

**Attachment E1**  
**Noise Technical Memorandum-Proposed**  
**Refinements**

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Date: March 4, 2013  
Subject: Supplemental Noise Analysis for Potential Refinements  
Project: East Link Extension

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## 1. Introduction

This technical memorandum provides the results of the noise analysis for several potential refinements for the East Link Extension. Details on the methods, criteria and general acoustical information are provided in the *Appendix H2, Noise and Vibration Technical Report* of the *East Link Light Rail Transit Project Final Environmental Impact Statement* (East Link Final EIS).<sup>1</sup> Complete copies of the environmental documentation can be found at Sound Transit's East Link Extension Web site at <http://www.soundtransit.org/x6887.xml>. The following analysis areas and evaluations are included in this memorandum:

- **Shift Bellevue Way Option:** This is a modified at-grade alignment along the east side of Bellevue Way SE, from the main entrance of the South Bellevue Park-and-Ride to the “Y” intersection with 112th Avenue SE. The City of Bellevue is also considering constructing a southbound high-occupancy vehicle (HOV) lane on Bellevue Way SE, the noise impacts of which are considered as a cumulative impact.
- **112th Road Over Rail Option:** This option involves raising 112th Avenue SE over an at-grade light rail alignment at SE 15th Street. To maintain access to the Bellefield Residential Park, a left turn lane is provided at 112th Avenue SE and the southern entrance of this area. Pedestrian crossings at the East Main Station would be equipped with audible warning devices under all options and a double crossover would be located near Surrey Downs Park. The following suboptions for access at SE 4th Street are also evaluated to provide access to the Surrey Downs neighborhood:
  - SE 4th Emergency Access Option: This option would close access at SE 4th Street except for emergency vehicles. This option also includes the Bellefield Access Variation to create an access road between Bellefield Park Drive and 111th Place SE. This variation does not include the left turn lane described above.
  - SE 4th Open Option: Allow vehicle access to SE 4th Street with an at-grade light rail crossing, including a pedestrian audible warning device to ensure safety at pedestrian crossings.

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<sup>1</sup> Sound Transit, FTA, and WSDOT. 2011. *East Link Light Rail Transit Project Final Environmental Impact Statement*. Prepared by Central Puget Sound Regional Transit Authority, U.S. Department of Transportation Federal Transit Administration, and the Washington State Department of Transportation. June 2011.

- Rail Under SE 4th Option: Lowers the light rail into a trench below SE 4th Street.

- **Bellevue Transit Center Options**

- **Optimized Selected Alternative Station:** This option would shift the location of the northern entrance to the Bellevue Transit Center Station to the western lane of 110th Avenue NE at NE 6th Street. This option would not have any potential for changes in noise impacts and is not discussed further in this memo.
- **NE 6th Station Option:** This option relocates the Bellevue Transit Center Station to the south side of NE 6th Street, and the light rail would cross Interstate 405 (I-405) on the south side of NE 6th Street.

## 2. General Assumptions

- Three-car trains with 7-minute headways during peak hours, 10-minute headways during midday and early evening, and 15-minute headways during late evening, nighttime, and early morning hours (see Appendix E, Operating Plan Summary, of the Final EIS<sup>2</sup>).
- Measured reference noise levels for the new light rail vehicles in use on the Central Link system.
- Plan and profile of the proposed light rail alternatives and design options, including the locations of special trackwork, such as crossovers.
- Proposed maximum speeds along the Selected Alternative and potential refinements.
- Adjustments based on track type from the Federal Transit Administration.
- Consistent with the practice on the Central Link line, train-mounted bells would be sounded two to three times as a train approaches and passes through an at-grade crossing and for arrivals and departures from a station, producing maximum levels of 80 decibels on an A-weighted scale (dBA) maximum noise level (Lmax) at 50 feet between 6:00 a.m. and 10:00 p.m. and reducing to 72 dBA Lmax between 10:00 p.m. and 6:00 a.m.
- For this analysis, the wayside pedestrian audible warning devices located near the at-grade crossings at the Main Street Station were analyzed using an Lmax of 77 dBA at 15 feet and assuming that they would sound for approximately 40 seconds per train.
- Wheel squeal can occur on curves with a radius of less than 600 feet, and Sound Transit has committed to lubricating all curves in noise-sensitive areas with a radius of 600 feet or less. The current design has several curves with a radius of less than 600 feet, including the curves from 112th Avenue SE to Main Street, Main Street to 110th Avenue NE, and 110th Avenue NE to the NE 6th Street Station. The curve at Main Street to 110th Avenue NE is inside a tunnel and not result in any noise impacts. However, wheel squeal from the curve from 112th Avenue SE to Main Street (which is located at an open retained cut) and the curve from 110th Avenue NE to the NE 6th Street Station (which is designed as an open structure) may be noticeable. The curves at these locations would be designed to be fitted with lubricators. There is also curve with a 700 foot radius east of I-405 where the alignment

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<sup>2</sup> *ibid*

transitions to the former BNSF railway right-of-way that would also be prepared for lubrication.

The procedure used to evaluate the impacts of the project alternatives is taken from the Federal Transit Administration (FTA) *Transit Noise and Vibration Manual*.<sup>3</sup> The results of the analysis, including identification of noise impacts and mitigate measures, are discussed in the following sections. A summary of the impacts for each of the options is provided in Table 1. Tabulated noise levels with and without noise mitigation are provided in Attachment A, and maps of impacts and mitigation are provided in Attachment B.

