes to provide users with a faster and more reliable trip. Transit vehicles and carpools with three or more persons (HOV 3+) will be able to use the lanes for free. Vehicles with less than three occupants can pay to access the lanes.

Tolls for use of the express toll lanes will change according to the traffic conditions in the express toll lanes. Electronic monitors along the roadway measure real-time information on the speed and number of vehicles in the express toll lanes. This information is used to determine whether tolls go up or down to provide the best use of the lane. As the express toll lanes become more congested, toll rates increase. As the congestion goes down, toll rates decrease. This is called dynamic pricing.

It is important to note that the express toll lanes, like any other road can only accommodate a certain number of vehicles at a time before becoming congested. The use of dynamic pricing allows the lanes to operate with high volumes, but avoid becoming congested.

Electronic signs will be used to communicate the current toll rate for drivers. Drivers will lock in their price to their destination when they enter the lanes.



Signs indicate current toll rate to use express toll lanes

Example of two express toll lane configuration

How will express toll lanes affect freeway operations?

Build Alternative 1 will have two express toll lanes between NE 6th Street in Bellevue and SR 522 and one express toll lane between SR 522 and I-5, with the remaining lanes being general-purpose lanes.

By managing the number of vehicles in the express toll lanes, and operating the express toll lanes to maintain maximum efficiency, freeway operations will improve. The current high-occupancy vehicle (HOV) lane system is often inefficient because it carries either too few or too many vehicles. Specifically, when the HOV lanes are underutilized, not enough vehicles benefit from the exclusive lane, and more traffic is pushed to the general-purpose lanes. When the HOV lane is overutilized, the lane becomes congested, and the travel benefits intended for the lane are lost.

By the year 2015, our analysis assumes the HOV lane occupancy requirement will increase from the existing HOV 2+ to HOV 3+, in order to comply with WSDOT's policy of maintaining a 45 mile-per-hour HOV lane travel speed.

Typically, an HOV lane can carry up to 1,600-1,700 vehicles per hour at near free-flow speeds. During the 2015 morning and afternoon peak periods, we expect the volumes in the I-405 HOV 3+ lane will be 250 to 650 vehicles per hour in the study area. The express toll lanes will improve freeway efficiency by allowing HOV 2 and single-occupant vehicles

(SOVs) that pay the toll to use the express toll lanes. The express toll lanes will continue to allow up to 1,600-1,700 vehicles per hour per lane to travel from 45-60 miles per hour. The toll structure will vary in real time to prevent the lanes from becoming over-crowded.

The express toll lane system benefits the general-purpose lanes by allowing some of the HOV 2 and SOVs from the general-purpose lanes to use the express toll lanes, thereby decreasing general-purpose lane volumes and improving their operation.

Express toll lane entry and exit locations

Access to the express toll lanes will be through direct-access ramps at NE 6th Street in downtown Bellevue and at NE 128th Street in Kirkland and at access points to and from the general-purpose lanes. Exhibit 2-4 on page 2-8 shows the location of the express toll lanes entry and exit points.

Express toll lanes limited entry and exit locations:

Southbound I-405 will have eight entry points and six exits to/from the express toll lane system.

Northbound I-405 will have six entry points and seven exits to/from the express toll lane system.

The express toll lanes will have a two- to four-foot-wide striped buffer separating them from the general-purpose lanes. Access to and from the express toll lanes will be limited to designated locations. The express toll lane buffers and limited entry points will prohibit random access to the lanes. Express toll lane drivers will be able to maintain their speeds because they will be less concerned with vehicles merging into their lane from the general-purpose lanes, thereby enabling traffic to flow more smoothly.

Limiting the express toll lanes access points will cause the lane changing in the general-purpose lanes to be focused at the designated access locations. For example, a high number of vehicles exiting the express toll lanes into the general-purpose lanes have potential to disrupt the general-purpose lanes flow of traffic. A similar situation could occur when a high number of vehicles use an express toll lane entry location. However, the express toll lane system is an interactive system, based on real-time traffic volumes. The electronic pricing structure will help to minimize traffic disruptions in the general-purpose lanes by automatically adjusting the cost to enter or exit the express toll lanes at each location. For example, at locations where too many vehicles attempt to enter the express toll lane, the cost will be increased to reduce the number of vehicles making that movement.

How will the project affect future freeway operations in the study area?

Transportation analysts evaluated the I-405 operational results of both build alternatives and the No Build Alternative. We evaluated the three alternatives with respect to the number of vehicle trips, average travel speeds, and travel time.

2015 and 2035 morning peak period

During the 2015 and 2035 morning peak periods, Build Alternative 1 will carry more peak direction (southbound) vehicles and increase general-purpose lane travel speeds compared to Build Alternative 2 and the No Build Alternative.

Southbound I-405

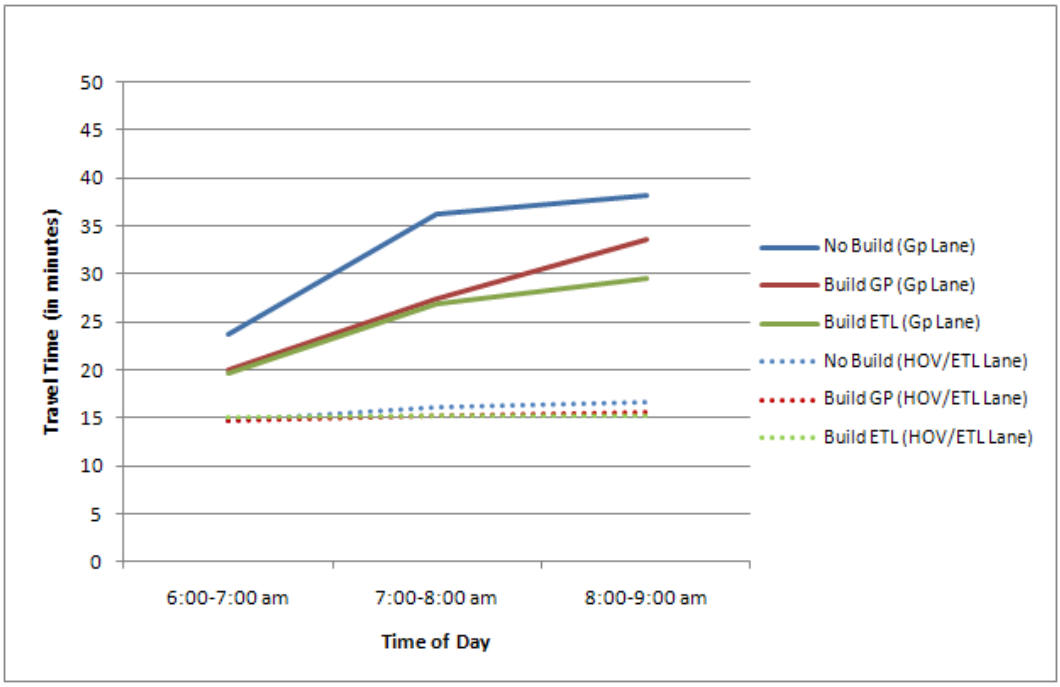
Build Alternative 1 will carry more total southbound vehicles (general-purpose lanes and HOV/express toll lanes combined) than Build Alternative 2 and the No Build Alternative for both sections of I-405: I-5 to SR 522, and from SR 522 to SR 520. For the section of southbound I-405 from SR 522 to SR 520, we expect the No Build Alternative will carry an average of 16,230 vehicles and Build Alternative 2 will carry an average of 21,040 vehicles during the 2015 morning peak 3-hour period. For the same section of I-405, we expect Build Alternative 1 will carry an average of 23,700 total vehicles during the 2015 morning peak 3-hour period, a 13 percent increase over Build Alternative 2 and a 46 percent increase over the No Build Alternative.

The two build alternatives will have similar southbound general-purpose lane travel speeds, and both build alternatives will have slightly faster general-purpose lane speeds (4-7 miles per hour) than the No Build Alternative.

The high-occupancy vehicle lanes and express-toll lanes will perform well with each of the three alternatives. The average travel speeds for the high-occupancy lanes and express toll lanes high will be at least 50 miles per hour during the morning 3-hour peak period. The high-occupancy vehicle lanes and express toll lanes will primarily experience slower speeds at the north end of I-405 near I-5, where the lanes begin and end.

For each of the three alternatives, Exhibit 5-1 shows the 2015 southbound I-405 travel time from I-5 to SR 520 in the general-purpose lanes and the HOV/Express Toll lanes. The travel time is reported separately for each hour in the peak period.

Exhibit 5-1: 2015 morning I-405 southbound travel time from I-5 to SR 520



During the 2035 morning peak period, travel demand in the study area will increase compared to the 2015 morning peak period. This will increase congestion, reduce travel speeds, and the number of vehicles able to travel through the study area will decrease for all three alternatives compared to the 2015 morning peak period. Build Alternative 1 will carry more total vehicles and increase the general-purpose lane speed compared to Build Alternative 2 and the No Build Alternative for both sections of I-405 during the 2035 morning peak 3-hour period.

For the three alternatives, Exhibits 5-2 and 5-3 show the 2015 and 2035 morning average 3-hour vehicle trips and travel speeds for the general-purpose lanes, HOV lane, and express toll lanes. The exhibits show southbound data for the two I-405 sections from I-5 to SR 522 and from SR 522 to SR 520.

Exhibit 5-2: 2015 morning peak 3-hour Build and No Build alternatives vehicles and speeds - southbound I-405

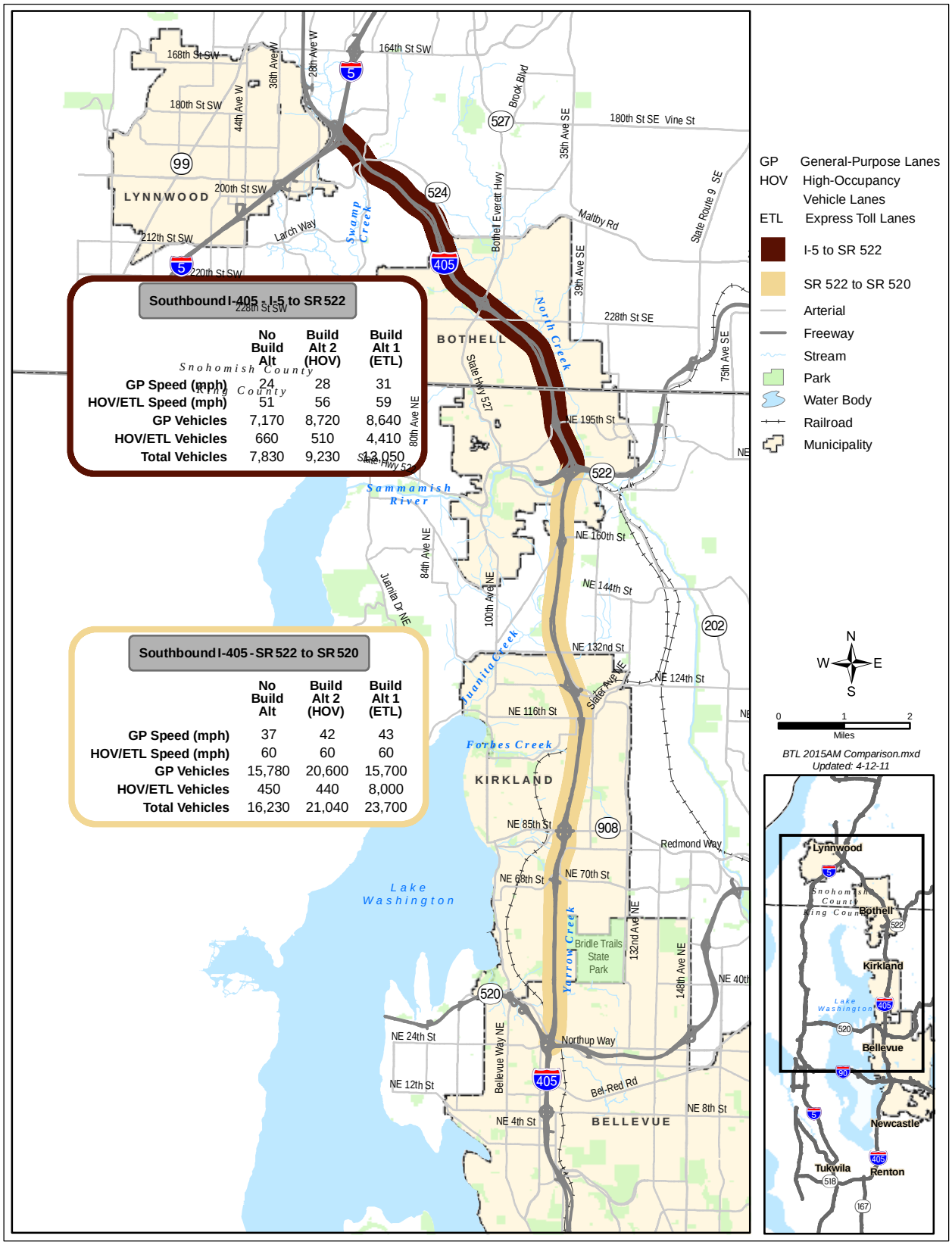
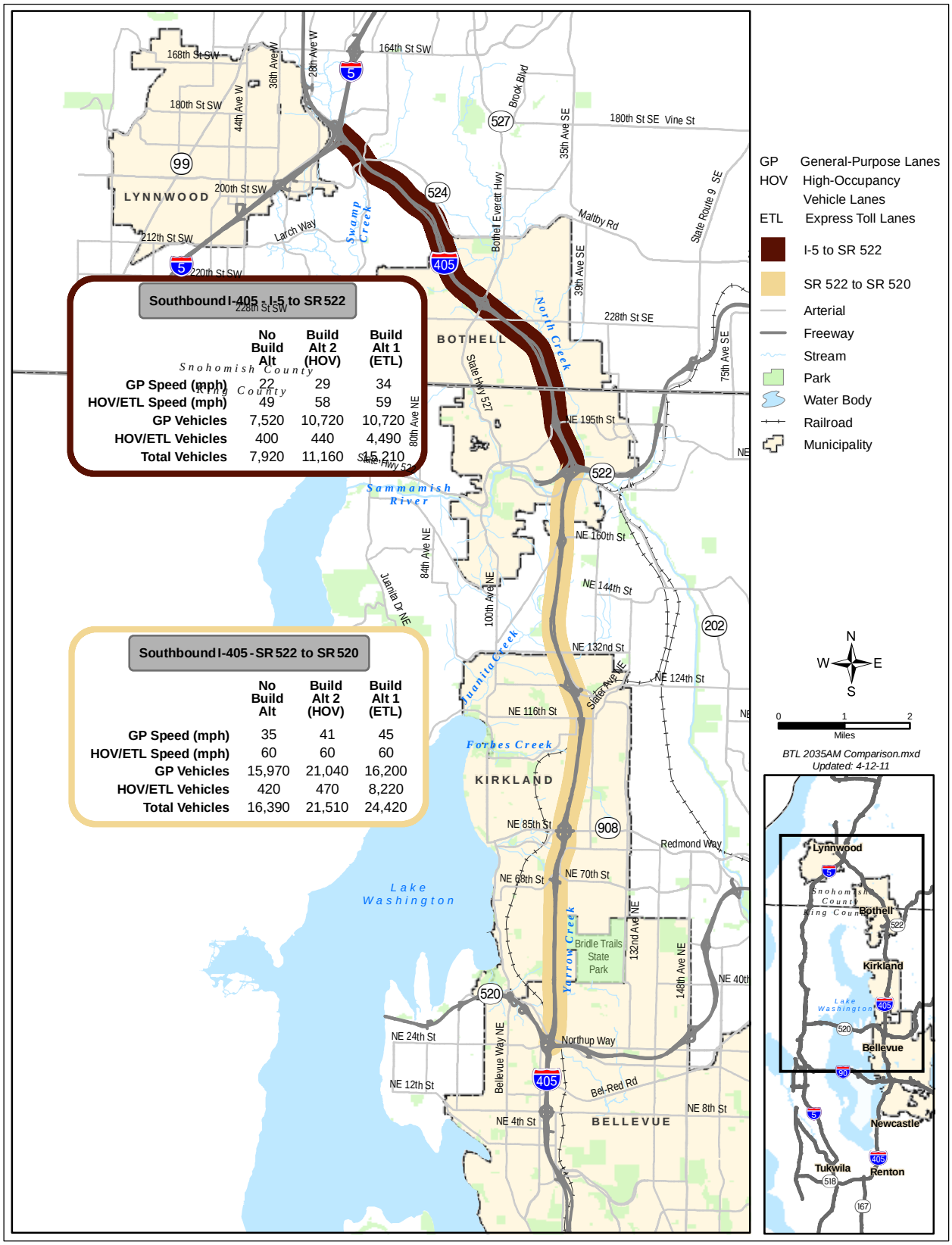


Exhibit 5-3: 2035 morning peak 3-hour Build and No Build alternatives vehicles and speeds - southbound I-405



Northbound I-405

During the 2015 morning peak period, all three alternatives perform well for the northbound off-peak travel direction, with general-purpose and HOV lane average travel speeds near 60 miles per hour.

During the 2035 morning peak period, both build alternatives perform slightly better than the No Build Alternative.

2015 and 2035 afternoon peak period

During the 2015 and 2035 afternoon peak periods, Build Alternative 1 will carry more vehicles and increase travel speeds compared to Build Alternative 2 and the No Build Alternative.

Northbound I-405

For both sections of northbound I-405, Build Alternative 1 will carry more vehicles and increase travel speeds compared to Build Alternative 2 and the No Build Alternative during the 2015 afternoon peak 3-hour period. For the section of northbound I-405 from SR 520 to SR 522, we expect the No Build Alternative will carry an average of 11,040 vehicles and Build Alternative 2 will carry an average of 16,370 vehicles during the 2015 afternoon peak 3-hour period. For the same section of I-405, we expect Build Alternative 1 will carry an average of 21,790 total vehicles during the 2015 afternoon peak 3-hour period, a 33 percent increase over Build Alternative 2 and a 97 percent increase over the No Build Alternative.

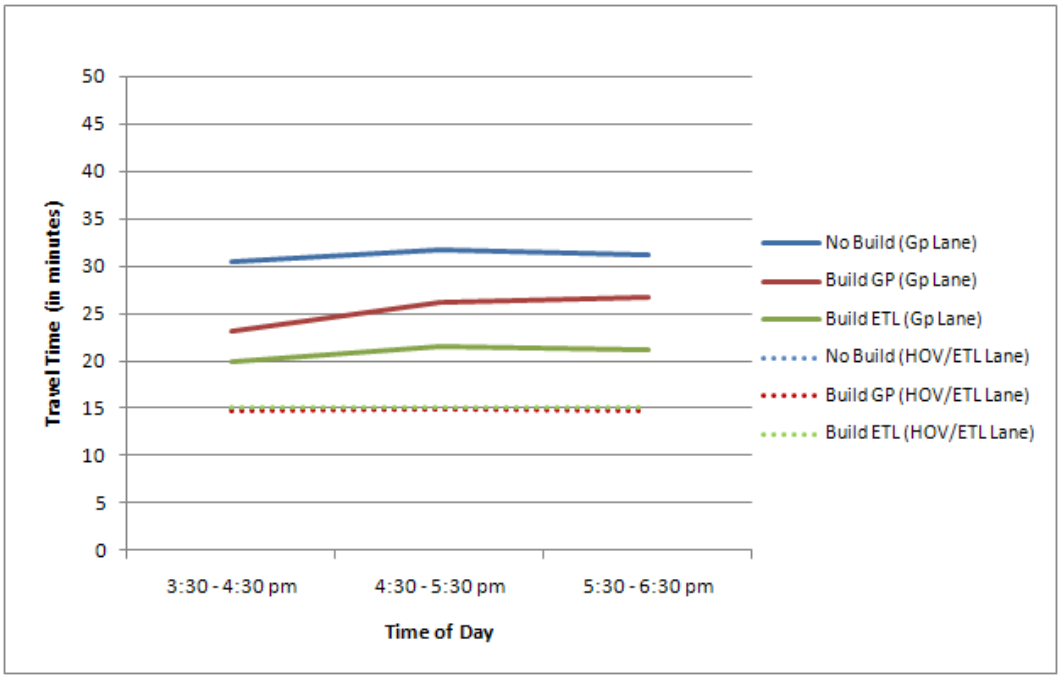
For all three alternatives, the general-purpose lane travel speeds will be slower in the southern section of I-405 from SR 520 to SR 520 compared to the northern section of I-405 from SR 522 to I-5. For the section of I-405 from SR 520 to SR 522, Build Alternative 1 will increase the average general-purpose lane travel speed from 21 miles per hour with the No Build Alternative to 32 miles per hour. For the same section, Build Alternative 2 will have an average travel speed of 31 miles per hour.

The high-occupancy vehicle lanes and express toll lanes will perform well with each of the three alternatives. The average travel speeds for the high-occupancy lanes and express toll

lanes high will be at least 55 miles per hour during the afternoon peak 3-hour period.

For each of the three alternatives, Exhibit 5-4 shows the 2015 northbound I-405 travel time from SR 520 to I-5 in the general-purpose lanes and the HOV/Express Toll lanes. The travel time is reported separately for each hour in the peak period.

Exhibit 5-4: 2015 afternoon I-405 northbound travel time from SR 520 to I-5



Similar to the 2035 morning peak period, the 2035 afternoon peak period will also experience an increase in travel demand in the study area compared to the 2015 afternoon peak period. All three alternatives will experience reductions in the number of vehicles able to travel through the study area and general-purpose lane travel speeds compared to the 2015 afternoon peak period. Build Alternative 1 will continue carry more total vehicles and increase the general-purpose lane speed compared to Build Alternative 2 and the No Build Alternative for both sections of I-405 during the 2035 afternoon peak 3-hour period.

For the three alternatives, Exhibits 5-5 and 5-6 show the 2015 and 2035 afternoon average 3-hour vehicle trips and travel speeds for the general-purpose lanes, HOV lane, and express

toll lanes. The exhibits show northbound data for the two I-405 sections from SR 520 to SR 522 and from SR 522 to I-5.

Southbound I-405

We expect the off-peak travel direction of southbound I-405 will continue to experience traffic backing up into the study area from congestion at the I-90 and Coal Creek Parkway interchanges. Build Alternative 2 and the No Build Alternative will experience more congestion because the high-occupancy vehicle lane will be underutilized, carrying 200 to 450 vehicles during the 2015 and 2035 afternoon peak 3-hour periods. Build Alternative 1 will improve operations because more vehicles will be allowed to use the express toll lanes.

What are the estimated costs to use the express toll lanes?

The cost to use the express toll lanes will change based on real-time traffic conditions to manage the number of toll-paying customers entering the express toll lanes. This dynamic toll price strategy will ensure the lanes are free flowing. Sensors along the road will continuously monitor traffic levels and speed.

While it is impossible for us to predict exactly what the tolls will be at any given time, we used computer models to project likely toll rates. Though preliminary at this time, in year 2015, we expect the costs to use the express toll lanes to vary between $0.50 to $4.85 depending on the time of day and length of trip. The average toll rate is projected to be $0.90 per trip and the average trip length in the express toll lanes is estimated to be 8 miles.

In year 2035, tolls could range from $0.75 to $10.80 with the average toll projected to be $2.95. Use of the express toll lanes is assumed to be free for transit and carpools with three or more people (HOV 3+).

Experience on existing express toll lane across the country and the SR 167 HOT lanes has been that toll-paying customers do not choose to use HOT lanes every day. Most customers use them a couple of times a week when they need a faster or more reliable travel time.

Exhibit 5-5: 2015 afternoon peak 3-hour Build and No Build alternatives vehicles and speeds - northbound I-405

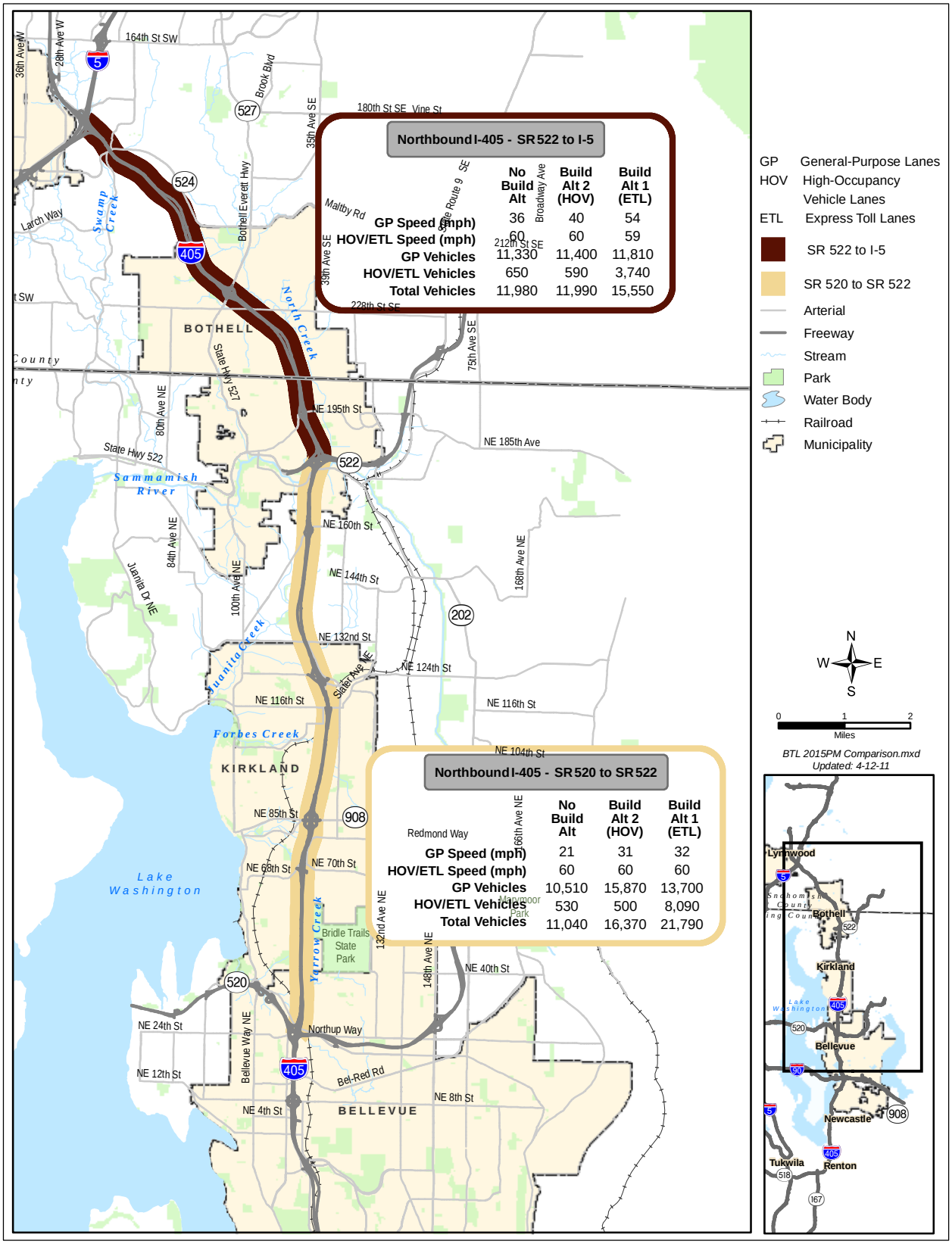
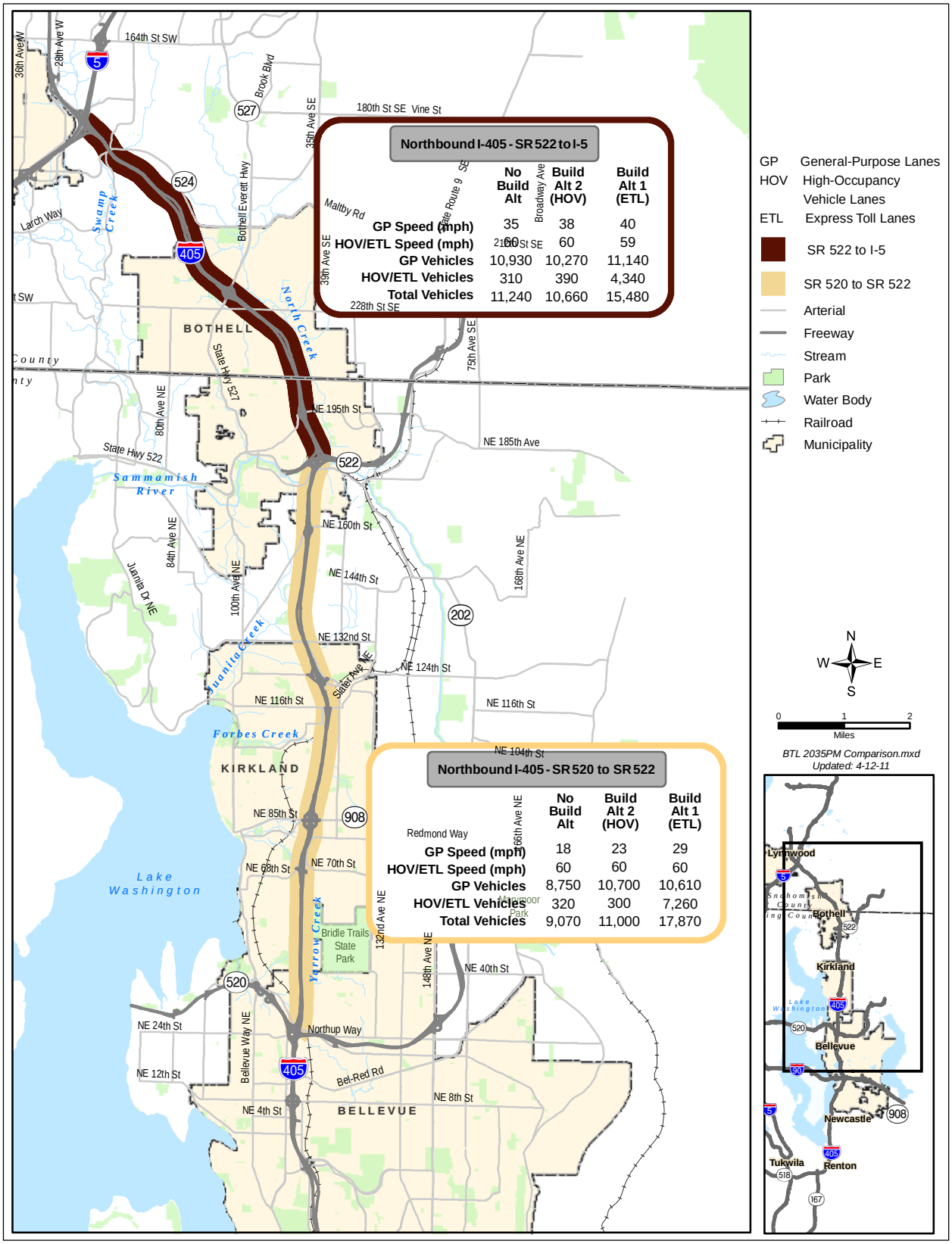


Exhibit 5-6: 2035 afternoon peak 3-hour Build and No Build alternatives vehicles and speeds - northbound I-405



When there is more space available in the express toll lanes, the cost of the trip will be cheaper. For example, it will be less expensive to use the express toll lanes for the off-peak travel directions of northbound I-405 in the morning, and southbound I-405 in the afternoon.

The distance of the trip in the express toll lanes will also affect the price. In general, the most expensive trips will be for the whole length of the express toll lane between NE 6th Street and I-5 during the peak travel direction. For example, one of the most expensive trips will be for vehicles traveling northbound on I-405 and entering the express toll lane at NE 6th Street and exiting north of SR 527 during the afternoon peak period.

How does electronic tolling work?

The express toll lanes that are proposed as part of Build Alternative 1 will use WSDOT's *Good To Go!* toll collection system. The system allows customers to pay tolls electronically while traveling at highway speeds and without leaving the highway to stop at a tollbooth. The toll is automatically deducted from the prepaid *Good To Go!* account.

Rendering of express toll lanes

Good To Go! transponder

How will I pay the tolls?

The express toll lanes will be fully electronic toll lanes. Customers will pay tolls with a "*Good To Go!*" account, which will eliminate the need to stop or slow down for traditional toll booths. Motorists can use the express toll lanes without a *Good To Go!* account through video tolling. A photograph of the motorist's license plate will be taken and they will be sent a bill for the cost of the toll and an administrative fee. Protecting customer privacy will be paramount in the deployment of all payment collection strategies.

How will I know ahead of time what the toll rate will be?

Electronic message signs will provide motorists with the latest toll rates. Motorists will see the electronic message sign before they enter the express toll lanes so they will have time to choose whether to use the express toll lanes or travel on the general-purpose lanes for free.

How will access and tolling in the express toll lanes be enforced?

Enforcement of HOV access and tolling in the express toll lanes will be critical to keeping the lanes free-flowing at all times. The Washington State Patrol will be stationed in the express toll lanes corridor checking for HOV violators. Equipment will alert officers of vehicles that are claiming to be HOV so officers can verify that the vehicles are carrying the required 3+ occupants.

How would the toll revenue be used?

WSDOT, with legislative authorization, would use the toll revenue for future I-405 corridor improvements. Current state law requires that all revenue must be used only to construct, improve, preserve, maintain, manage, or operate the toll facility from which the revenue is collected.

How will the project affect freeway safety?

Both build alternatives will add capacity to I-405, which will improve operations and reduce congestion. This will, in turn, reduce congestion-related crash rates in the study area. Congestion-related crashes are rear-end and sideswipe crashes, which make up 77 percent of freeway crashes in the study area.

Both build alternatives will reduce I-405 shoulder and lane widths in some areas of the corridor. This may increase the number of fixed-object and sideswipe crashes. However, we anticipate the overall crash rate will decrease with the build alternatives.

How will the project affect transit service and HOV trips?

By the year 2015, we assume the HOV lane occupancy requirement will change from HOV 2+ to HOV 3+. This change will be due to future growth in HOV volumes and WSDOT's policy of maintaining a minimum 45 mile-per-hour HOV lane travel speed. The occupancy change from HOV 2+ to HOV 3+ will reduce the number of vehicles using the HOV lanes, which will allow those lanes to operate close to free-flow speeds of 60 miles per hour. However, similar to today, because Build Alternative 2 and the No Build Alternative will continue to allow HOVs to enter and exit the HOV lane at any location, HOV lanes may experience speeds lower than 60 miles per hour during the peak periods of traffic congestion. The reduction in speed is caused by HOV drivers slowing down as they anticipate vehicles from the adjacent slower lanes moving into the HOV lane.

Build Alternative 2 and the No Build Alternative will have similar HOV lane travel speeds during the 2015 and 2035 morning and afternoon peak periods.

Build Alternative 1 will limit the number of vehicles in the express toll lanes, which will be separated from the general-purpose lanes by a two- to four-foot-wide striped buffer. Vehicles will only be allowed to enter the express toll lanes at designated locations. Limited access points should enable the express toll lanes to maintain a travel speed of at least 45 miles per hour even when the general-purpose lanes become congested. The details of how each of the bus routes will use the express toll lanes is shown in Appendix C.

Build Alternatives 1 and 2 will include transit shoulders on the right side of southbound I-405 from SR 527 to NE 195th Street and from SR 522 to NE 160th Street. Currently, buses entering from SR 522 and traveling to the Brickyard Park-and-Ride at NE 160th Street do not have enough time to use the HOV lane to bypass congestion. Also, buses traveling from the Canyon Park Park-and-Ride at SR 527 to NE 195th Street and the University of Washington Bothell campus have difficulty weaving over to the HOV lane to bypass congestion. The transit-only shoulders will reduce the transit travel time for buses traveling from SR 522 to NE 160th Street and from SR 527 to NE 195th Street, especially during the morning commute when southbound I-405 is congested.