<b>Table 1. Summary of Noise Impact and Mitigation Measures</b>				
<b>Design Option Number and Description</b>	<b>Light Rail Noise Impacts</b>		<b>Traffic Noise Impacts</b>	<b>Potential Noise Mitigation</b>
	<b>Mod</b>	<b>Sev</b>		
<b>Bellevue Way SE Options</b>				
Shift Bellevue Option	14	0	26	Sound walls and Insulation if necessary
Shift Bellevue Option - with HOV Lane	14	0	28	Sound walls and Insulation if necessary
<b>112th Road Over Rail Options<sup>a</sup></b>				
SE 4th Emergency Access	17	19	N/A	Sound wall and building insulation if necessary
SE 4th Emergency Access Suboption with Bellefield Access Variation	17	18	N/A	Sound wall and building insulation if necessary
SE 4th Open Suboption	18	21	N/A	Sound wall and building insulation if necessary
Rail Under SE 4th Suboption	15	18	N/A	Sound wall and Building Insulation if necessary
<b>Downtown Bellevue Options</b>				
Optimized Selected Alternative	48	36	N/A	Building sound insulation if necessary
NE 6th Station	84	0	N/A	Building sound insulation if necessary

<sup>a</sup> Up to 8 residences impacted by the 112th Road Over Rail Option could be by voluntarily displaced through the City of Bellevue's recently passed Light Rail Overlay. This would result in seven fewer severe impacts and seven more moderate impacts for all suboptions.

### **3. Shift Bellevue Option - Bellevue Way SE At-Grade Alignment, Realigned Roadway, and Potential HOV Lane**

The Selected Alternative in the Final EIS identified 13 moderate impacts between the South Bellevue Park and Ride and the 112th Avenue SE "Y" intersection. Under the Shift Bellevue Way Option, the light rail alignment would be revised from the main entrance of the South Bellevue Park-and-Ride to the "Y" intersection of Bellevue Way SE and SE 112th Avenue. This option would have an elevated guideway north of the park and ride descending to an at-grade alignment along the east side of Bellevue Way SE in the existing northbound lanes. The project would move the traffic lanes west, toward the residences. Therefore, both a light rail noise

<sup>3</sup> Harris Miller Miller and Hanson. 2006. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Prepared for the U.S. Department of Transportation Federal Transit Administration, Office of Planning and Environment. May 2006.

The cumulative noise levels from light rail and traffic with the HOV lane would also range from about 59 dBA Ldn to 74 dBA Ldn.

#### **4. 112th Road Over Rail Option**

This option involves reconstructing 112th Avenue SE over an at-grade light rail alignment at SE 15th Street. To maintain access to the Bellefield Residential Park, a left turn lane is provided at 112th Avenue SE and the southern entrance of this area. Pedestrian crossings at the East Main Station would be equipped with audible warning devices under all options and a double crossover would be located near Surrey Downs Park. The following suboptions for access at SE 4th Street are also evaluated to provide access to the Surrey Downs neighborhood:

- **SE 4th Emergency Access Suboption:** This option would close access at SE 4th Street except for emergency vehicles. This suboption also includes the Bellefield Access Variation to create an access road between Bellefield Park Drive and 111th Place SE. This variation does not include the left turn lane described above.
- **SE 4th Open Suboption:** Allow vehicle access to SE 4th Street with an at-grade light rail crossing, including crossing gates and an audible device such as a bell.
- **Rail Under SE 4th Suboption:** Lower the light rail into a trench below SE 4th Street.

Traffic noise levels were also reviewed to determine whether raising the roadway over the light rail would result in a change of 3 dBA or more at any residence along this segment of the corridor. The proposed roadway modifications are predicted to increase noise levels at some residences along the corridor by up to 1 dBA when compared to the existing condition and future No Build condition. There are some residences that are predicted to have reduced traffic noise levels due to shielding provided by the raised roadway near the northern entrance to the Bellefield Residential Park. Because the predicted traffic noise level increase is less than 3 dBA, no traffic noise analysis is required under FTA and FHWA guidance.

Under the Selected Alternative in the Final EIS, there are 35 moderate impacts between Bellevue Way SE and the Surrey Downs Park. From Surrey Downs Park to the Tunnel portal, there were an additional 9 moderate impacts and 10 severe impacts. All 10 severe impacts were located near the station and were due, in part, to noise from audible warning devices and train mounted bells at the station. The main change in impacts under the 112th Road Over Rail Option is at the Bellefield Residential Park, where there were 19 impacts, most of which are now mitigated with shielding from raising 112th Avenue SE over the light rail.

With the SE 4th Emergency Access Suboption, there would be 12 moderate and 9 severe impacts between Bellevue Way SE and Surrey Downs Park. There would be 5 moderate noise impacts and 10 severe impacts between the Surrey Downs Park and Main Street. Four moderate impacts would be located at the north end of Bellefield Condominiums, with two moderate impacts at SE 4th Street and 3 additional moderate impacts just north of SE 4th Street. Nine severe impacts are along 111th Place SE with the other 10 severe noise impacts located near the East Main Station. The 10 severe impacts near the station would result from the noise from two at-grade crossings with pedestrian audible warning devices and train mounted bells. Overall, noise levels from light rail related operations would range from 46 to 71 dBA Ldn between Bellevue Way SE and the tunnel portal. The highest noise levels would be at residences located along 111th Place, south of Surrey Downs Park and near the East Main Station.

at any noise sensitive property. The analysis shows that two of the residences have increases of 3 dB with the proposed widening, and therefore, the realignment of Bellevue Way SE requires a traffic noise study under the FTA criteria. In accordance with FTA guidance, the traffic noise analysis followed the FHWA and WSDOT traffic noise analysis methods and criteria.

To perform the traffic noise study, the existing, future no build, and future build traffic noise levels were calculated for 44 single-family residences along the realigned road on the west side of Bellevue Way SE. Under the existing conditions, noise levels on Bellevue Way SE between the park and ride and “Y” intersection ranged from 56 to 72 dBA Leq and there are an estimated 28 residences that meet or exceed the WSDOT version of the FHWA traffic noise abatement criteria (NAC). These same impacts would occur under the No Build Alternative, in the year 2030, when traffic noise levels are predicted to increase up to 1 dBA over the existing conditions and future No Build traffic noise levels ranging from 57 to 73 dBA Leq. The No-Build Alternative is also predicted to have the same 28 traffic noise impacts.

Under the Shift Bellevue Way option, three houses would be displaced by the roadway realignment. There are 26 traffic noise impacts predicted under this option. Future noise levels under the Shift Bellevue Way option range from 57 to 75 dBA, increasing traffic noise levels over the existing noise level by up to 3 dBA but also reducing the noise levels at some residences by 1 to 2 dBA over the No-Build conditions due to shielding from the retaining wall (parcels 2235, 2345, 2378 and 2385). Detailed tables, including comparisons and residences meeting or exceeding the FHWA criteria for the existing, No-Build and Build traffic noise levels are provided Attachment A.