How will the project affect local traffic operations?

We analyzed future traffic operations with CORSIM, microsimulation software. This model calculated intersection LOS for the two build alternatives and the No Build Alternative. The analysis focused on the 2015 and 2035 morning and afternoon peak hours. See Exhibit 3-1 on page 3-4 for a definition of intersection LOS and delay.

Build Alternatives 1 and 2 will not change the capacity of any of the study intersections.

The build alternatives will increase freeway volumes and, in turn, more vehicles will use the local streets to enter and exit the freeway. While the higher freeway traffic volumes will increase traffic near the I-405 interchanges, it will also mean a decrease in volumes on local streets used to bypass the freeway.

We show the 2015 morning and afternoon intersection LOS for both build alternatives in Exhibit 5-5 and the No Build

Alternative in Exhibit 4-7. The 2035 intersection LOS for the build alternatives and the No Build Alternative is reported in Appendix D. To show the reduction in local street traffic that will occur with the build alternatives carrying higher I-405 volumes, we included intersections on three north/south streets that are used as alternative routes to I-405: Lake Washington Boulevard and 100th Avenue NE in Kirkland, and 96th Avenue NE in Bothell. The three locations are shown on sheet 6 of the intersection exhibits.

This analysis assumes HOV 2+ and SOVs will be allowed to use the express toll lanes via the NE 6th Street and NE 128th Street direct-access ramps with Build Alternative 1, thereby increasing traffic volumes at these locations.

NE 6th Street interchange

Build Alternative 1 will increase traffic volumes at the NE 6th Street direct-access ramps because we assume HOV 2+ and SOVs will be allowed to use the express toll lanes via the direct-access ramps. The increased use at NE 6th Street direct-access ramps will reduce volumes at the nearby NE 8th Street and NE 4th Street ramps. With Build Alternative 1, the intersection of NE 6th Street and the I-405 direct-access ramps and the adjacent intersection of NE 6th Street and 112th Avenue NE are projected to operate at LOS C or better during the 2015 and 2035 morning and afternoon peak hours. The downtown Bellevue 2015 intersection LOS for Build Alternative 1 is shown in Exhibit 5-5 sheet 5A and the Build Alternative 2 intersection LOS is shown separately in sheet 5B.

NE 128th Street interchange

Build Alternative 1 will increase volumes on all of the NE 128th Street direct-access ramps because we assume HOV 2+ and SOVs will be allowed to use the express toll lanes via the direct-access ramps. With Build Alternative 1 the three NE 128th Street intersections with 116th Avenue NE, I-405 direct-access ramps, and Totem Lake Boulevard NE will perform at LOS D or better during the 2015 and 2035 morning and afternoon peak hours. The north Kirkland 2015 intersection LOS for Build Alternative 1 is shown in Exhibit 5-5 sheet 3A and the Build Alternative 2 intersection LOS is shown separately in sheet 3B.

Currently, SOVs are not allowed to use the NE 128th Street direct-access ramps. A change in policy would be necessary to

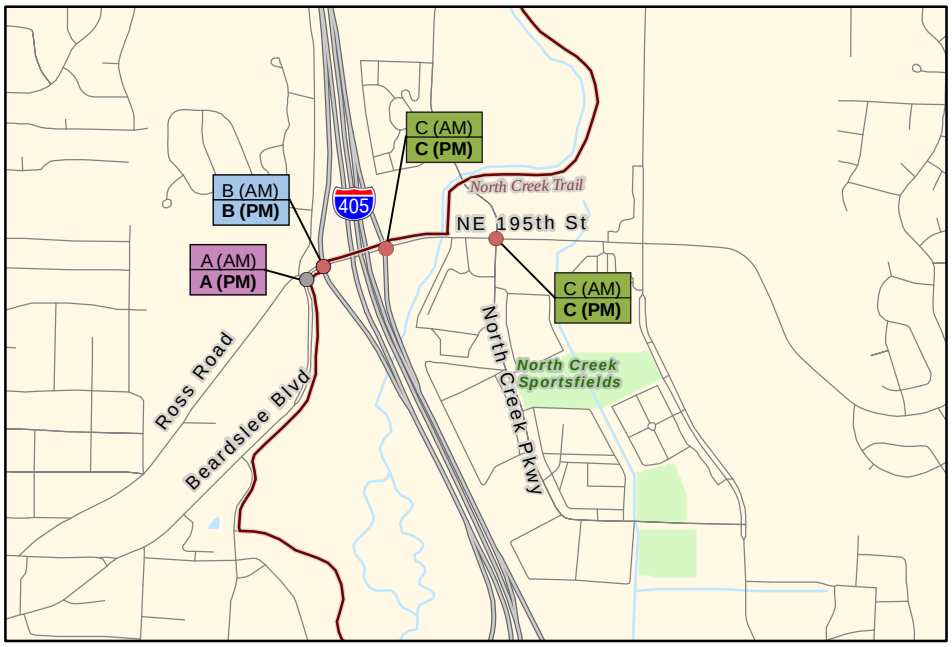
allow them to use the interchange. If SOVs and HOV 2 were not allowed to use the NE 128th Street interchange, the Build Alternative 1 intersection operations would be similar to the No Build Alternative and Build Alternative 2.

New I-405 half-interchange at NE 132nd Street

By the year 2035, all three alternatives assume a new half-interchange will be constructed at I-405 and NE 132nd Street. The NE 132nd Street half-interchange is not part of this project, but is assumed to be constructed by 2035. The half-interchange will have a northbound on-ramp and a southbound off-ramp. These new ramps will increase traffic volumes on NE 132nd Street, and NE 132nd Street will be widened near I-405 to accommodate the increased traffic. The new interchange will primarily divert vehicles traveling to and exiting from I-405 at the NE 124th Street/Totem Lake Boulevard interchange, and will slightly reduce traffic coming from the NE 160th Street ramps.

Exhibit 5-7: 2015 Build Alternatives morning and afternoon peak-hour intersection level of service - sheet 1

SR 527 and I-405 Interchange



NE 195th St and I-405 Interchange

Level Of Service (LOS)	*Signalized Stopped Delay per Vehicle (seconds)*	*Unsignalized Average Total Delay per Vehicle (seconds)*	*General Description*
A	*0 - 10*	*0 - 10*	Little or No Delay
B	*10 - 20*	*10 - 15*	Short Delays
C	*20 - 35*	*15 - 25*	Average Delays
D	*35 - 55*	*25 - 35*	Long Delays
E	*55 - 80*	*35 - 50*	Very Long Delays
F	*> 80*	*> 50*	Failure - Extreme Congestion

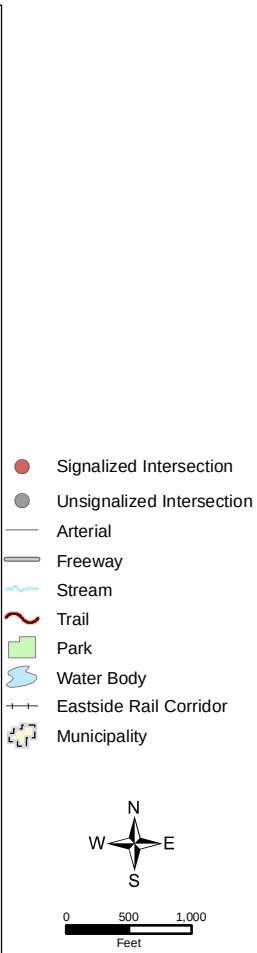
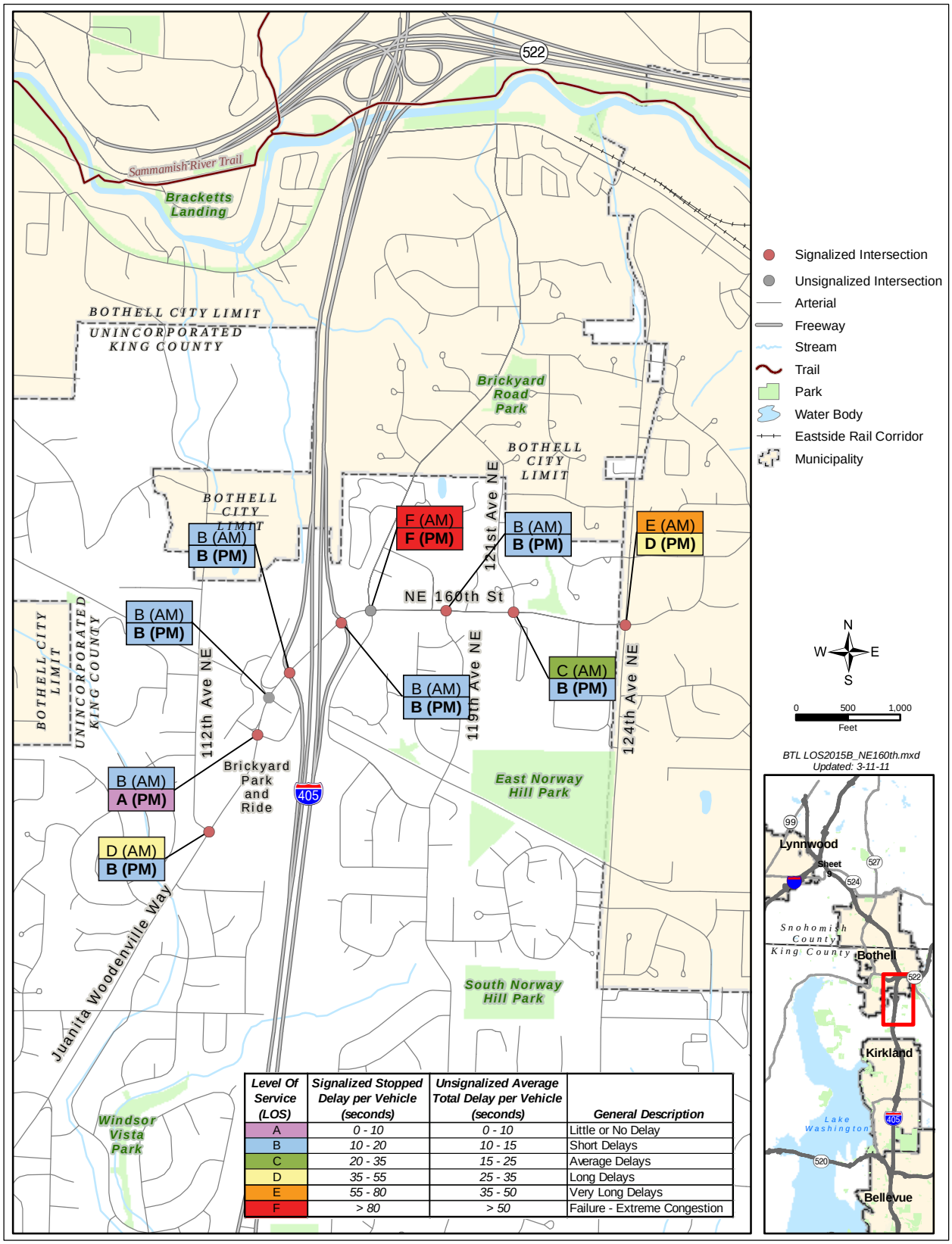
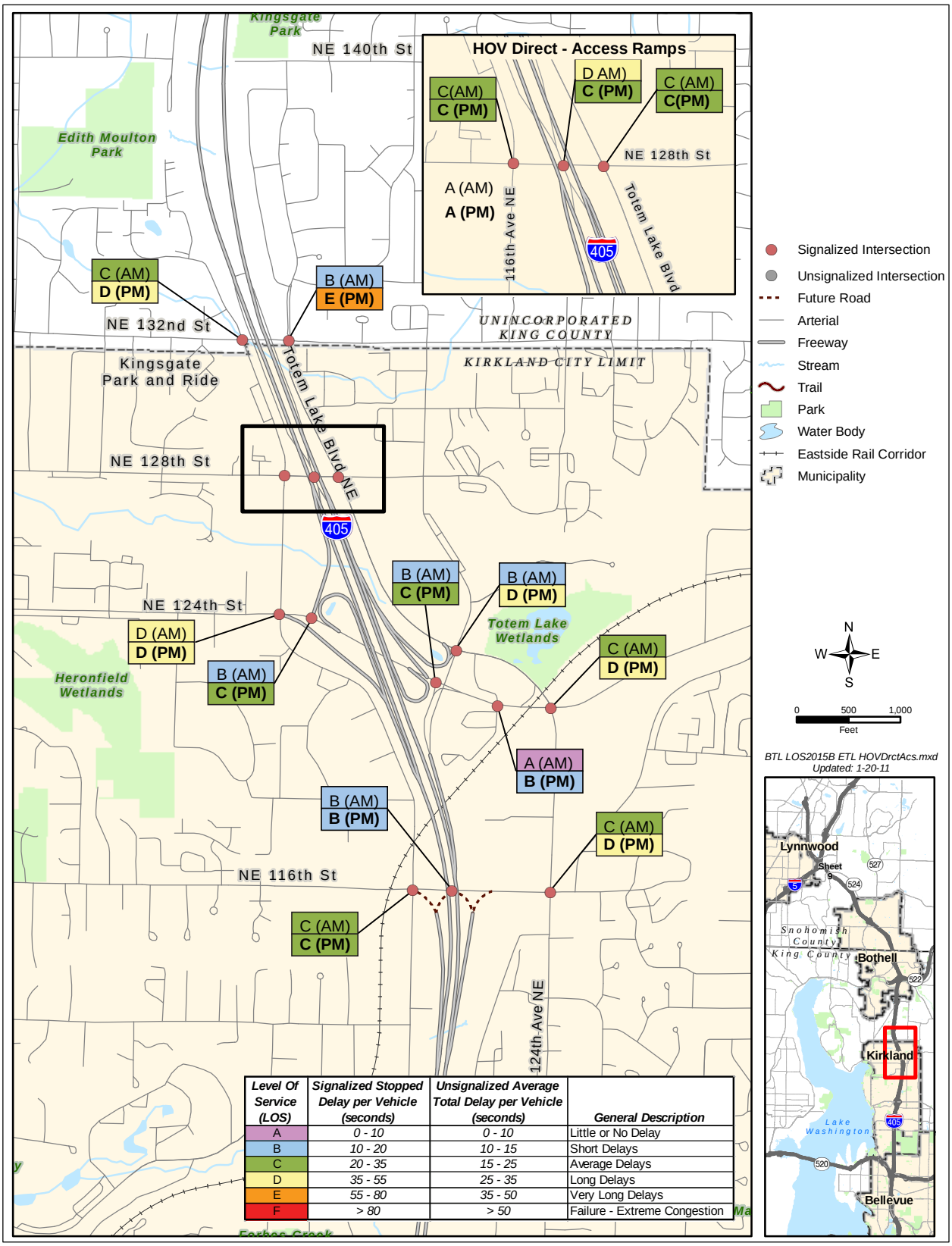


Exhibit 5-7: 2015 Build Alternatives morning and afternoon peak-hour intersection level of service – sheet 2



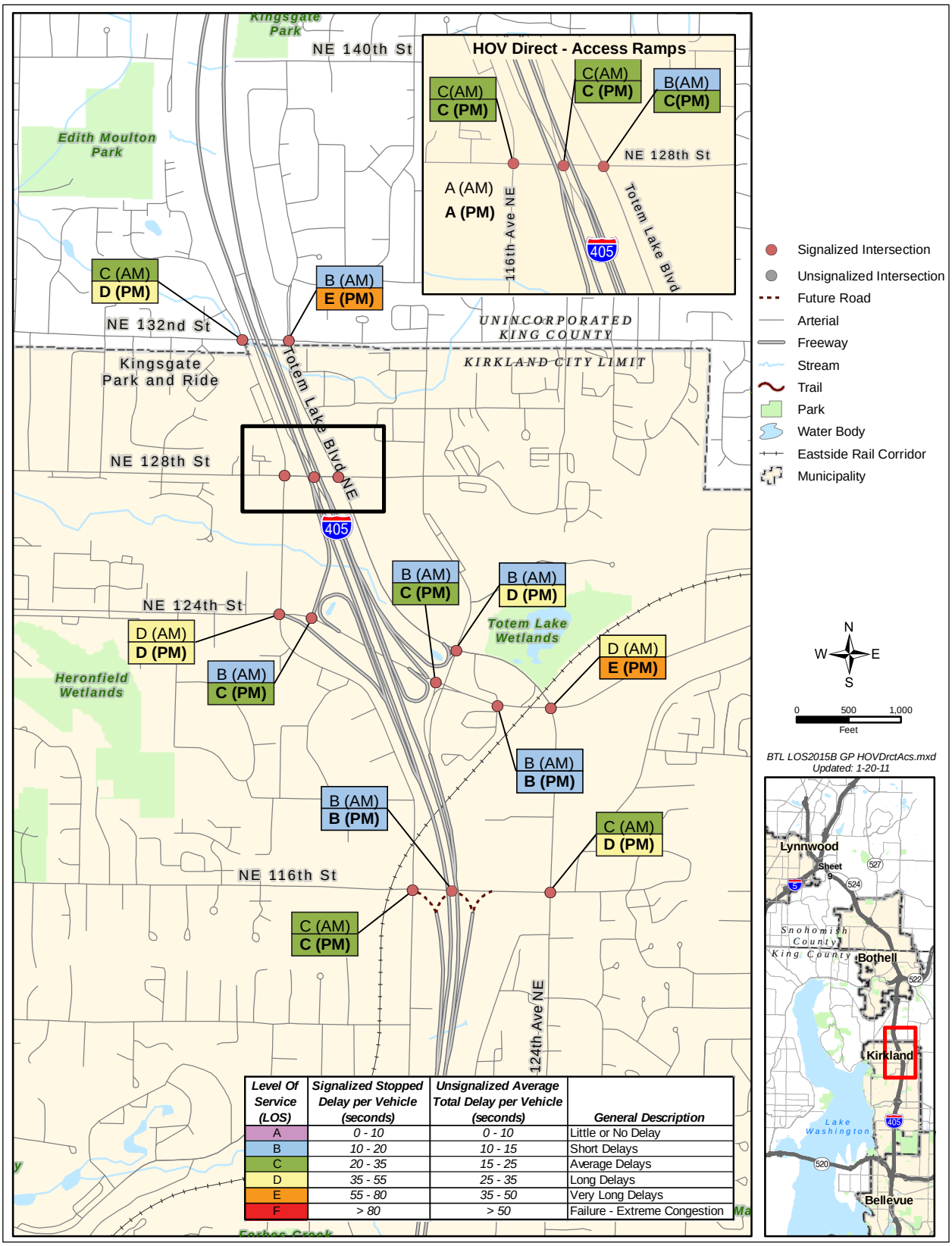
Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

Exhibit 5-7: 2015 Build Alternative 1 morning and afternoon peak-hour intersection level of service – sheet 3A



Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

Exhibit 5-7: 2015 Build Alternative 2 morning and afternoon peak-hour intersection level of service – sheet 3B

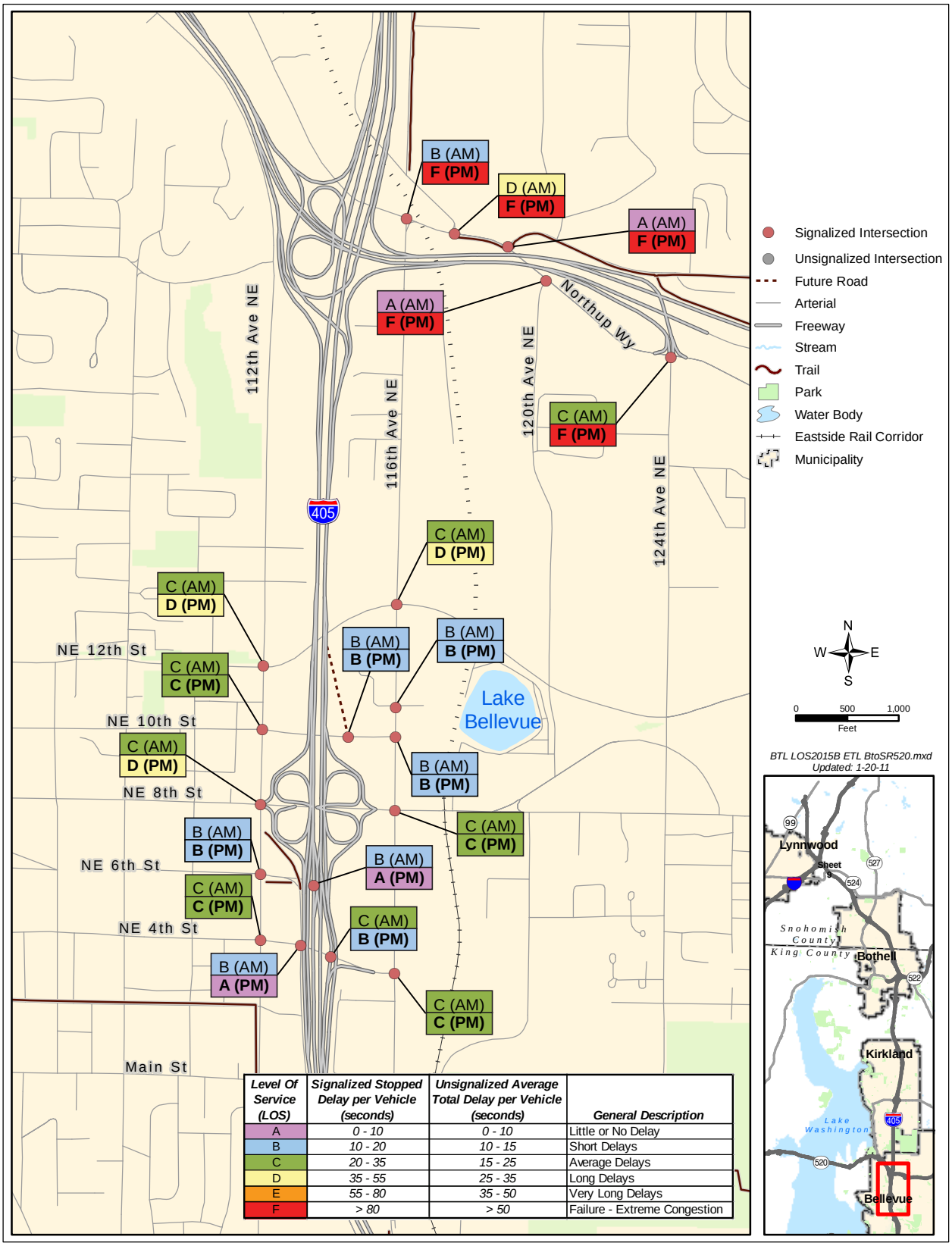


Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

Exhibit 5-7: 2015 Build Alternatives morning and afternoon peak-hour intersection level of service – sheet 4

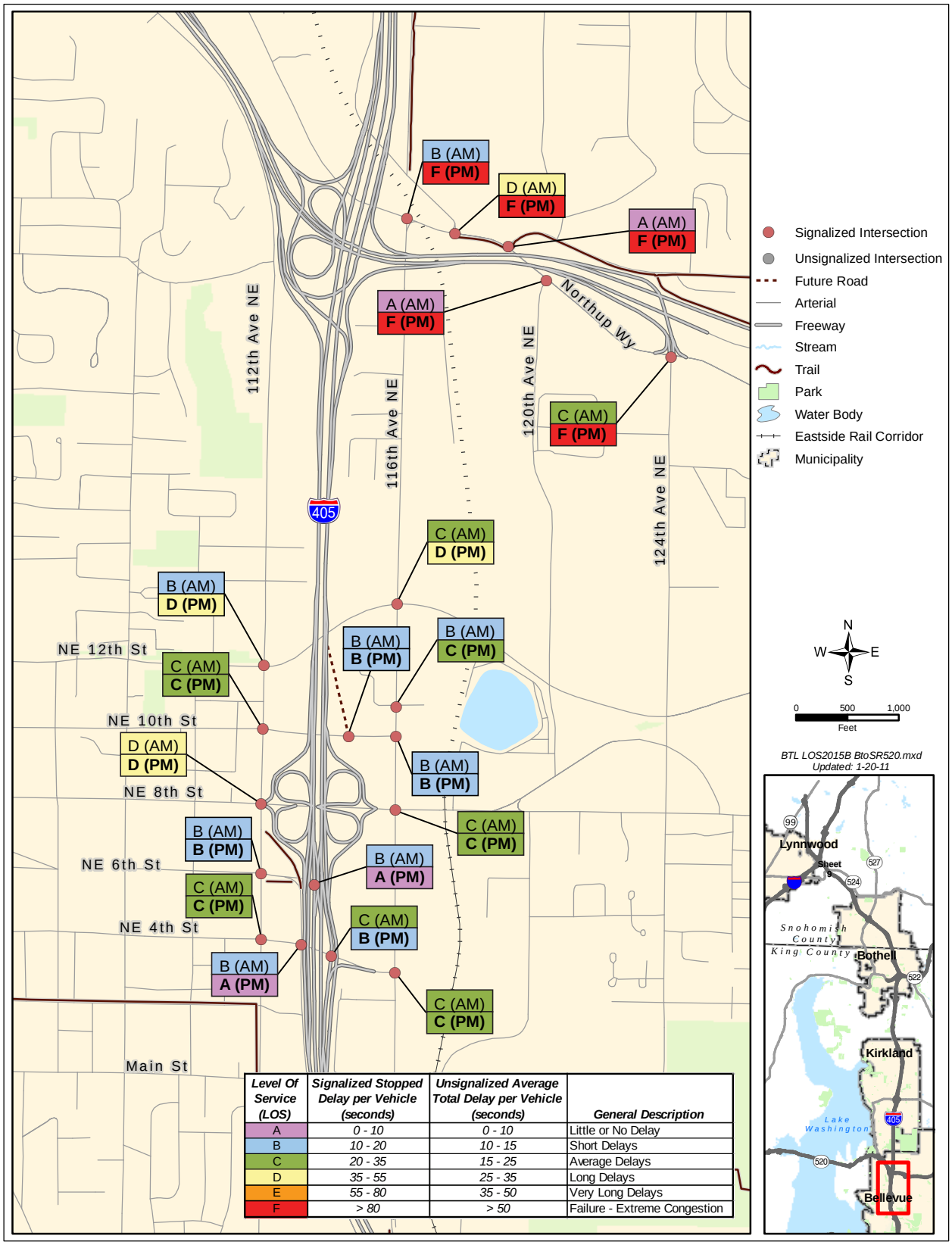
Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

Exhibit 5-7: 2015 Build Alternative 1 morning and afternoon peak-hour intersection level of service – sheet 5A



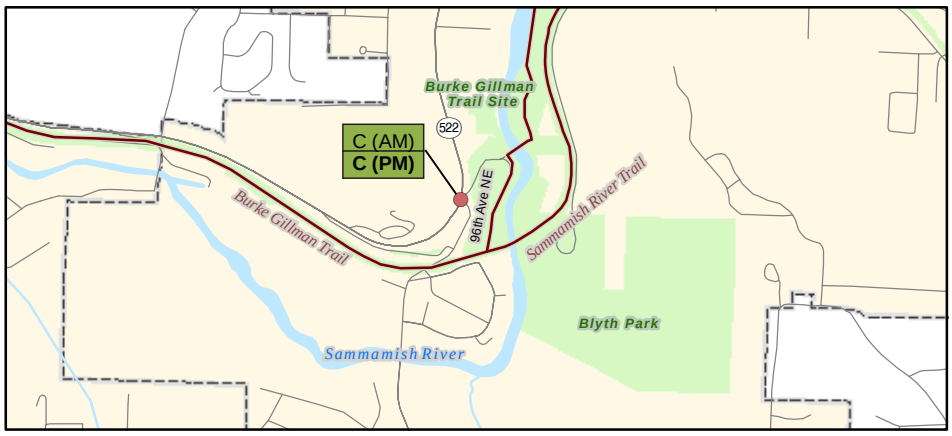
Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

Exhibit 5-7: 2015 Build Alternative 2 morning and afternoon peak-hour intersection level of service – sheet 5B

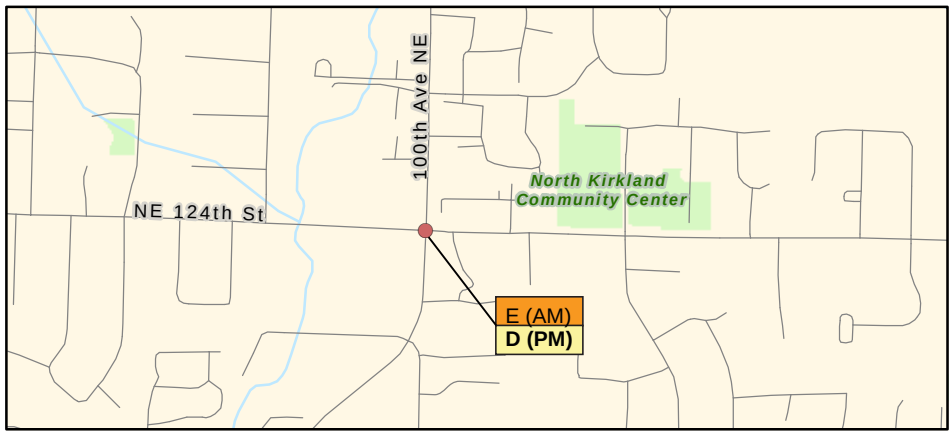


Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

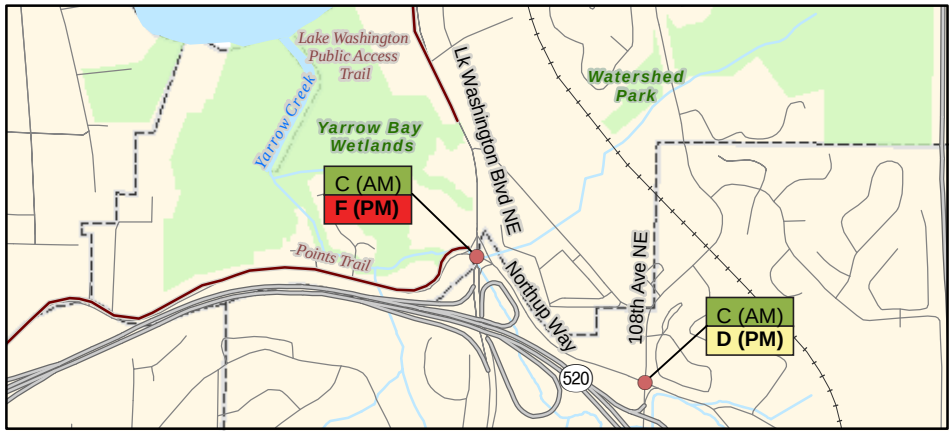
Exhibit 5-7: 2015 Build morning and afternoon peak-hour intersection level of service – sheet 6 of 6



SR 522 and 96th Ave NE

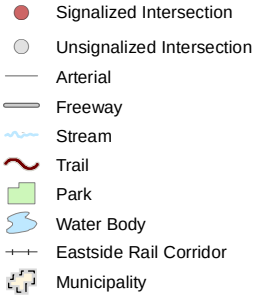


NE 124th St and 100th Ave NE

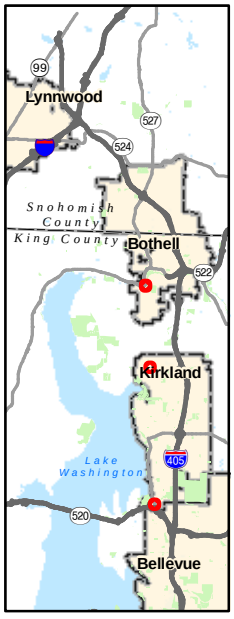


Northup Way, Lake Washington Blvd NE, and 108th Ave NE

Level Of Service (LOS)	*Signalized Stopped Delay per Vehicle (seconds)*	*Unsignalized Average Total Delay per Vehicle (seconds)*	*General Description*
A	*0 - 10*	*0 - 10*	Little or No Delay
B	*10 - 20*	*10 - 15*	Short Delays
C	*20 - 35*	*15 - 25*	Average Delays
D	*35 - 55*	*25 - 35*	Long Delays
E	*55 - 80*	*35 - 50*	Very Long Delays
F	*> 80*	*> 50*	Failure - Extreme Congestion



BTL LOS2015B 522 124th Nrthp.mxd
Updated: 3-11-11



How will the project affect pedestrian and bicycle travel?

The Sammamish River regional trail will be temporarily rerouted due to construction of a stormwater outfall to the Sammamish River. Pedestrian and bicycle traffic will be rerouted 50 to 100 feet north of the trail during construction.

The seven pedestrian crossings on I-405 will not be affected by the construction of the project. See the *Social, Public Services, and Environmental Justice Discipline Report* for more details on these trails.

How will the project affect freight travel?

Freight will experience the same travel time reductions and increases in speeds in the general-purpose lanes that the other travel modes will experience with the project. The express toll lanes will have the same vehicle weight limits as all HOV lanes.

How will transportation be affected during construction?

The Bellevue to Lynnwood Improvement Project will widen I-405 in certain locations, rebuild the I-405 bridges over NE 132nd Street, and build northbound braided ramps from NE 160th Street to SR 522. We expect construction to take approximately 2.5 years, but construction activity in some locations will take substantially less time.

Effect of construction traffic on the transportation network

Most of the project construction vehicles will carry dirt and materials to and from the construction sites. The majority of construction vehicles will be needed to rebuild the I-405 bridges over NE 132nd Street and the construction of the northbound NE 160th Street to SR 522 braided ramps. Construction vehicles will increase traffic delay in the study area during the construction period. The truck routes will not be known until a construction contract is signed, but we anticipate the majority of construction vehicles will use I-405.

Effect of construction activities on freeway travel

During construction of the Bellevue to Lynnwood Improvement Project, the existing mainline I-405 lanes will be realigned through the construction area. Temporary night and

weekend lane closures may be required for the mainline widening. Full freeway closures may be required at limited times to shift traffic between phases of construction or during demolition and construction of the NE 132nd Street bridges. In the event such closures are necessary, they will be of short duration during nights or weekends.

I-405 bridge construction over NE 132nd Street will occur in multiple stages to minimize traffic delays and detours. The final staging concept is yet to be determined, but any staging plan will allow for continued traffic flow while the new bridge is being constructed.

Effect of construction activities on local arterial travel

The construction of the new I-405 bridges over NE 132nd Street will be staged to minimize the impact to local street operations. Temporary closures of NE 132nd Street under I-405 will be required for erecting the bridge girders, demolishing the existing bridge, and pouring the concrete deck slab. These closures will be of short duration and will be limited to nights or weekends when possible.

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

We do not anticipate that either of the build alternatives will have any effects that are delayed or distant from the project.

What are cumulative effects?

The effect on the environment that results from the incremental effect of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such actions. Cumulative effects can result from individually minor but collectively noticeable actions taking place over a period of time.

Were potential cumulative effects for transportation considered?

In accordance with the Council on Environmental Quality (CEQ) guidelines, an analysis of cumulative effects is not needed for every discipline studied in NEPA documentation. Disciplines selected for cumulative effects analysis are determined on a case - by - case basis early in the NEPA process. This transportation discipline report was not identified for a cumulative effects analysis, but the transportation analysis is by its approach is an examination of the cumulative effects of the system. The traffic analysis includes the section of I-405 from I-5 in Lynnwood to south of I-90 and adjacent sections of I-5, SR 522, SR 520, and I-90. By analyzing this larger area we were able to capture effects that may occur outside the study area.