Concern over the potential for traffic noise to reflect off the new retaining wall along the west side of Bellevue Way back toward the Winters House was expressed. Under ideal conditions, traffic noise reflected off a wall on the opposite side of a roadway could result in a slight increase in the overall noise levels. However, given the distance between the retaining wall and the Winters House (140 to 150 feet), the proposed realignment of the roadway farther from the Winters House than it is today, and the addition of a traffic safety barrier between the roadway and light rail, a net decrease in the overall traffic noise at the Winters House is predicted.

Finally, cumulative noise levels including traffic and light rail would range from about 59 dBA Ldn to 74 dBA Ldn along Bellevue Way.

### **3.3 *Shift Bellevue Way Option- Traffic Noise Impact Analysis-with HOV Lane***

If the City of Bellevue were to construct a southbound HOV lane in addition to shifting Bellevue Way SE, the number of light rail impacts is the same as described under the Shift Bellevue Way Option. The traffic noise levels would change slightly at some residences with the overall traffic noise levels ranging from 56 to 75 dBA Leq. With the HOV lane, one residence would have an increase of 3 dBA, the overall average increase would be approximately 1 dBA, while five residences would see reduced traffic noise levels, with reductions of 1 to 2 dBA over the No-Build conditions. The number of traffic noise impacts would be 28 with the HOV lane. The reduced noise levels at some residences with the HOV lane is related to two items: (1) the taller retaining wall would reduce noise at some residences, and (2) installing the HOV lane along the center of Bellevue Way SE would move truck traffic closer to the retaining walls, and the retaining wall would reduce truck noise.

The cumulative noise levels from light rail and traffic with the HOV lane would also range from about 59 dBA Ldn to 74 dBA Ldn.

#### **4. 112th Road Over Rail Option**

This option involves reconstructing 112th Avenue SE over an at-grade light rail alignment at SE 15th Street. To maintain access to the Bellefield Residential Park, a left turn lane is provided at 112th Avenue SE and the southern entrance of this area. Pedestrian crossings at the East Main Station would be equipped with audible warning devices under all options and a double crossover would be located near Surrey Downs Park. The following suboptions for access at SE 4th Street are also evaluated to provide access to the Surrey Downs neighborhood:

- SE 4th Emergency Access Suboption: This option would close access at SE 4th Street except for emergency vehicles. This suboption also includes the Bellefield Access Variation to create an access road between Bellefield Park Drive and 111th Place SE. This variation does not include the left turn lane described above.
- SE 4th Open Suboption: Allow vehicle access to SE 4th Street with an at-grade light rail crossing, including crossing gates and an audible device such as a bell.
- Rail Under SE 4th Suboption: Lower the light rail into a trench below SE 4th Street.

Traffic noise levels were also reviewed to determine whether raising the roadway over the light rail would result in a change of 3 dBA or more at any residence along this segment of the corridor. The proposed roadway modifications are predicted to increase noise levels at some residences along the corridor by up to 1 dBA when compared to the existing condition and future No Build condition. There are some residences that are predicted to have reduced traffic noise levels due to shielding provided by the raised roadway near the northern entrance to the Bellefield Residential Park. Because the predicted traffic noise level increase is less than 3 dBA, no traffic noise analysis is required under FTA and FHWA guidance.

Under the Selected Alternative in the Final EIS, there are 35 moderate impacts between Bellevue Way SE and the Surrey Downs Park. From Surrey Downs Park to the Tunnel portal, there were an additional 14 moderate impacts and 5 severe impacts. All five severe impacts were located near the station and were due, in part, to noise from audible warning devices and train mounted bells at the station. The main change in impacts under the 112th Road Over Rail Option is at the Bellefield Residential Park, where there were 19 impacts, most of which are now mitigated with shielding from raising 112th Avenue SE over the light rail.

With the SE 4th Emergency Access Suboption, there would be 12 moderate and 9 severe impacts between Bellevue Way SE and Surrey Downs Park. There would be 5 moderate noise impacts and 10 severe impacts between the Surrey Downs Park and Main Street. Four moderate impacts would be located at the north end of Bellefield Condominiums, with two moderate impacts at SE 4th Street and 3 additional moderate impacts just north of SE 4th Street. Nine severe impacts are along 111th Place SE with the other 10 severe noise impacts located near the East Main Station. The 10 severe impacts near the station would result from the noise from two at-grade crossings with pedestrian audible warning devices and train mounted bells. Overall, noise levels from light rail related operations would range from 46 to 71 dBA Ldn between Bellevue Way SE and the tunnel portal. The highest noise levels would be at residences located along 111th Place, south of Surrey Downs Park and near the East Main Station.



With the Bellefield Access Variation, one home on 111th Place SE that would have a severe impact would be displaced; all other impacts are the same as given under the SE 4th Emergency Access Suboption. Therefore, the total number of impacts would be reduced by one severe impact with 17 moderate and 18 severe impacts between Bellevue Way and Main Street.

With the SE 4th Open Suboption, which includes an at-grade crossing requiring train bells and pedestrian audible warning devices, but no traffic warning bells, there would be two additional moderate impacts at SE 4th Street, and two moderate impacts near SE 4th Street are now in the severe category. Finally, the added noise from the audible warning devices at the crossing would result in a noise impact at the Bellevue Club Hotel for a total of 18 severe and 21 moderate impacts from Bellevue Way SE to Main Street. Four of the additional impacts are at single-family residences near the proposed gated crossing at SE 4th Street, and the two severe impacts and two moderate impacts would result, in part, from the added noise from the at-grade crossing at SE 4th Street. The total impacts for this suboption would include 6 moderate noise impacts and 12 severe noise impacts between Surrey Downs Park and Main Street. Under this suboption, noise levels between Surrey Downs Park and Main Street would range from 58 to 71 dBA Ldn, with the highest levels near the station and residences near the SE 4th Street at-grade crossing and the East Main Station.