The I-405, Bellevue to Lynnwood Improvement Project will be constructed as part of the I-405 Corridor Program long-term master plan. The project will improve the transportation system and contribute to the cumulative benefits realized under the master plan.

The I-405 Corridor Program Final Environmental Impact Statement (EIS) describes and evaluates the long-term master plan for the I-405 corridor and provides the appropriate background to address the transportation cumulative effects of the I-405, Bellevue to Lynnwood Improvement Project.

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SECTION 6 MEASURES TO AVOID OR MINIMIZE EFFECTS

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

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

Traffic management strategies in the Bellevue to Lynnwood Improvement project area will be implemented prior to construction to increase public awareness and participation in HOV travel. The major focus will be on expanding vanpooling and vanshare opportunities.

What measures will be taken to mitigate operation effects?

We foresee no adverse effects related to operation that will require mitigation.

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SECTION 7 UNAVOIDABLE ADVERSE EFFECTS

Does the project cause any substantial adverse effects that cannot be avoided?

We do not expect the project to create any substantial adverse effects to traffic or transportation.

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SECTION 8 REFERENCES

GIS data sources

Exhibit 2-1

All data from base data referenced below.

Exhibit 4-1, sheet 1 and 2

WSDOT (Washington State Department of Transportation). 2006 – 2007. I-405 Staff; Morning Peak-Hour Vehicle and Person Trips, and Average Travel Speed.

Exhibit 4-2, sheet 1 and 2

WSDOT (Washington State Department of Transportation). 2006 – 2007. I-405 Staff; Afternoon Peak-Hour Vehicle and Person Trips, and Average Travel Speed.

Exhibit 4-5, sheet 1 - 4

WSDOT (Washington State Department of Transportation). 2006 – 2007. I-405 Staff; 2005 Morning and Afternoon Peak-Hour Intersection Level of Service.

Exhibit 4-6, sheet 1 and 2

WSDOT (Washington State Department of Transportation). 2006 – 2007. I-405 Staff; 2015 Baseline/No Build Morning Peak-Hour Vehicle and Person Trips, and Average Travel Speed.

Exhibit 4-7, sheet 1 and 2

WSDOT (Washington State Department of Transportation). 2006 – 2007. I-405 Staff; 2015 Baseline/No Build Afternoon Peak-Hour Vehicle and Person Trips, and Average Travel Speed.

Exhibit 4-8, sheet 1 - 4

WSDOT (Washington State Department of Transportation). 2006 – 2007. I-405 Staff; 2015 Baseline/No Build Morning and Afternoon Peak-Hour Intersection Level of Service.

Exhibit C-9, sheet 1

WSDOT (Washington State Department of Transportation). 2006 – 2007. I-405 Staff; 2035 Build Alternatives 1 and 2, and No Build Alternative Morning and Afternoon Peak- Hour Intersection Level of Service.

Exhibit C-9, sheet 2A

WSDOT (Washington State Department of Transportation). 2006 – 2007. I-405 Staff.

2035 Build Alternatives 1 and 2 Morning and Afternoon Peak-Hour Intersection Level of Service.

Exhibit C-9, sheet 2B

WSDOT (Washington State Department of Transportation). 2006 – 2007. I-405 Staff.

2035 No Build Alternative Morning and Afternoon Peak-Hour Intersection Level of Service.

Exhibit C-9, sheet 3

WSDOT (Washington State Department of Transportation). 2006 – 2007. I-405 Staff.

2035 Build Alternatives 1 and 2, and No Build Alternative Morning and Afternoon Peak-Hour Intersection Level of Service.

Exhibit C-9, sheet 4

WSDOT (Washington State Department of Transportation). 2006 – 2007. I-405 Staff.

2035 Build Alternatives 1 and 2, and No Build Alternative Morning and Afternoon Peak- Hour Intersection Level of Service.

Text references and verbal communications

FHWA (Federal Highway Administration). 2002. King County Dept. of Transportation, Sound Transit, and Washington State Dept. of Transportation. I-405 Corridor Program NEPA/SEPA Final Environmental Impact Statement and Final Preliminary Section 4(f) Evaluation. June 2002.

HNTB, Mirai Associates, McGowan Environmental. 2003. Traffic Analysis White Paper: I-405 Congestion Relief and Bus Rapid Transit Projects. Prepared for the Washington State Department of Transportation.

King County Metro Online, Transit Schedules. Available at: www.transit.metrokc.gov Accessed on: October, 2006.

Sound Transit. 2003. Sound Transit Express. Service Implementation Plan.

Sound Transit. 2005. Transit Schedules. Available at: www.soundtransit.org Accessed on: October, 2006.

Washington State Department of Transportation (WSDOT). 2003. Average Travel Times for the Top 22 Commutes.

Washington State Department of Transportation (WSDOT). 2006. The Gray Notebook for the quarter ending September 30th, 2006.

Washington State Department of Transportation (WSDOT). 2004. Managed Lanes White Paper. Updated April 2007.

APPENDIX A: PROJECTS INCLUDED IN TRAFFIC MODELING

Within the I-405 corridor, there are two improvement projects assumed to be constructed in the 2015 baseline conditions and No Build Alternative. Exhibit D-1 shows the two projects assumed to be operational by 2015.

Exhibit A-1: I-405 projects assumed for 2015 within the I-405 corridor

I-405 projects assumed completed by 2015	
Location	Project
Bellevue	I-405, NE 8th Street to SR 520 Braided Ramps Project
Tukwila/Renton	Renton Nickel Improvement Project - I-5 to SR 169

Outside of the I-405 corridor, the 2015 network will consist of projects that are currently planned and programmed by WSDOT and other transportation agencies. For the most part, these projects are fully funded or expected to be funded within the next six years. Exhibit D-2 lists projects which are consistent with the No Build Alternative assumptions used in the EIS.

Exhibit A-2: Transportation projects assumed for 2015 outside of I-405 corridor

Regional projects assumed to be completed by 2015		
Location		Project
Seattle/Tacoma		Sound Transit Link Light Rail (Phase 1)
Regionwide		Sound Transit 2008 Bus Service Concepts
King		SR 161 (Jovita Boulevard to S 360th Street) - Widen to 5 Lanes
King		SR 520 (I-5 to I-405) 4-lane freeway + 1 HOV lane (6-lane option)
King		SR 167 (15th Street SW to 15th Street NW) - HOV Improvement
King		SR 518 Add 1 eastbound GP lane from airport access to I-5 and Interchange Improvements
King		SR 519 - Phase 2
King		SR 99 (N 145th Street to N 200th Street) - Transit/HOV Lanes
Snohomish		SR 9 (SR 522 to 176th Street SE) - Stage 1 and 2
Snohomish		SR 525 (SR 99 to Paine Field) - 5 lanes
Snohomish		SR 527 (132nd SE to 112th SE) - Additional Lanes
2015 committed arterial projects (I-405 Corridor Program EIS Project # shown in second column)		
Bothell, Snohomish	R.AC-21	120th NE and 39th SE (NE 195th to Maltby Road) - 4/5 lanes including new connection
Bellevue	R-08	NE 29th Place (148th Avenue NE to NE 24th Street) - Construct new 2 lane road
Snohomish	R-10	SR 524 (24th Street SW to SR 527) - Widen to 4/5 lanes including sidewalks, bicycle lanes
Kirkland	R-21	NE 120th Street (Slater Avenue to 124th Avenue NE) - Construct new 3 lane roadway with pedestrian and bicycle facilities

Regional projects assumed to be completed by 2015		
Location		Project
Redmond/ WSDOT	R-25	SR 202 Corridor Improvements (East Lake Sammamish Parkway to Sahalee Way) - Widen to 3/5 lanes; intersection improvements with bicycle and pedestrian facilities
Redmond	R-26	NE 90th Street (Willows Road to SR 202) - Construct new 4/5 lanes with bicycle facilities
Redmond	R-28	West Lake Sammamish Parkway (Leary Way to Bel-Red Road) - Widen to 4/5 lanes with CGS*, bicycle lanes
Renton	R-36	Oakesdale Avenue SW (SW 31st Street to SW 16th Street) - Construct new 5 lane roadway
KCDOT	R-39 & R.AC-2	140th Avenue SE (SR 169 to SE 208th Street) - Widen to 5 lanes; (SR 169 to SE 196th Street) Widen for turn channels on SE 196th. Combines 2 King County CIP projects. A major north-south arterial that serves the Soos Creek Plateau and Fairwood
KCDOT	R-47	NE 124th Street (Willows Road to SR 202) - Widen to 3/4 lanes with CGS; bicycle facilities; traffic signal
Woodinville	R-51	Woodinville-Snohomish Road/140th Avenue NE (NE 175th Street to SR 522) - Widen to 4/5 lanes with CGS; bicycle lanes
Bellevue	R-101	150th Avenue SE (SE 36th Street to SE 38th Street) - Widen to 7 lanes; add turn lanes
Redmond	R-111 & R.AC-15	Willows Road Corridor Improvements - Channelization of Willows Road and Redmond Way intersection; widening of Willows Road from NE 116th to NE 124th
Snohomish	R-117	39th Avenue SE realignment at SR 524 and York Road - Construct 4-way intersection to replace 2 offset intersections
WSDOT	R.PB-27	SR 520 and SR 202 interchange - Complete interchange by constructing a new ramp and thru-lane on SR 202 to SR 520 (ETP R-29) NOTE: Part of Nickel Package

** CGS – Curb, gutter, and sidewalks*

Outside of the I-405 corridor, the 2035 network will consist of planned, programmed, and reasonably foreseeable projects to be implemented during the next 25 years. This network includes all of the projects assumed for 2015, plus additional regional and local projects that have been given high priority in recent programming processes. Several of these projects have the potential to affect the travel conditions along the I-405 corridor, so their inclusion in the network is important to establish realistic traffic forecasts for environmental and design purposes. All of the projects are included within the PSRC *Destination 2030* as being important to implement by 2035. While several projects are currently not funded, they have been consistently included in multi-jurisdictional funding forums, such as the RTID and ETP 10-year Mobility Action Priorities. Given the importance of transportation issues in the Puget Sound Region, it is reasonable to assume that transportation investments will continue throughout the next 25 years. The assumed projects represent only a portion of the overall regional needs.

The projects included in Exhibit D-3 are assumed to be completed by 2035. The selection of these projects met the following rationale:

- Included within *Destination 2030*;
- Included within established funding and prioritization processes (e.g., RTID, ETP, SKATBD, etc.);

- Could potentially affect transportation conditions along the I-405 corridor; and
- Environmental processes either complete, in process, or expected to be underway by 2009.

By meeting these tests, the listed projects were considered to have a reasonable likelihood of being implemented prior to 2035.

Exhibit A-3: Regional projects assumed for 2035 outside the I-405 corridor

Regional projects assumed to be completed by 2035	
Location	**Project**
King County	Sound Transit Link Light Rail (Phase 2)
SR 410 (Pierce County)	Additional Lanes - 214th to 234th
I-5 (Tacoma)	New HOV Lanes - Port of Tacoma Road to King and Pierce County Line
SR 167 Extension (Pierce County)	6-lane freeway
SR 167 (I-405 to Puyallup)	Add HOV lanes - 15th Street SW to SR 161 (Puyallup) Add 1 lane each direction - SW 43rd St/S 180th St to SR 18
SR 18 (Auburn to I-90)	4-lane expressway - SR 516 to I-90
Alaskan Way Viaduct	Replace viaduct with 4-lane bored tunnel
I-90 Two-Way Transit and HOV	Alternative R-8A - rail across I-90
SR 522 (Snohomish)	4 Lane Widening - Snohomish River to US 2

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APPENDIX B: EXISTING TRANSIT SERVICE IN THE STUDY AREA

Exhibit B-1: Existing transit service in the study area

Route	Service area	Service type
CT 105	Everett, Mariner P&R[1], Mill Creek, Canyon Park P&R, Bothell P&R, UW Bothell Campus, Cascadia Community College	Weekdays
CT 106	Everett, Mariner P&R, Mill Creek, Canyon Park P&R, Bothell P&R, UW Bothell Campus, Cascadia Community College	Weekdays, Saturday, Sunday
CT 120	UW Bothell Campus, Cascadia Community College, Canyon Park P&R, Alderwood Manor, Lynnwood Transit Center	Weekdays, Saturday, Sunday
CT 121	UW Bothell Campus, Cascadia Community College, Canyon Park P&R, Lynnwood Transit Center	Weekdays
230	Kingsgate P&R, Rose Hill, Kirkland Transit Center, S Kirkland P&R, Bellevue Transit Center, Crossroads, Overlake, Redmond P&R	Weekdays, Saturday, Sunday
234	Kenmore, Finn Hill, Juanita, Kirkland Transit Center, Northwest College, S Kirkland P&R, Bellevue Transit Center	Weekdays, Saturday
236	Kirkland Transit Center, Kirkland, Juanita, Totem Lake, Kingsgate, Brickyard P&R, Bothell, Woodinville P&R	Weekdays, Saturday, Sunday
237	Bellevue Transit Center, Houghton P&R, Brickyard P&R, Woodinville P&R	Weekdays
238	Kirkland Transit Center, Rose Hill, Lake Washington Technical College, Totem Lake, Kingsgate P&R, Finn Hill, Brickyard P&R, Bothell P&R, UW Bothell Campus, Cascadia Community College	Weekdays, Saturday, Sunday
245	Kirkland, Houghton P&R, Redmond, Overlake, Bellevue, Eastgate P&R, Factoria	Weekdays, Saturday, Sunday
251	Kirkland Transit Center, Houghton P&R, Redmond P&R, Bear Creek P&R, Cottage Lake, Woodinville P&R, Bothell, UW Bothell Campus	Weekdays, Saturday
252	Downtown Seattle, SR-520 Freeway Stops, Kingsgate P&R, Totem Lake	Weekdays
254	Kirkland Transit Center, Houghton P&R, Redmond P&R, Education Hill	Weekdays, Saturday, Sunday
255	Brickyard P&R, Kingsgate P&R, Kingsgate, Juanita, Kirkland Transit Center, Northwest College, South Kirkland P&R, Montlake, Downtown Seattle	Weekdays, Saturday, Sunday
256	Overlake Transit Center, Overlake, S Kirkland P&R, SR-520 Freeway Stops, Downtown Seattle	Weekdays
257	Downtown Seattle, SR-520 Freeway Stops, Houghton P&R, Kingsgate P&R, Brickyard P&R, Kingsgate	Weekdays
260	Downtown Seattle, SR-520 Freeway Stops, Houghton P&R, Juanita, Finn Hill	Weekdays
265	Downtown Seattle, SR-520 Freeway Stops, Houghton P&R, Rose Hill, Redmond P&R	Weekdays
277	Juanita, Kingsgate P&R, Rose Hill, Houghton P&R, SR-520 Freeway stops, UW Campus	Weekdays
291	Kingsgate P&R, Redmond Civic Center, Redmond P&R, Redmond Town Center	Weekdays
311	Downtown Seattle, SR-520 Freeway Stops, Brickyard P&R, Woodinville, Duvall	Weekdays
312	Downtown Seattle, Lake City, Lake Forest Park, Kenmore P&R, Bothell P&R, UW	Weekdays

Route	Service area	Service type
	Bothell Campus, Cascadia Community College	
342	Shoreline P&R, Aurora Village Transit Center, Lake Forest Park, Kenmore, Bothell P&R, Brickyard P&R, Houghton P&R, Bellevue Transit Center, Wilburton P&R, Coal Creek Pkwy Freeway Station, Newport Hills, Kennydale P&R, Renton Boeing, Renton Transit Center	Weekdays
372	University District, Ravenna, Wedgewood, Lake Forest Park, Northshore P&R, Kenmore P&R, Bothell P&R, Woodinville P&R	Weekdays
CT 424	Snohomish P&R, Monroe P&R, Brickyard P&R, SR-520 Freeway Stops, Downtown Seattle	Weekdays
CT 435	Mays Pond, Canyon Park P&R, Downtown Seattle	Weekdays
CT 441	Edmonds P&R, Lynnwood P&R, Canyon Park P&R, Redmond, Overlake	Weekdays
ST 522	Downtown Seattle, Lake Forest Park, Kenmore P&R, Bothell P&R, UW Bothell Campus, Cascadia Community College, Woodinville P&R	Weekdays, Saturday, Sunday
ST 532	Downtown Everett, Everett Station, Eastmont P&R, Ash Way P&R, Canyon Park P&R, Brickyard P&R, Bellevue Transit Center	Weekdays
ST 535	Lynnwood P&R, Alderwood Mall, Canyon Park P&R, UW Bothell Campus, Cascadia Community College, Bothell P&R, Brickyard P&R, Houghton P&R, Bellevue Transit Center	Weekdays, Saturday, Sunday
630	Bellevue Transit Center, Houghton P&R, Kingsgate P&R	Weekdays
644	Kenmore P&R, Finn Hill, Kirkland, Kingsgate P&R, Overlake Transit Center, Redmond	Weekdays
935	Kenmore, Bastyr University, Finn Hill, Juanita, Kingsgate P&R, Evergreen Hospital, Totem Lake, DART	Weekdays
952	Auburn P&R, Kent Station, Kennydale P&R, Newport Hills P&R, Wilburton P&R, Houghton P&R, Brickyard P&R, Boeing Everett Gate E-77	Weekdays
986	Houghton P&R, S Kirkland P&R, Montlake, Wedgewood, Lakeside School	Weekdays

[1] *Park-and-Ride*

Source: King County Metro webpage, Sound Transit webpage and Community Transit webpage