With the Rail Under SE 4th Suboption, there would be 15 moderate and 18 severe impacts between Bellevue Way SE and Surrey Downs Park. There would be three moderate noise impacts and nine severe impacts between the Surrey Downs Park and Main Street. Impacts south of Surrey Downs Park are the same as the SE 4th Emergency Access suboption. The 9 severe impacts north of Surrey Downs Park are at the same residences as the 10 severe impacts with the other 112th Road Over Rail suboptions, with one of the severe impacts (C4011) now in the moderate category because of shielding from the trench retaining walls. Noise from train bells and the two at-grade pedestrian crossings at the East Main Station are responsible for the nine severe impacts. The main difference would occur near SE 4th Street, where the light rail is in a trench, which would effectively reduce noise at the nearby residences, resulting in no noise impacts at the houses located along SE 4th Street. Noise levels would still range from 49 to 70 dBA, with the highest noise levels at residences near the station.

Under the recently passed City of Bellevue Light Rail Overlay, up to eight residences on 111th Place SE could chose to be voluntarily acquired. These residences would be severe impacts for all suboptions on 112th Avenue SE, and if displaced, would result in impacts to the next row of homes to the west. For all suboptions, this would result in removal of 8 severe impacts, and impacts to 8 new residences, seven of which would be moderate and one of which would be severe. Residences with impacts have future light rail noise levels from 60 to 68 dBA Ldn.

## **5. Downtown Bellevue Options**

Under the Selected Alternative and the Optimized Selected Alternative, there would be an estimated 48 noise impacts at the Bravern Condominiums on NE 6th Street. No other noise impacts were predicted in downtown Bellevue. With the NE 6th Station Option, the station bell noise from the at-grade station is predicted to increase noise at the Bravern Condominiums by approximately 3 dBA, which would result in the same estimated 48 moderate noise impacts. Noise levels with the at-grade station are predicted at 66 dBA Ldn with criteria of 63 dBA Ldn for moderate and 68 dBA Ldn for severe. The Selected Alternative crosses I-405 along the north side of NE 6th Street near the Coast Bellevue Hotel; as a result, there would be 36 estimated

hotel rooms with moderate impacts. With this option, the alignment would be moved to the south side of NE 6th Street, and the crossover would be moved to the west of I-405. The result would reduce the severity of the 36 impacts from severe to moderate and reduce noise levels from 82 to 65 dBA Ldn when compared to the Selected Alternative.

## **6. Potential Noise Mitigation**

The following section provides the noise mitigation options proposed for this segment of the East Link Light Rail Project and are based on the current design drawings and information. However, if during final design, Sound Transit determines that the relevant noise criterion can be achieved using a different method, or that the noise impact at that location will not occur, even without mitigation, then the mitigation measure might be eliminated or modified as needed. Conversely, if any additional noise impacts are identified during final design, then Sound Transit will consider mitigation measures..

### **6.1 Shift Bellevue Way Option**

This option would have both traffic noise and light rail noise impacts and the most effective mitigation for this area addressing both types of impacts would be constructing noise walls above the proposed retaining wall along with a short, 4 foot acoustic wall along the elevated structure from the station north to the at-grade trackway.

Traffic noise walls along the retaining wall were optimized using the FHWA traffic noise model (TNM version 2.5), and the resulting noise wall would have heights of up to 15 to 18 feet on top of the retaining wall. The wall would be approximately 3,000 feet long, starting at the SE 112th Avenue intersection by the South Bellevue Park-and-Ride, continuing north to the SE 112th Avenue “Y” intersection with Bellevue Way SE. For this analysis, the base of the noise wall on top of the retaining wall was placed approximately 5 feet back from the edge of the retaining wall. Also, to address potential aesthetic issues of placing a noise wall above the retaining wall, a shorter wall and/or residential sound insulation could also be considered. With a lower noise wall, there would likely be some residences where sound insulation would be considered. The number of residences considered for insulation would depend on the height and length of the proposed wall.

The combination of the light rail wall along the elevated structure and the traffic wall along the retaining wall would be effective at eliminating all traffic noise impacts and all but one of the light rail noise impacts. Residence number 2413, located along the at-grade segment near the “Y” intersection, would have a predicted light rail noise level of 64 dBA Ldn, which equals the FTA criteria for a moderate impact. This one impact could be mitigated with a slightly higher traffic safety barrier (3 to 4 feet tall instead of 2-1/2 feet), or an increase in the traffic noise wall (2 to 4 feet taller), or with sound insulation. Mitigation is the same for both of the Shift Bellevue Way options, without or with, the HOV lane. With the mitigation, cumulative noise levels along Bellevue Way SE would range from about 56 dBA Ldn to 66 dBA Ldn (with or without the HOV lane) which is a decrease of 2 to 11 dBA from the existing conditions. Finally, relocating the noise wall on top of the retaining wall, or farther west from the retaining wall may also be an option; however, the wall height may need to be adjusted to accommodate locating the wall in closer to or farther from residences.

## **6.2 112th Road Over Rail Option**

All options along 112th Avenue SE from Bellevue Way SE to Surrey Downs Park would be mitigated with sound walls and special trackwork. The noise mitigation would consist of three sound walls and some potential building insulation. The first sound wall would be approximately 6 to 8 feet tall and begin just north of the 112th Avenue SE “Y” intersection at Bellevue Way and continue for approximately 1,300 feet until 112th Avenue SE transitions to cross over the light rail, which would be an effective noise barrier for residences in the Bellefield Residential Park. The second barrier, also approximately 6 to 8 feet tall, would begin on the west side of the light rail alignment along the Bellefield Residential Park, continuing for approximately 1,500 to 1,600 feet and increasing to 8 feet or more, depending on the base height of any retaining wall.

If the optional residential displacements on the east side of 111th Place SE occur, a noise wall along the west side of the light rail alignment or along the east side of 111th Place would be an effective method of mitigating all noise impacts. The one severe impact (MapID 5050) may also require sound insulation depending on the location and end point of the noise wall. Special trackwork is also recommended for the crossover located north of this neighborhood.

The third sound wall would start near SE 4th Street, depending on the access variation. The wall would be located along the west side of the light rail alignment, beginning approximately 200 feet south of SE 4th Street and continuing along the west side of East Main Station, ending near the tunnel portal for a total length of approximately 1,600 feet. The wall height would start at approximately 6 feet and would likely continue to be between 6 to 12 feet tall depending on the location of the wall and the height of any potential retaining walls. The sound wall could be placed adjacent to the tracks or close to the right-of-way line, however, this could change the height of the walls depending on the topographical conditions and final grading. The sound wall, along with sound insulation, if necessary would provide noise mitigation for all noise impacts in this segment. Based on this analysis, sound insulation may be necessary at residences near the pedestrian crossings at both end of the East Main Station, which will be evaluated during final design.

Under the SE 4th Open Suboption, the opening at SE 4th Street would reduce the effectiveness of the wall, and four houses along SE 4th may be considered for building sound insulation (C2001, C2002, C4003, C4004). Finally, the added noise from the pedestrian warning devices at SE 4th Street would result in a slight overall increase in light rail noise levels at the Bellevue Club Hotel, which would be mitigated with bell shrouds and sound insulation if necessary.

For the Rail Under SE 4th Option, the sound wall would still be needed but only along the tracks north of SE 4th Street to the tunnel portal. The length of this wall was estimated at 1,200 feet and the heights would also start at approximately 6 feet tall, increasing to a 8 to 12 foot range, depending on the location of the wall and the height of any potential retaining walls. Without a retaining wall, the wall may need to be slightly higher to provide the necessary noise mitigation.

Reducing the noise from wayside pedestrian crossing audible warning devices would also help to potentially reduce the number and level of noise impacts. Sound insulation may be needed at residences west of the station for all suboptions because of the pedestrian audible warning devices, depending on the type of devices used and effectiveness of the shielding from the noise walls (parcels C4019, C4024, C4028, C4032, C4036, C4040, C4041, C4042). The specific type of audible warning device will be determine during final design and could include using

directional audible warning devices, shrouds, and/or audible warning devices that automatically adjust based on the existing background noise level at that time.

Curves with a radius of less than 600 feet based can produce wheel squeal. Curves between 600- and 1,000-foot radius can also produce wheel squeal depending on conditions, for example, during very dry conditions when dust accumulates on the rails. Wheel squeal is not included in the noise model because Sound Transit has committed to lubricating all curves in noise-sensitive areas with a radius of less than 600 feet, and preparing all curves with radius of less than 1,000 feet for lubrication. Therefore, the curve between the Main Street Station and the tunnel portal will be setup for trackside lubrication.

### **6.3 NE 6th Station Option**

The only noise mitigation that would be considered for the Bravern Condominiums would be building sound insulation because of the elevated location of the residential units. Units may already have acceptable interior noise levels because they are new construction. Noise mitigation for the Coast Bellevue Hotel could consist of a 4 feet high sound wall along the elevated structure or sound insulation of the affected hotel rooms. In addition, as previously noted, wheel squeal from the curve from 10th Avenue NE to the NE 6th Street Station may be noticeable outside the tunnel, and therefore that curve would be designed for lubrication. The 510-foot radius curve east of I-405 where the alignment transitions to the former BNSF railway right-of-way, would also be designed for lubrication.

## **Attachment A: Tables**

- A1. Bellevue Way Light Rail Noise Impact Analysis with Cumulative Noise Levels
- A2. Bellevue Way Light Rail Mitigation Analysis with Cumulative Noise Levels
- A3. Bellevue Way Existing and Future No-Build Traffic Noise Levels
- A4. Bellevue Way Option 1 Traffic Noise Analysis without HOV Lane
- A5. Bellevue Way Option 1 Traffic Noise Analysis with HOV Lane
- A6. Comparison of Existing Traffic Noise Levels with Build and No-Build Alternatives  
Traffic Noise with and without Noise Mitigation
- A7. SE 4th Street Emergency Access Only: Changes from 112th SE “Y” to Surrey  
Downs Park
- A8. Bellefield Access Suboption: Changes from 111th Place SE to Tunnel Portal
- A9. 4th Street Open Access Suboption: Changes from 111th Place SE to Tunnel Portal
- A10. Light Rail Under 4th Street Access Suboption: Changes from 111th Place SE to  
Main Street
- A11. Option with Front-Line Structures along 111th Place SE Displaced; Analysis of  
Second-Line Residences Only



Table A1. Bellevue Way Light Rail Noise Impact Analysis with Cumulative Noise Levels