APPENDIX C: TRANSIT ACCESS TO EXPRESS TOLL LANES

Exhibit C-1: Northbound I-405 Express Toll Lane access by transit route

	← NORTHBOUND ←																					
	Ramps																					
Route	I-5		SR 527		NE 195 St		SR 522		NE 160 St		NE 128 St		NE 116 St		NE 85 St		NE 70 St		SR 520		NE 6th St	
237							x		x		x*										x*	
252											x*								x			
257											x*								x			
260													x				x		x			
265																	x		x			
277																	x		x			
311							x		x		x*								x			
342							x		x		x*						x				x*	
952	x								x		x*						x					
424							x				x*								x			
435	x		x																			
522					x		x															
532	x		x						x		x*										x*	
535	x		x		x		x		x		x*										x*	

Key	
	Operates in this section of I-405
	No access to express toll lanes this section
x	Enters/Exits I-405 at this location
*	Direct access to/from HOV lanes
	King County Metro routes
	Community Transit routes
	Sound Transit routes

Exhibit C-2: Southbound I-405 Express Toll Lane access by transit route

	→ SOUTHBOUND →																					
	Ramps																					
Route	I-5		SR 527		NE 195 St		SR 522		NE 160 St		NE 128 St		NE 116 St		NE 85 St		NE 70 St		SR 520		NE 6th St	
237							x		x		x*										x*	
252											x*								x			
257											x*								x			
260													x				x		x			
265																	x		x			
277																	x		x			
311							x		x		x*								x			
342							x		x		x*						x				x*	
952	x								x		x*						x					
424							x				x*								x			
435	x		x																			
522					x		x															
532	x		x						x		x*										x*	
535	x		x		x		x		x		x*										x*	

Key	
	Operates in this section of I-405
	No access to express toll lanes this section
x	Enters/Exits I-405 at this location
*	Direct access to/from HOV lanes
	King County Metro routes
	Community Transit routes
	Sound Transit routes

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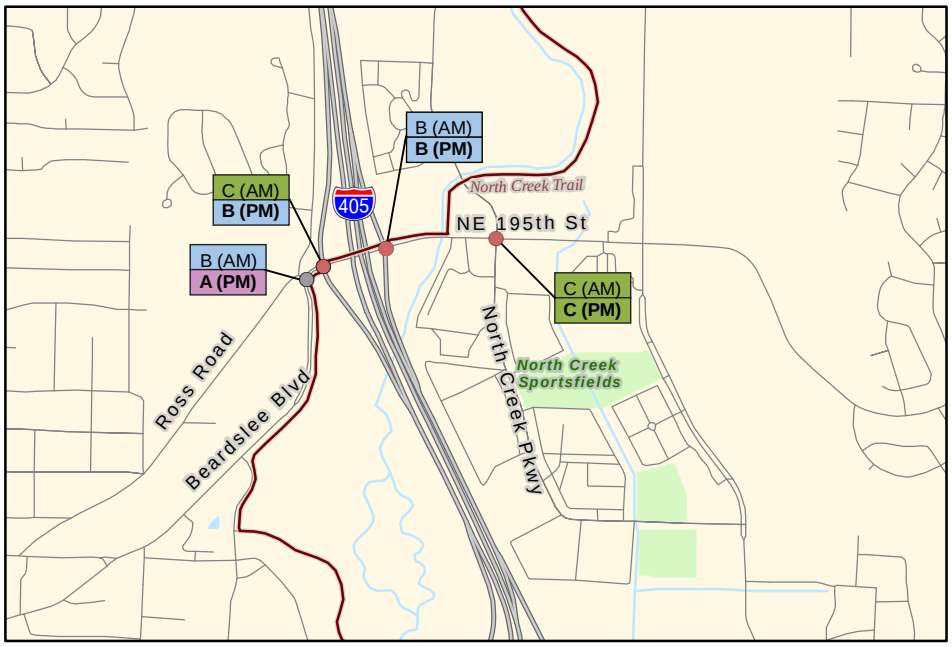
APPENDIX D: 2035 INTERSECTION LEVEL-OF-SERVICE

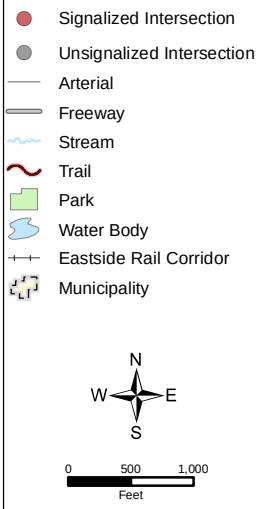
Exhibit D-1: 2035 No Build morning and afternoon peak-hour intersection level of service - sheet 1 of 6

SR 527 and I-405 Interchange



NE 195th St and I-405 Interchange

Level Of Service (LOS)	*Signalized Stopped Delay per Vehicle (seconds)*	*Unsignalized Average Total Delay per Vehicle (seconds)*	*General Description*
A	*0 - 10*	*0 - 10*	Little or No Delay
B	*10 - 20*	*10 - 15*	Short Delays
C	*20 - 35*	*15 - 25*	Average Delays
D	*35 - 55*	*25 - 35*	Long Delays
E	*55 - 80*	*35 - 50*	Very Long Delays
F	*> 80*	*> 50*	Failure - Extreme Congestion



BTL LOS2035NB SR27 195th.mxd
Updated: 1-21-11

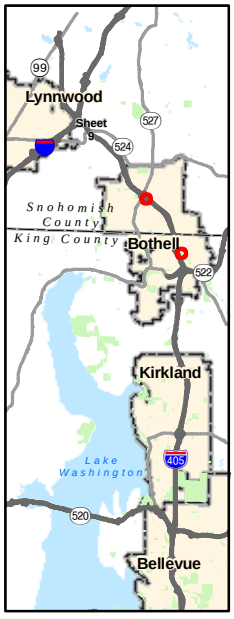
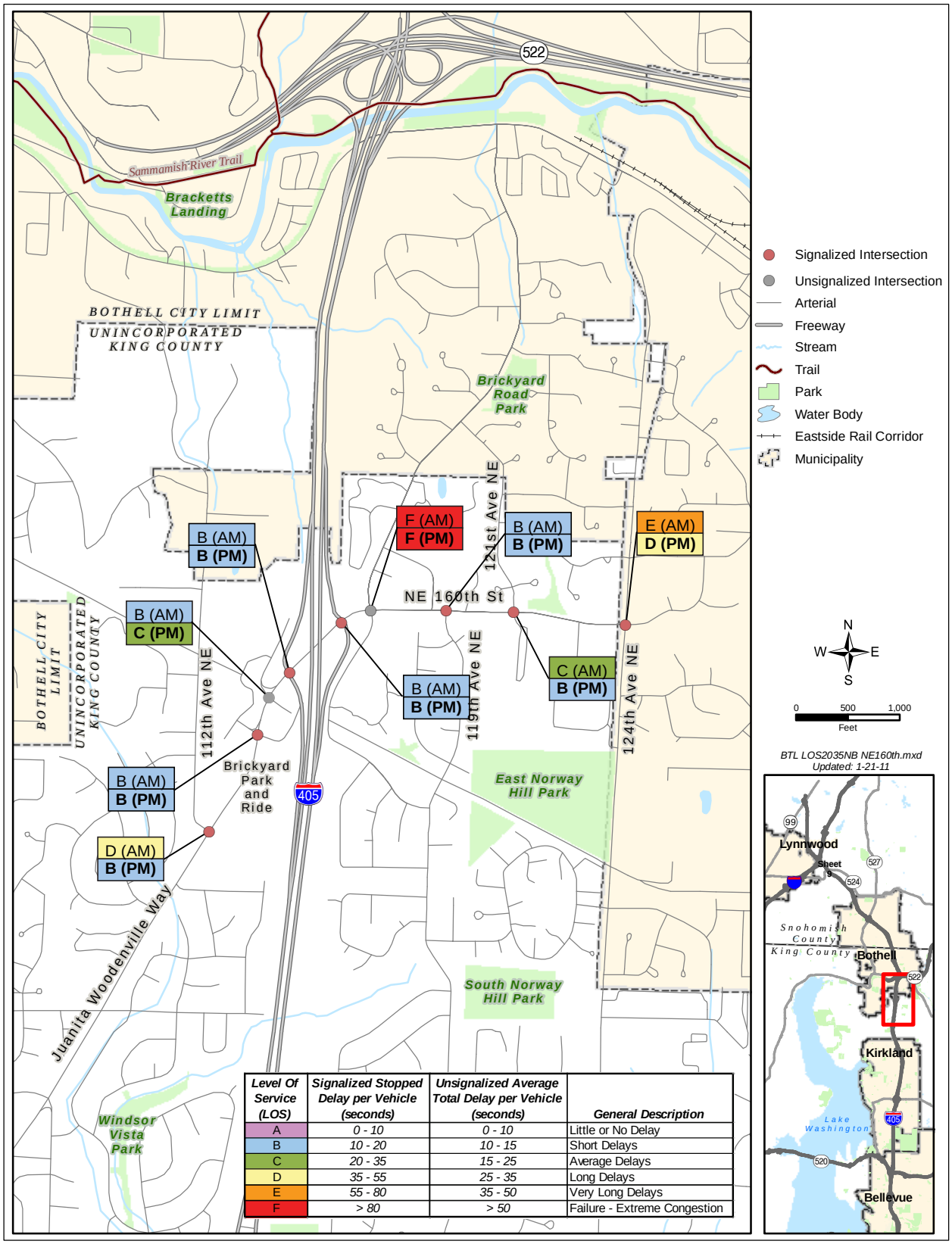
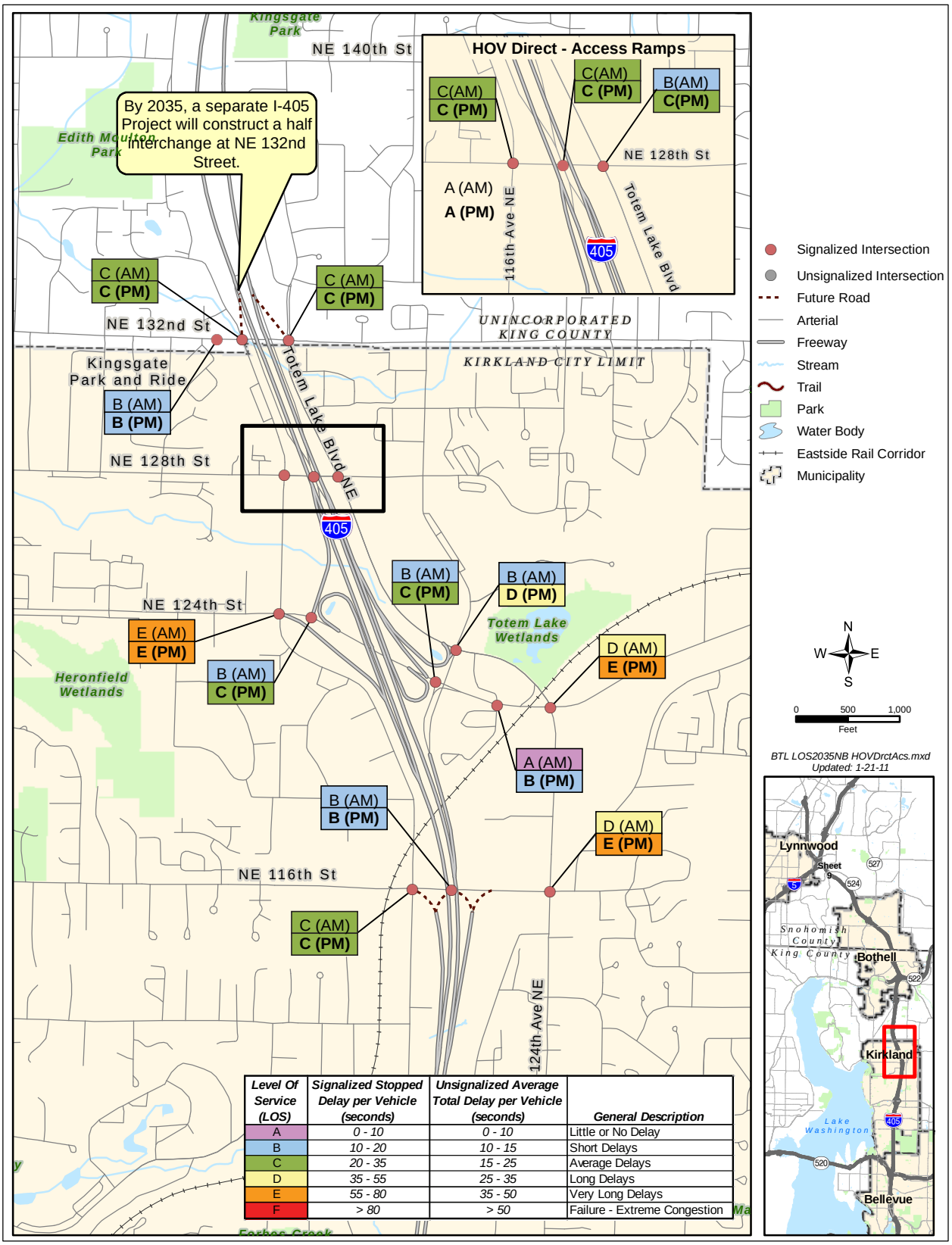


Exhibit D-1: 2035 No Build morning and afternoon peak-hour intersection level of service – sheet 2 of 6



Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

Exhibit D-1: 2035 No Build morning and afternoon peak-hour intersection level of service – sheet 3 of 6

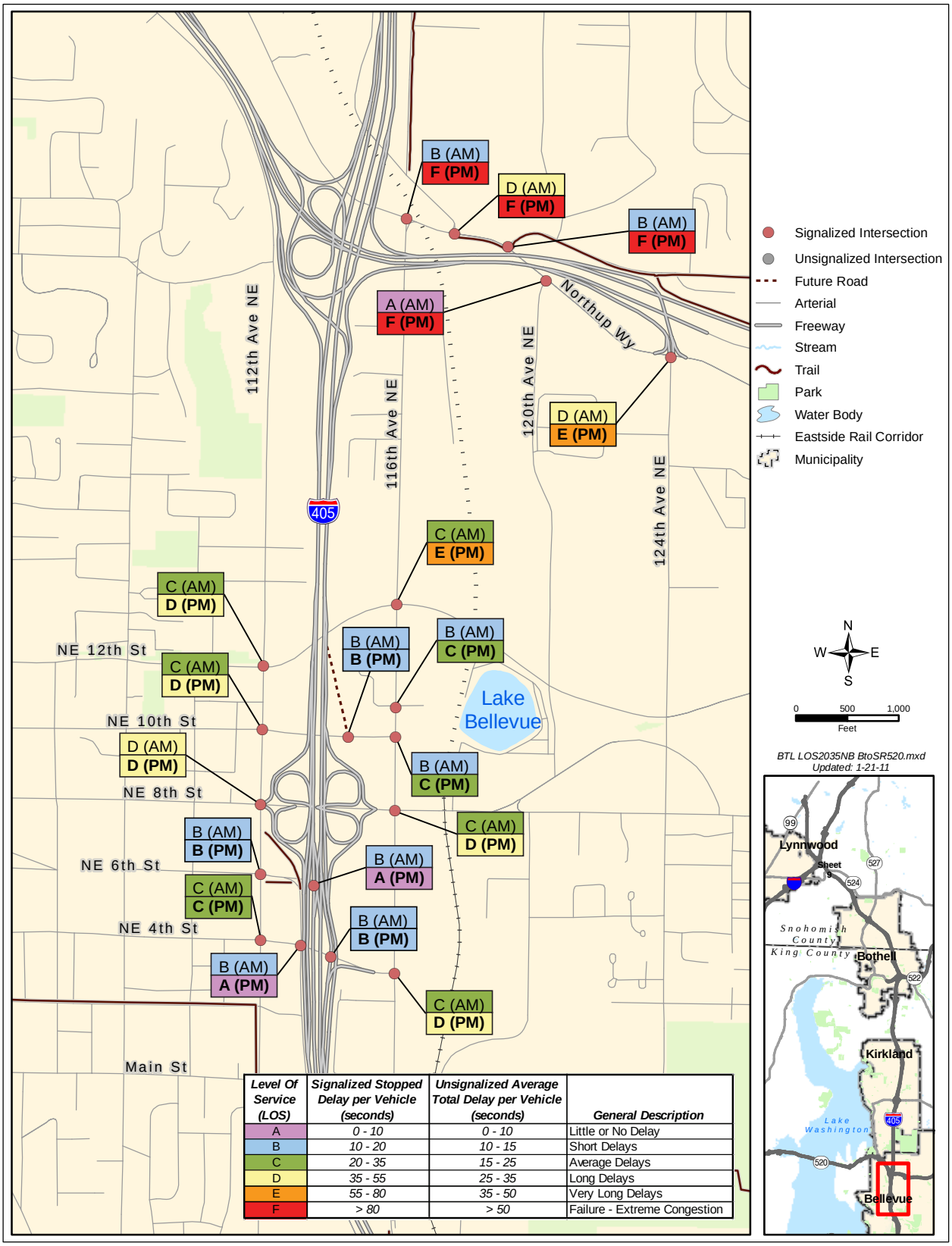


Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

Exhibit D-1: 2035 No Build morning and afternoon peak-hour intersection level of service – sheet 4 of 6

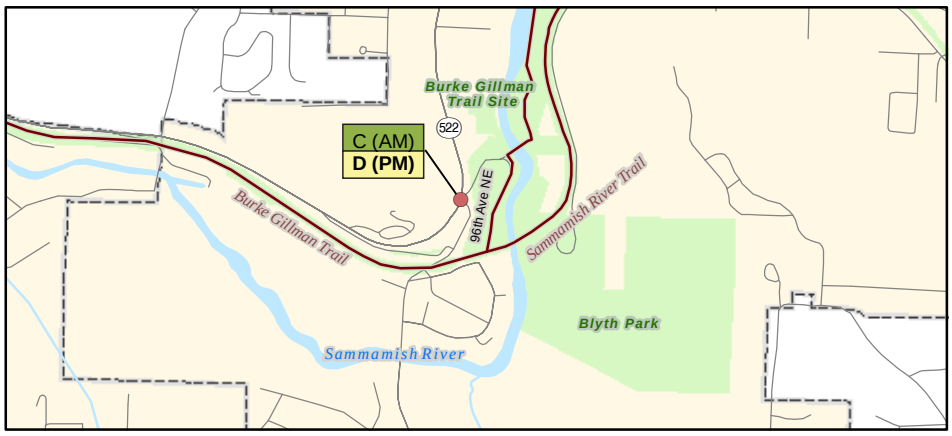
Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

Exhibit D-1: 2035 No Build morning and afternoon peak-hour intersection level of service – sheet 5 of 6

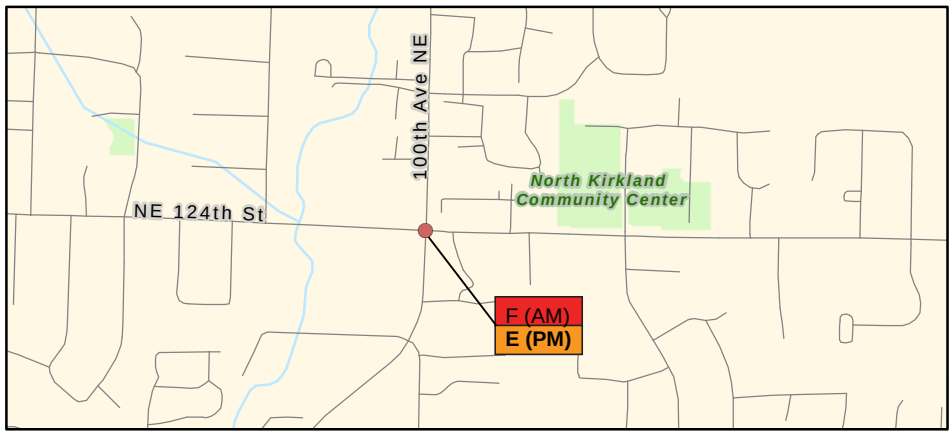


Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

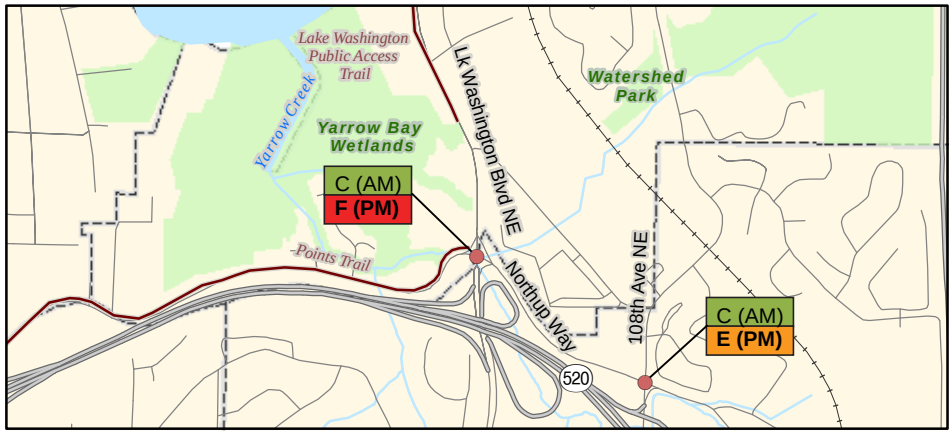
Exhibit D-1: 2035 No Build morning and afternoon peak-hour intersection level of service – sheet 6 of 6



SR 522 and 96th Ave NE



NE 124th St and 100th Ave NE



Northup Way, Lake Washington Blvd NE, and 108th Ave NE

Level Of Service (LOS)	*Signalized Stopped Delay per Vehicle (seconds)*	*Unsignalized Average Total Delay per Vehicle (seconds)*	*General Description*
A	*0 - 10*	*0 - 10*	Little or No Delay
B	*10 - 20*	*10 - 15*	Short Delays
C	*20 - 35*	*15 - 25*	Average Delays
D	*35 - 55*	*25 - 35*	Long Delays
E	*55 - 80*	*35 - 50*	Very Long Delays
F	*> 80*	*> 50*	Failure - Extreme Congestion

LOS2035NB 522 124th Nrthp.mxd
Updated: 1-21-11

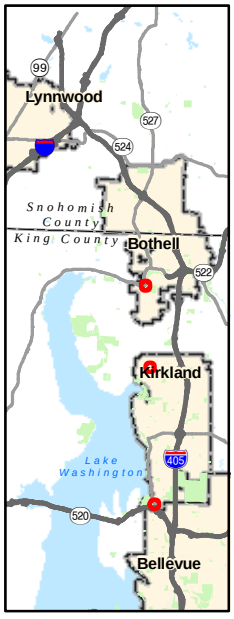
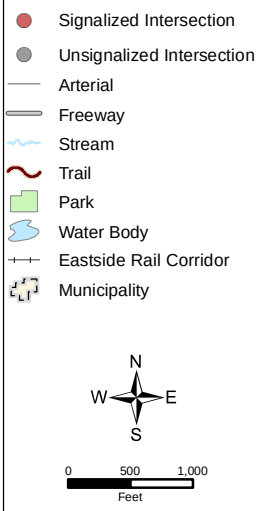


Exhibit D-2: 2035 Build Alternatives morning and afternoon peak-hour intersection level of service - sheet 1

SR 527 and I-405 Interchange

NE 195th St and I-405 Interchange

Level Of Service (LOS)	*Signalized Stopped Delay per Vehicle (seconds)*	*Unsignalized Average Total Delay per Vehicle (seconds)*	*General Description*
A	*0 - 10*	*0 - 10*	Little or No Delay
B	*10 - 20*	*10 - 15*	Short Delays
C	*20 - 35*	*15 - 25*	Average Delays
D	*35 - 55*	*25 - 35*	Long Delays
E	*55 - 80*	*35 - 50*	Very Long Delays
F	*> 80*	*> 50*	Failure - Extreme Congestion



BTL ILOS2035B SR27 195th.mxd
Updated: 1-21-11

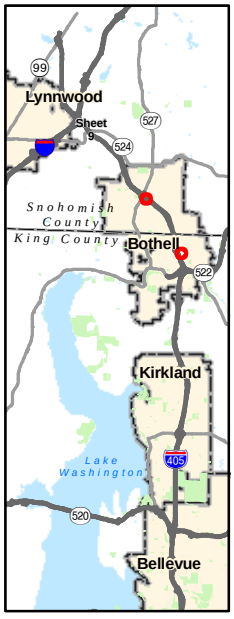
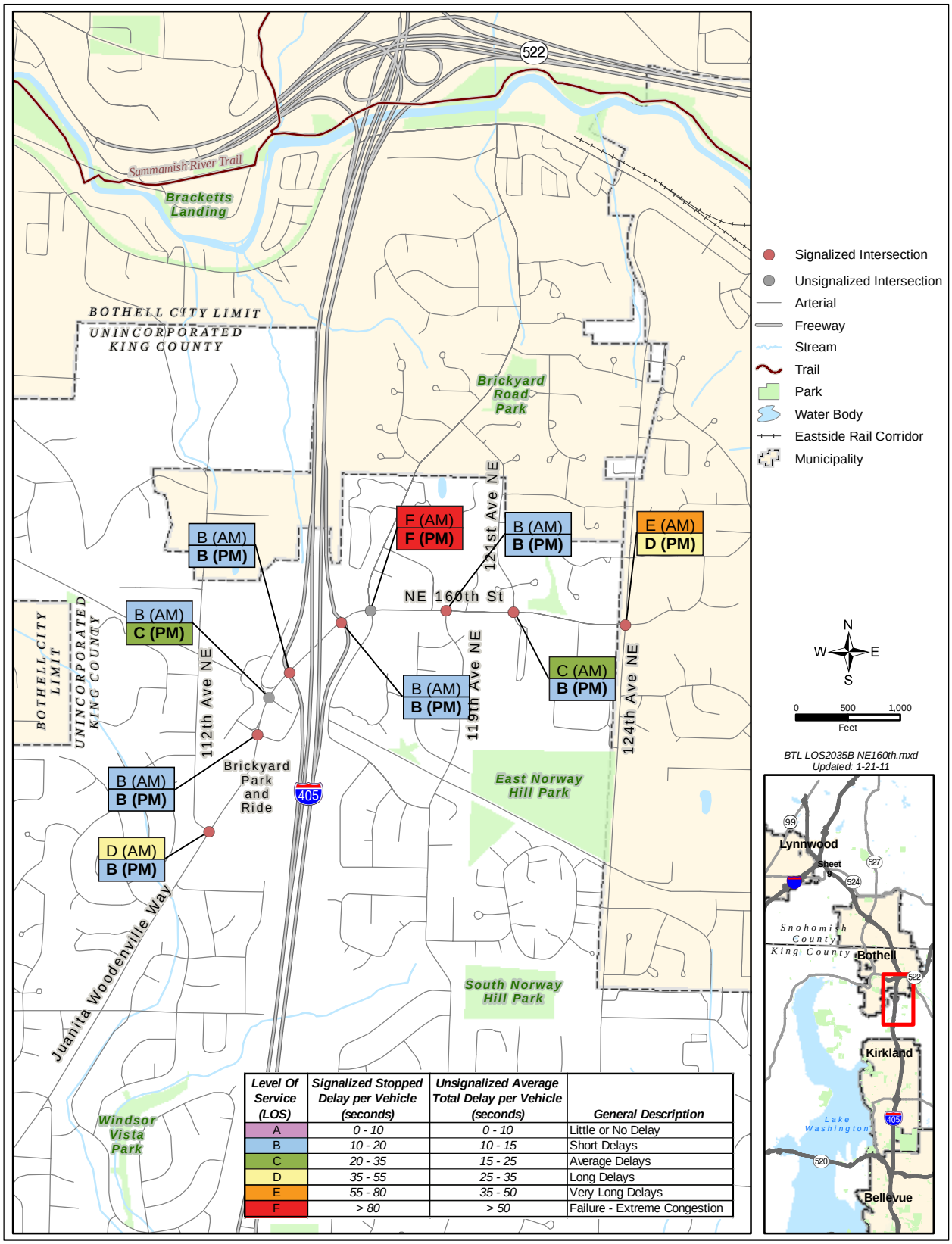
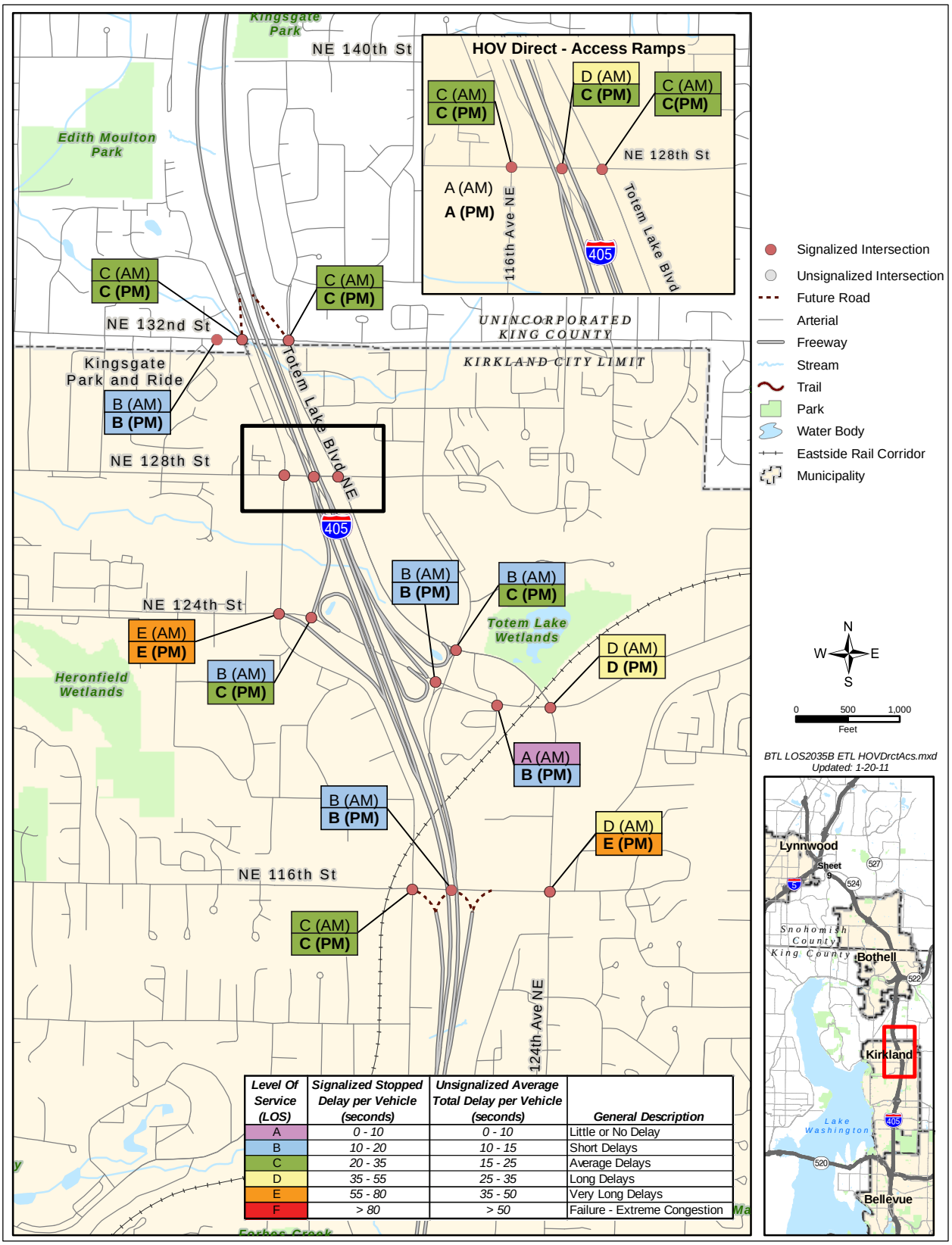


Exhibit D-2: 2035 Build Alternatives morning and afternoon peak-hour intersection level of service – sheet 2



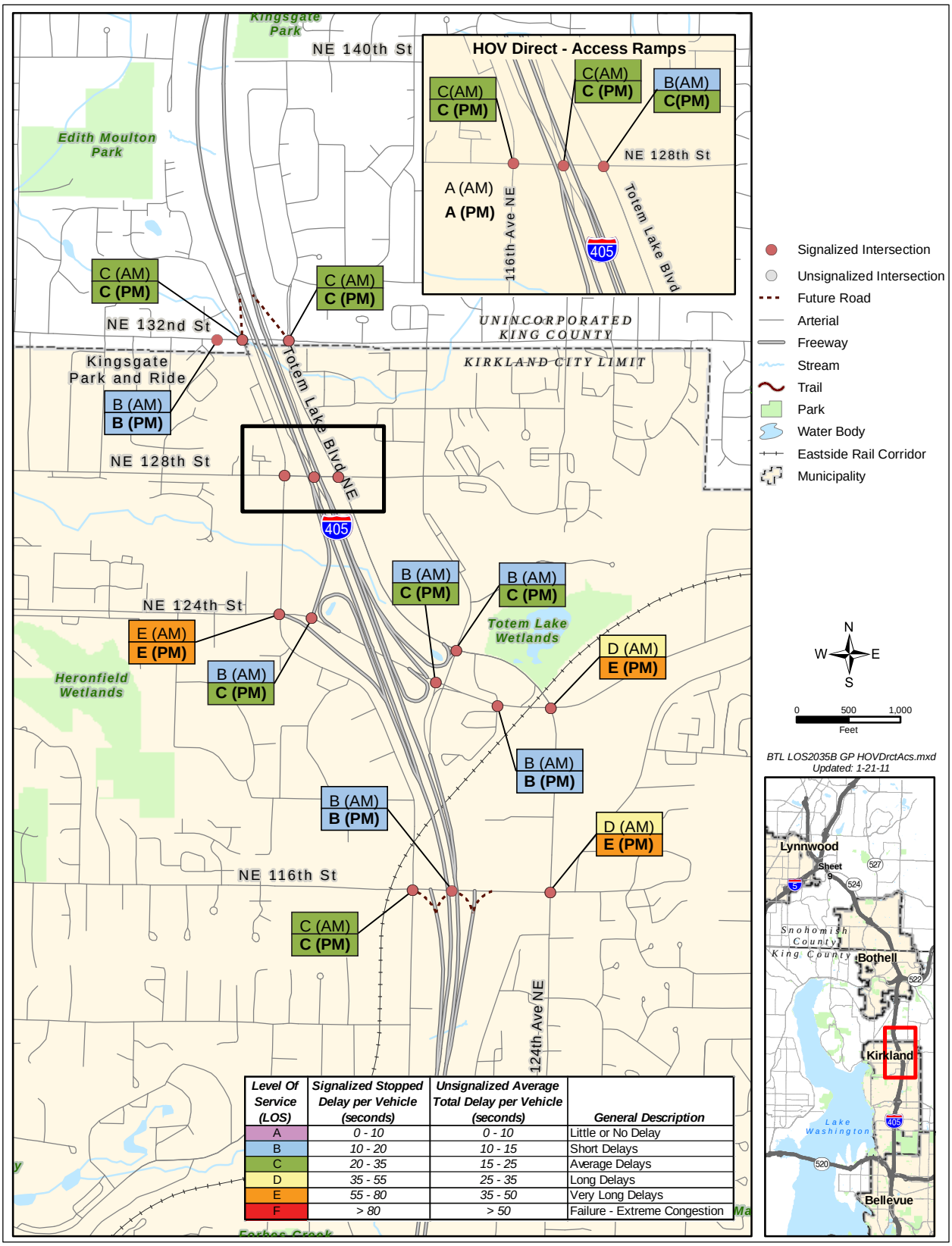
Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

Exhibit D-2: 2035 Build Alternative 1 morning and afternoon peak-hour intersection level of service – sheet 3A