NOTE: Noise levels presented are without any noise mitigation measures

Cost Savings Alternative: Noise Impact Analysis		Shift Bellevue Option - with and without HOV Lane 112th Road Over Rail Option SE 4th Emergency Access NE 6th Station																					
Receiver and Data Input Section						LRT Noise Impact Analysis -a-						Traffic Noise Levels -b-				Noise Source -c-		Cumulative Noise -d-		Change in Noise -e-			
Parcel #, Description, Existing Noise Levels and FTA Category						Noise Sources		Project	FTA Criteria		Number		W/O HOV	W/HOV	W/O HOV	W/HOV	W/O HOV	W/HOV	W/O HOV	W/HOV	W/O HOV	W/HOV	
Area	Parcel	Description	Units	Ldn	FTA-CAT	Bells	X-Over	Ldn	Mod	Sev	Mod	Sev	Leq	Leq	Ldn	Ldn			Ldn	Leq	Change	Change	
<b>Receptors near station to 23rd Street</b>																							
2	2160	SF residence	1	69	2	Yes	No	60	64	70	--	--	73	72	71	70	Traffic	Traffic	71	70	2	1	
2	2193	SF residence	1	69	2	Yes	No	64	64	70	1	--	72	70	70	68	Traffic	Traffic	71	70	2	1	
2	2210	SF residence	1	69	2	Yes	No	64	64	70	1	--	72	71	70	69	Traffic	Traffic	71	70	2	1	
2	2225	SF residence	1	69	2	Yes	No	67	64	70	1	--	72	71	70	69	Traffic	Traffic	72	71	3	2	
2	2235	SF residence	1	69	2	Yes	No	67	64	70	1	--	70	70	68	68	Traffic	Traffic	71	71	2	2	
<b>Same as above, second row</b>																							
2	2166	SF residence	1	67	2	Yes	No	59	63	68	--	--	68	67	66	65	Traffic	Traffic	67	66	0	-1	
2	2170	SF residence	1	65	2	Yes	No	52	61	67	--	--	61	61	59	59	Traffic	Traffic	60	60	-5	-5	
2	2181	SF residence	1	65	2	Yes	No	57	61	67	--	--	60	59	58	57	Traffic	Equal	61	60	-5	-5	
2	2183	SF residence	1	67	2	Yes	No	58	63	68	--	--	66	66	64	64	Traffic	Traffic	65	65	-2	-2	
2	2211	SF residence	1	67	2	Yes	No	59	63	68	--	--	57	57	55	55	LRT	LRT	61	61	-7	-7	
2	2230	SF residence	1	67	2	No	No	60	63	68	--	--	57	57	55	55	LRT	LRT	61	61	-6	-6	
<b>Receptors from 23rd Street to 25th Street</b>																							
2	2246	SF residence	1	69	2	Yes	No	67	64	70	1	--	72	70	70	68	Traffic	Traffic	72	71	3	2	
2	2252	SF residence	1	69	2	No	No	67	64	70	1	--	72	71	70	69	Traffic	Traffic	72	71	3	2	
2	2265	SF residence	1	69	2	No	No	67	64	70	1	--	67	67	65	65	LRT	LRT	69	69	0	0	
2	2275	SF residence	1	69	2	No	No	67	64	70	1	--	70	70	68	68	Traffic	Traffic	71	71	2	2	
2	2284	SF residence	1	69	2	No	No	68	64	70	1	--	70	69	68	67	Equal	LRT	71	71	2	2	
2	2288	SF residence	1	69	2	No	No	67	64	70	1	--	67	66	65	64	LRT	LRT	69	69	0	0	
2	2296	SF residence	1	69	2	No	No	68	64	70	1	--	70	67	68	65	Equal	LRT	71	70	2	1	
2	2300	SF residence	1	69	2	No	No	65	64	70	1	--	73	69	71	67	Traffic	Traffic	72	69	3	2	
2	2306	SF residence	1	69	2	No	No	65	64	70	1	--	71	68	69	66	Traffic	Traffic	71	69	2	-1	
<b>Same as above, second row</b>																							
2	2254	SF residence	1	65	2	No	No	58	61	67	--	--	52	51	50	49	LRT	LRT	59	59	-6	-7	
2	2251	SF residence	1	67	2	No	No	60	63	68	--	--	57	56	55	54	LRT	LRT	61	61	-6	-6	
2	2271	SF residence	1	67	2	No	No	60	63	68	--	--	62	62	60	60	Equal	Equal	63	63	-4	-4	
2	2289	SF residence	1	67	2	No	No	61	63	68	--	--	62	61	60	59	LRT	LRT	64	63	-4	-4	
2	2297	SF residence	1	67	2	No	No	61	63	68	--	--	65	62	63	60	Traffic	LRT	65	64	-2	-4	
2	2307	SF residence	1	67	2	No	No	57	63	68	--	--	66	63	64	61	Traffic	Traffic	65	63	-2	-5	
<b>Receptors from 25th Street to 108th Avenue</b>																							
2	2317	SF residence	1	69	2	No	No	60	64	70	--	--	65	66	63	64	Traffic	Traffic	65	66	-4	-4	
2	2326	SF residence	1	69	2	No	No	60	64	70	--	--	65	66	63	64	Traffic	Traffic	65	66	-4	-4	
2	2333	SF residence	1	69	2	No	No	56	64	70	--	--	67	68	65	66	Traffic	Traffic	66	66	-4	-3	
2	2345	SF residence	1	69	2	No	No	61	64	70	--	--	63	66	61	64	Equal	Traffic	64	66	-5	-3	
2	2351	SF residence	1	69	2	No	No	60	64	70	--	--	60	60	58	58	LRT	LRT	62	62	-7	-7	
2	2361	SF residence	1	69	2	No	No	62	64	70	--	--	67	65	65	63	Traffic	Traffic	67	66	-2	-4	
2	2367	SF residence	1	69	2	No	No	60	64	70	--	--	62	60	60	58	Equal	LRT	63	62	-6	-7	
<b>Receptors along 108th Avenue near the "Y"</b>																							
2	2375	Displaced	D	69	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
2	2384	Displaced	D	69	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
2	2397	Displaced	D	69	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
2	2378	SF residence	1	69	2	No	No	60	64	70	--	--	60	62	58	60	LRT	Equal	62	63	-7	-6	
2	2385	SF residence	1	69	2	No	No	60	64	70	--	--	62	64	60	62	Equal	Traffic	63	64	-6	-5	
2	2393	SF residence	1	69	2	No	No	61	64	70	--	--	66	67	64	65	Traffic	Traffic	66	67	-3	-3	
2	2401	SF residence	1	69	2	No	No	62	64	70	--	--	69	69	67	67	Traffic	Traffic	68	68	-1	-1	
2	2407	SF residence	1	69	2	No	No	63	64	70	--	--	73	72	71	70	Traffic	Traffic	72	71	3	2	
2	2413	SF residence	1	69	2	No	No	64	64	70	1	--	75	75	73	73	Traffic	Traffic	74	74	5	5	
2	2421	SF residence	1	69	2	No	No	63	64	70	--	--	74	73	72	71	Traffic	Traffic	73	72	4	3	
2	3001	SF residence	1	69	2	No	No	62	64	70	--	--	72	73	70	71	Traffic	Traffic	71	72	2	3	
2	2414	SF residence	1	67	2	No	No	55	63	68	--	--	59	59	57	57	Traffic	Traffic	59	59	-8	-8	
2	2418	SF residence	1	69	2	No	No	60	64	70	--	--	62	62	60	60	Equal	Equal	63	63	-6	-6	
2	3000	SF residence	1	69	2	No	No	60	64	70	--	--	67	67	65	65	Traffic	Traffic	66	66	-3	-3	
2	3004	SF residence	1	67	2	No	No	54	63	68	--	--	67	68	65	66	Traffic	Traffic	65	66	-2	-1	
<b>Analysis for Commercial Uses (Performed assuming an FTA Cat 3 land use using the peak hour Leq) -f-</b>																							
<b>Winters House</b>			Leq				Leq	WSDOT NAC					No Ldn for Comm						Leq	Leq			
2	2358	Commercial Building, Fnt	1	72	3	No	No	66	71	76	--	--	69	69	N/A	N/A	Traffic	Traffic	71	71	-1	-1	
		Commercial Building, Rear	1	62	3	No	No	56	71	76	--	--	61	59	N/A	N/A	Traffic	Traffic	62	61	0	-1	
<p><b>-a- LRT Noise Impact Analysis</b> The LRT impact analysis presented was performed using the same methods of other alternatives presented in the FEIS and allows for a direct comparison of the impact analysis of the other alternatives. The existing noise levels used for this analysis are based on measured noise levels presented in the FEIS. Predicted noise levels include a 32 inch traffic barrier along the at-grade segment of the alignment. Levels meeting or exceeding the FTA criteria are in Bold-Red typeface.</p> <p><b>-b- Traffic Noise Levels</b> Traffic noise levels are taken from the FHWA Traffic Noise Model (TNM version 2.5). Noise levels that meet or exceed the WSDOT criteria are in Bold-Red typeface. The Ldn is estimated based on the FTA method of subtracting 2 dB to the calculated peak hour traffic noise levels</p> <p><b>-c- Noise Source</b> Identifies the major noise source, traffic or light rail, for each of the modeling sites</p> <p><b>-d- Cumulative Noise Levels</b> Total modeled noise levels, FTA light rail predictions and FHWA traffic noise predictions</p> <p><b>-e- Change in Noise Levels</b> Change in noise levels by subtracting the predicted cumulative light rail and traffic noise from the measured/estimated Ldn noise levels</p> <p><b>-f- Winters House Noise Analysis</b> There is no FTA noise impact criteria for commercial land uses like the Winters House. The Winters House was evaluated using the FTA Category 3 criteria normally reserved for schools, libraries and other institutional uses.</p>																							