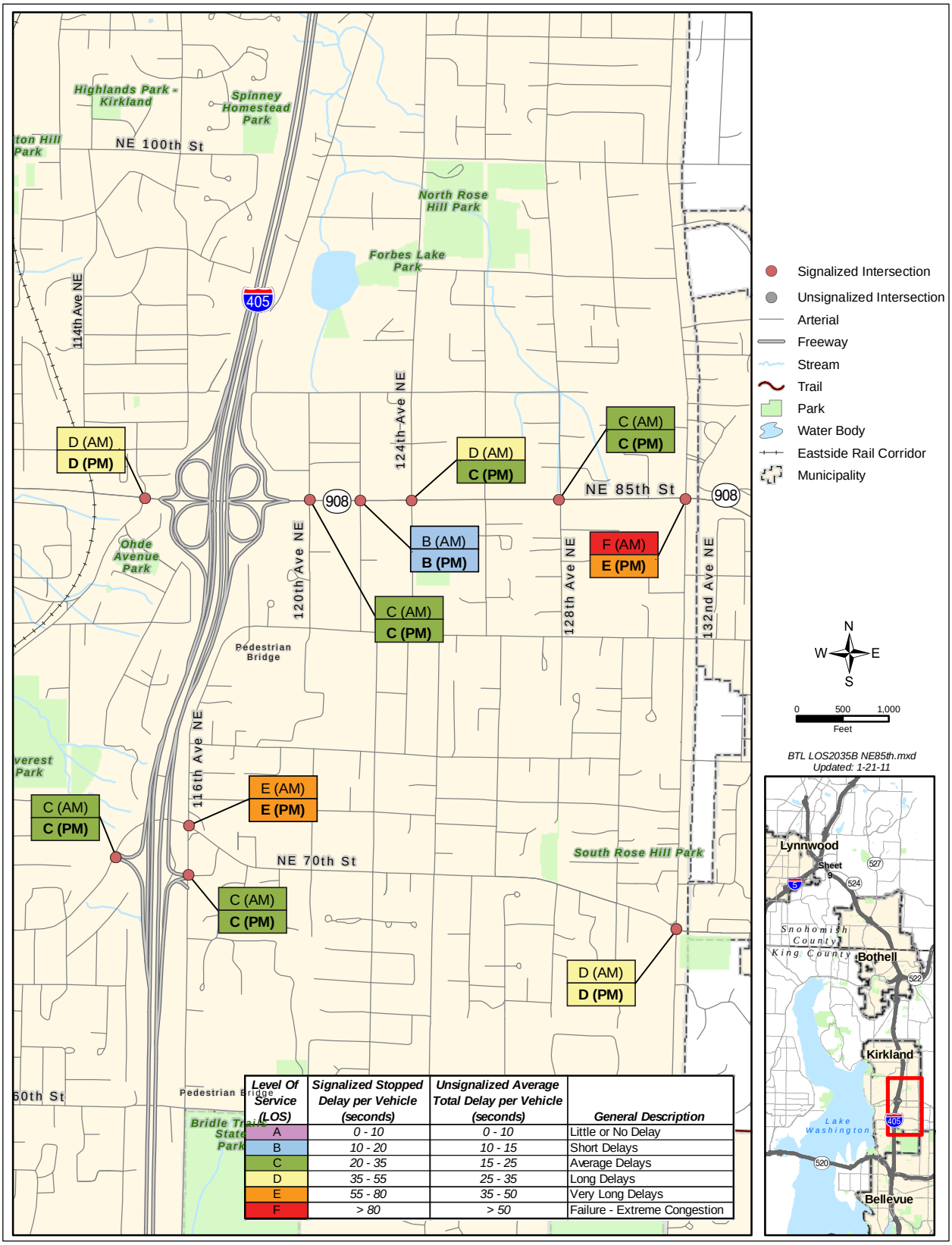
Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

Exhibit D-2: 2035 Build Alternative 2 morning and afternoon peak-hour intersection level of service – sheet 3B



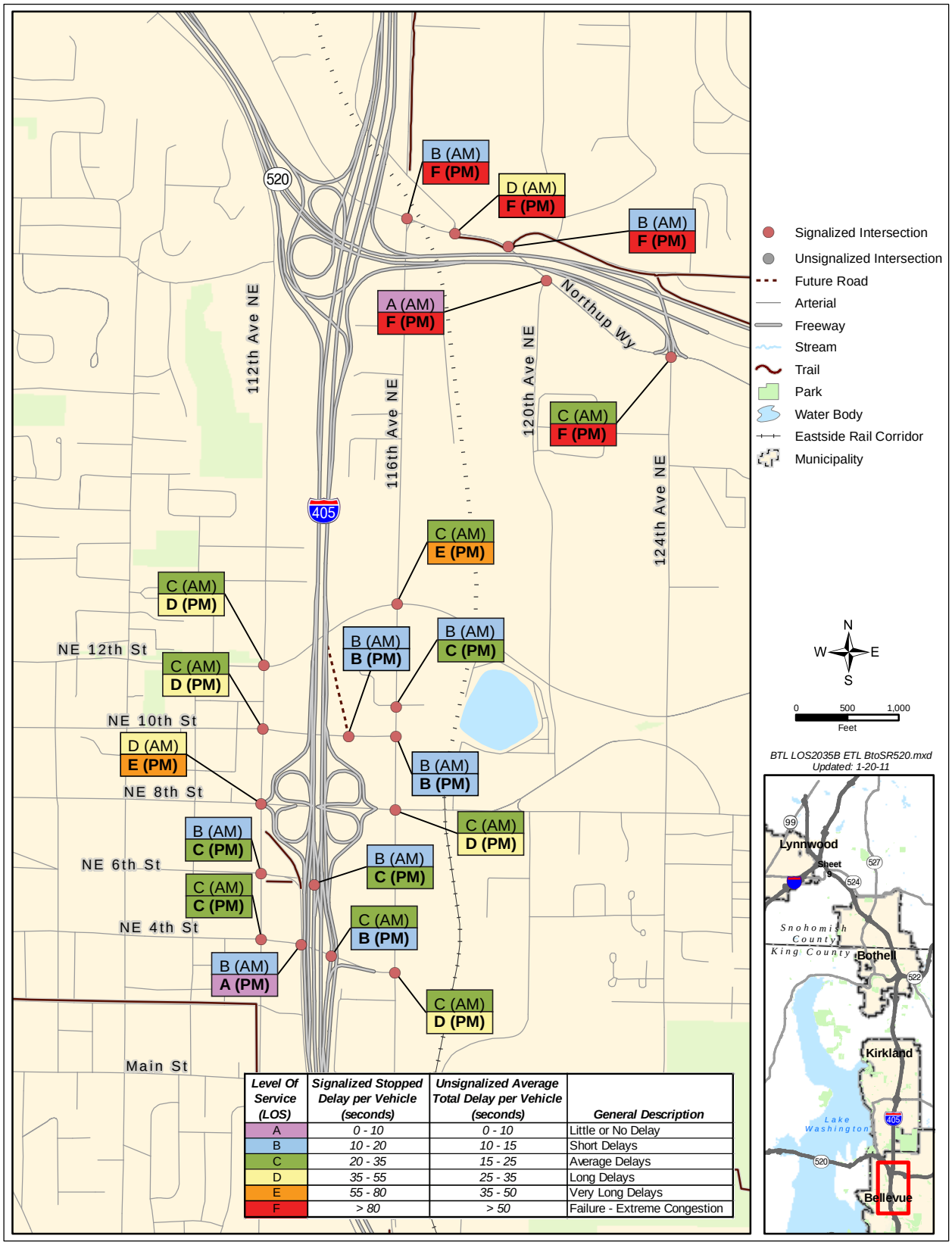
Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

Exhibit D-2: 2035 Build Alternatives morning and afternoon peak-hour intersection level of service – sheet 4



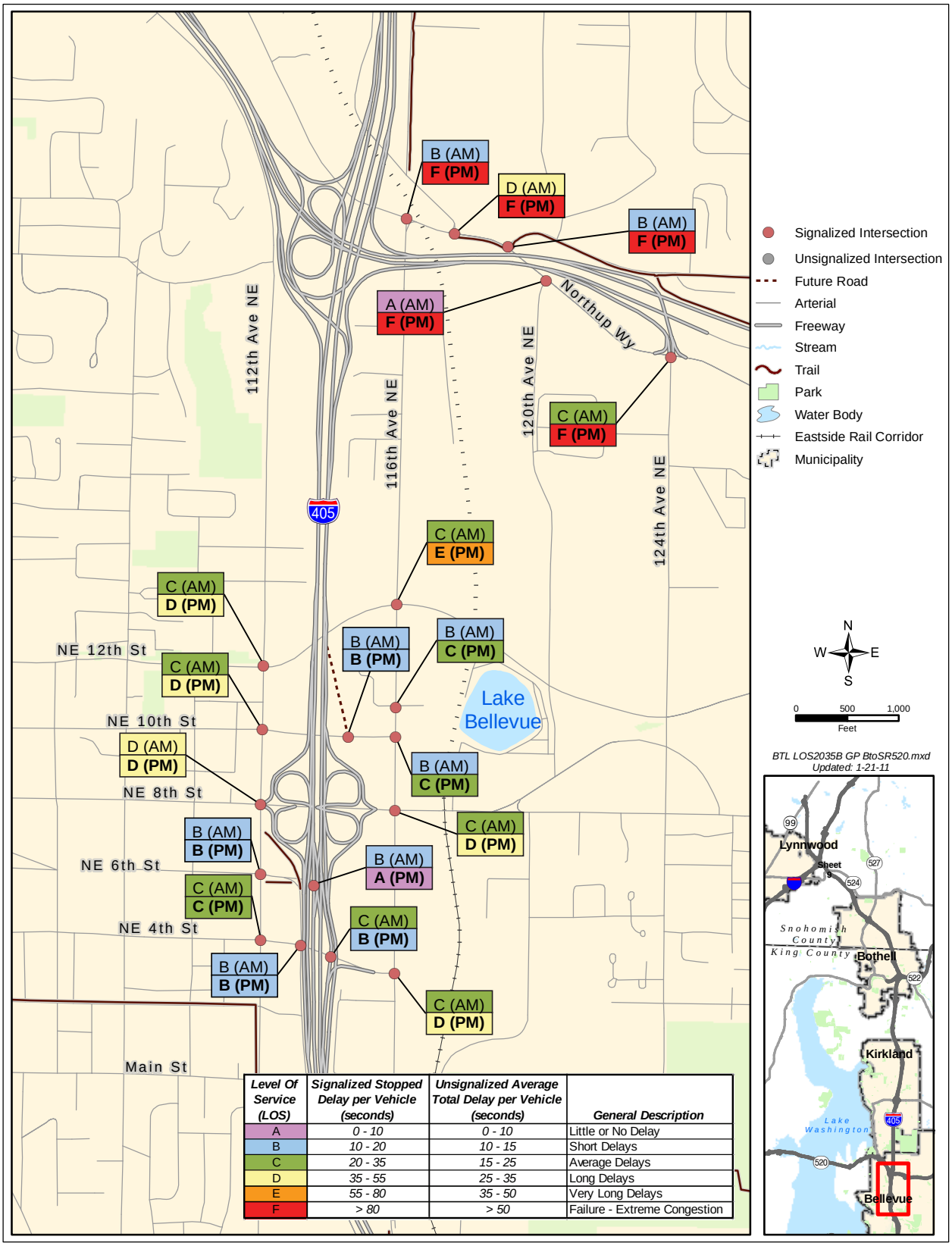
Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

Exhibit D-2: 2035 Build Alternative 1 morning and afternoon peak-hour intersection level of service – sheet 5A



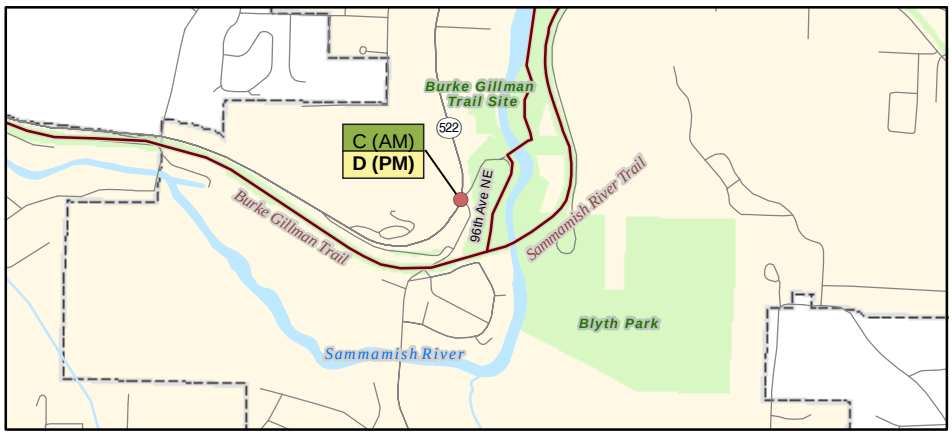
Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

Exhibit D-2: 2035 Build Alternative 2 morning and afternoon peak-hour intersection level of service – sheet 5B

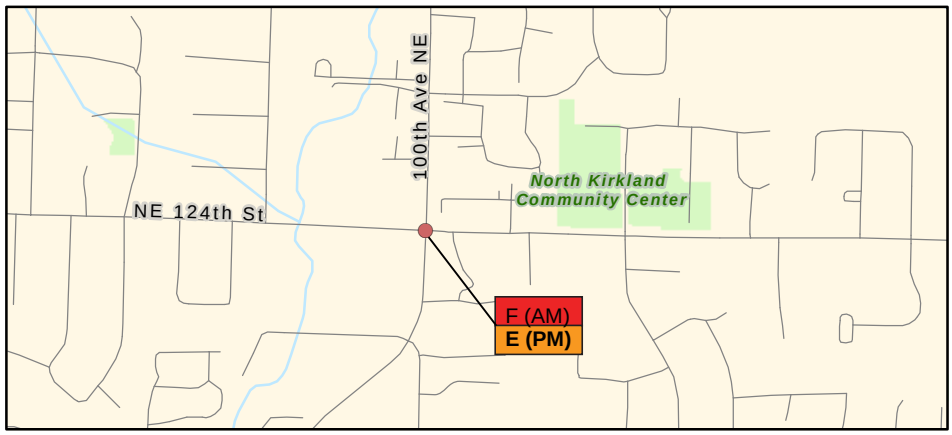


Level Of Service (LOS)	Signalized Stopped Delay per Vehicle (seconds)	Unsignalized Average Total Delay per Vehicle (seconds)	General Description
A	0 - 10	0 - 10	Little or No Delay
B	10 - 20	10 - 15	Short Delays
C	20 - 35	15 - 25	Average Delays
D	35 - 55	25 - 35	Long Delays
E	55 - 80	35 - 50	Very Long Delays
F	> 80	> 50	Failure - Extreme Congestion

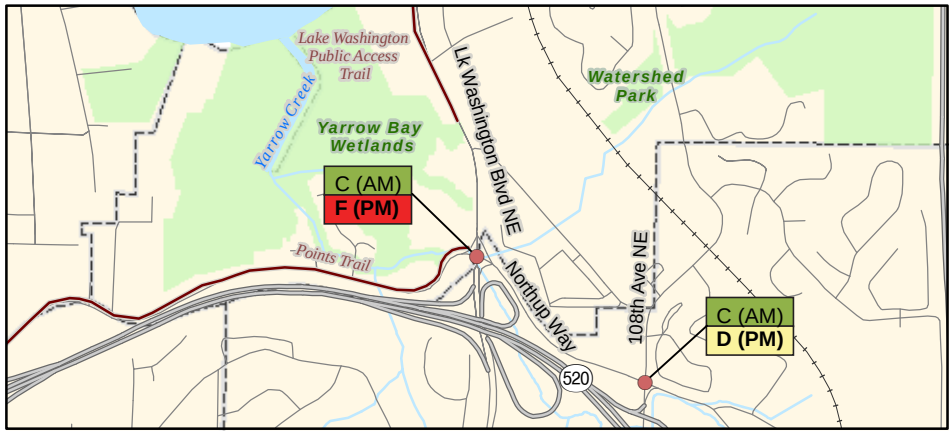
Exhibit D-2: 2035 Build Alternatives morning and afternoon peak-hour intersection level of service – sheet 6



SR 522 and 96th Ave NE

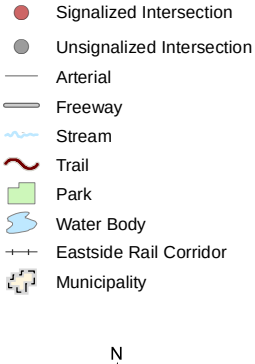


NE 124th St and 100th Ave NE

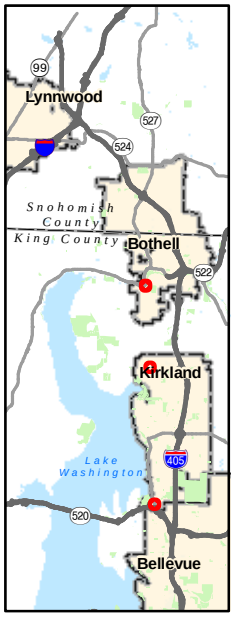


Northup Way, Lake Washington Blvd NE, and 108th Ave NE

Level Of Service (LOS)	*Signalized Stopped Delay per Vehicle (seconds)*	*Unsignalized Average Total Delay per Vehicle (seconds)*	*General Description*
A	*0 - 10*	*0 - 10*	Little or No Delay
B	*10 - 20*	*10 - 15*	Short Delays
C	*20 - 35*	*15 - 25*	Average Delays
D	*35 - 55*	*25 - 35*	Long Delays
E	*55 - 80*	*35 - 50*	Very Long Delays
F	*> 80*	*> 50*	Failure - Extreme Congestion



LOS2035NB 522 124th Nrthp.mxd
Updated: 3-11-11



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