**Table A2. Bellevue Way Light Rail Mitigation Analysis with Cumulative Noise Levels**

*NOTE: Noise levels presented are with recommended noise mitigation measures*

Receiver and Data Input Section			LRT Noise Mitigation Analysis -a-								Traffic Noise Levels -b-				Noise Source -c-		Cumulative Noise -d-		Change in Noise -e-		
Parcel #, Description, Existing Noise Levels and FTA Category	Mitigation	Project	FTA Criteria			Number		W/O HOV	W/HOV	W/O HOV	W/HOV	W/O HOV	W/HOV	W/O HOV	W/HOV	W/O HOV	W/HOV	Change	Change		
Area	Parcel	Description	Units	Ldn	FTA-CAT	Ldn	Mod	Sev	Mod	Sev	Leq	Leq	Ldn	Ldn	W/O HOV	W/HOV	W/O HOV	W/HOV	W/O HOV	W/HOV	
<b>Cost Savings Alternative:</b> Shift Bellevue Option - with and without HOV Lane																					
<b>Noise Mitigation Analysis</b> 112th Road Over Rail Option																					
SE 4th Emergency Access																					
NE 6th Station																					
<b>Receptors near station to 23rd Street</b>																					
2	2160	SF residence	1	69	2	4 Ft. Acoustic Wall on Structure	52	64	70	--	--	63	63	61	61	Traffic	Traffic	62	62	-8	-8
2	2193	SF residence	1	69	2	4 Ft. Acoustic Wall on Structure	55	64	70	--	--	63	63	61	61	Traffic	Traffic	62	62	-7	-7
2	2210	SF residence	1	69	2	4 Ft. Acoustic Wall on Structure	55	64	70	--	--	65	65	63	63	Traffic	Traffic	64	64	-5	-5
2	2225	SF residence	1	69	2	4 Ft. Acoustic Wall on Structure	58	64	70	--	--	64	64	62	62	Traffic	Traffic	64	64	-6	-6
2	2235	SF residence	1	69	2	4 Ft. Acoustic Wall on Structure	58	64	70	--	--	61	61	59	59	Traffic	Traffic	62	62	-8	-8
<b>Same as above, second row</b>																					
2	2166	SF residence	1	67	2	4 Ft. Acoustic Wall on Structure	51	63	68	--	--	64	64	62	62	Traffic	Traffic	62	62	-5	-5
2	2170	SF residence	1	65	2	4 Ft. Acoustic Wall on Structure	43	61	67	--	--	59	59	57	57	Traffic	Traffic	57	57	-8	-8
2	2181	SF residence	1	65	2	4 Ft. Acoustic Wall on Structure	48	61	67	--	--	58	58	56	56	Traffic	Traffic	57	57	-8	-8
2	2183	SF residence	1	67	2	4 Ft. Acoustic Wall on Structure	49	63	68	--	--	63	63	61	61	Traffic	Traffic	61	61	-6	-6
2	2211	SF residence	1	67	2	4 Ft. Acoustic Wall on Structure	51	63	68	--	--	56	56	54	54	Traffic	Traffic	56	56	-11	-11
2	2230	SF residence	1	67	2	4 Ft. Acoustic Wall on Structure	51	63	68	--	--	56	56	54	54	Traffic	Traffic	56	56	-11	-11
<b>Receptors from 23rd Street to 25th Street</b>																					
2	2246	SF residence	1	69	2	4 Ft. Acoustic Wall on Structure	59	64	70	--	--	60	60	58	58	LRT	LRT	62	62	-8	-8
2	2262	SF residence	1	69	2	4 Ft. Acoustic Wall on Structure	59	64	70	--	--	65	65	63	63	Traffic	Traffic	65	65	-5	-5
2	2265	SF residence	1	69	2	4 Ft. Acoustic Wall on Structure	58	64	70	--	--	62	62	60	60	Traffic	Traffic	62	62	-7	-7
2	2275	SF residence	1	69	2	4 Ft. Acoustic Wall on Structure	59	64	70	--	--	65	65	63	63	Traffic	Traffic	65	65	-5	-5
2	2284	SF residence	1	69	2	4 Ft. Acoustic Wall on Structure	59	64	70	--	--	64	64	62	62	Traffic	Traffic	64	64	-5	-5
2	2288	SF residence	1	69	2	4 Ft. Acoustic Wall on Structure	59	64	70	--	--	63	63	61	61	Traffic	Traffic	63	63	-6	-6
2	2296	SF residence	1	69	2	4 Ft. Acoustic Wall on Structure	59	64	70	--	--	65	65	63	63	Traffic	Traffic	65	65	-5	-5
2	2300	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	63	64	70	--	--	65	65	63	63	Equal	Equal	66	66	-3	-3
2	2306	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	63	64	70	--	--	65	65	63	63	Equal	Equal	66	66	-3	-3
<b>Same as above, second row</b>																					
2	2254	SF residence	1	65	2	4 Ft. Acoustic Wall on Structure	49	61	67	--	--	65	65	63	63	Traffic	Traffic	63	63	-2	-2
2	2251	SF residence	1	67	2	4 Ft. Acoustic Wall on Structure	52	63	68	--	--	55	55	53	53	Traffic	Traffic	56	56	-12	-12
2	2271	SF residence	1	67	2	4 Ft. Acoustic Wall on Structure	51	63	68	--	--	62	62	60	60	Traffic	Traffic	61	61	-7	-7
2	2289	SF residence	1	67	2	4 Ft. Acoustic Wall on Structure	52	63	68	--	--	63	63	61	61	Traffic	Traffic	62	62	-6	-6
2	2297	SF residence	1	67	2	4 Ft. Acoustic Wall on Structure	52	63	68	--	--	65	65	63	63	Traffic	Traffic	63	63	-4	-4
2	2307	SF residence	1	67	2	None (2.6 Ft. Traffic safety barrier)	55	63	68	--	--	65	65	63	63	Traffic	Traffic	64	64	-3	-3
<b>Receptors from 25th Street to 108th Avenue</b>																					
2	2317	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	60	64	70	--	--	65	65	63	63	Traffic	Traffic	65	65	-4	-4
2	2326	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	60	64	70	--	--	64	64	62	62	Traffic	Traffic	64	64	-5	-5
2	2333	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	56	64	70	--	--	64	64	62	62	Traffic	Traffic	63	63	-6	-6
2	2345	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	60	64	70	--	--	60	60	58	58	LRT	LRT	63	63	-6	-6
2	2351	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	60	64	70	--	--	57	57	55	55	LRT	LRT	61	61	-8	-8
2	2361	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	62	64	70	--	--	64	64	62	62	Equal	Equal	65	65	-4	-4
2	2367	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	60	64	70	--	--	64	64	62	62	Traffic	Traffic	64	64	-5	-5
<b>Receptors along 108th Avenue near the "Y"</b>																					
2	2375	Displaced	D	69	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2	2384	Displaced	D	69	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2	2397	Displaced	D	69	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2	2378	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	60	64	70	--	--	59	59	57	57	LRT	LRT	62	62	-7	-7
2	2385	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	60	64	70	--	--	62	62	60	60	Equal	Equal	63	63	-6	-6
2	2393	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	61	64	70	--	--	63	63	61	61	Equal	Equal	64	64	-5	-5
2	2401	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	62	64	70	--	--	65	65	63	63	Traffic	Traffic	66	66	-4	-4
2	2407	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	63	64	70	--	--	65	65	63	63	Equal	Equal	66	66	-3	-3
2	2413	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	<b>64</b>	64	70	<b>1</b>	--	62	62	60	60	LRT	LRT	66	66	-4	-4
2	2421	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	63	64	70	--	--	65	65	63	63	Equal	Equal	66	66	-3	-3
2	3001	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	62	64	70	--	--	63	63	61	61	LRT	LRT	65	65	-5	-5
2	2414	SF residence	1	67	2	None (2.6 Ft. Traffic safety barrier)	55	63	68	--	--	57	57	55	55	Equal	Equal	58	58	-9	-9
2	2418	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	60	64	70	--	--	60	60	58	58	LRT	LRT	62	62	-7	-7
2	3000	SF residence	1	69	2	None (2.6 Ft. Traffic safety barrier)	60	64	70	--	--	64	64	62	62	Traffic	Traffic	64	64	-5	-5
2	3004	SF residence	1	67	2	None (2.6 Ft. Traffic safety barrier)	54	63	68	--	--	63	63	61	61	Traffic	Traffic	62	62	-5	-5
<b>Analysis for Commercial Uses (Performed assuming an FTA Cat 3 land use using the peak hour Leq) -f-</b>																					
<b>Winters House</b>																					
2	2358	Commercial Building, Fnt	1	72	3	None	66	71	76	--	--	69	69	N/A	N/A	Traffic	Traffic	71	71	-1	-1
		Commercial Building, Rear	1	62	3	None	56	71	76	--	--	61	59	N/A	N/A	Traffic	Traffic	62	61	0	-1
<b>-a- LRT Noise Mitigation Analysis</b>																					
The LRT impact analysis presented was performed using the same methods of other alternatives presented in the FEIS and allows for a direct comparison of the impact analysis of the other alternatives. The existing noise levels used for this analysis are based on measured noise levels presented in the FEIS. Predicted noise levels include a 32 inch traffic barrier along the at-grade segment of the alignment. Where noise mitigation is recommended, a description of the proposed mitigation is provided.																					
<b>-b- Traffic Noise Levels</b>																					
Traffic noise levels are taken from the FHWA Traffic Noise Model (TNM version 2.5) including an optimized noise wall along the retaining wall on the west side of Bellevue Way. Noise levels that meet or exceed the WSDOT criteria are in Bold-Red typeface. The Ldn is estimated based on the FTA method of subtracting 2 dB to the calculated peak hour traffic noise levels.																					
<b>-c- Noise Source</b>																					
Identifies the major noise source, traffic or light rail, for each of the modeling sites																					
<b>-d- Cumulative Noise Levels</b>																					
Total modeled noise levels, FTA light rail predictions and FHWA traffic noise predictions with proposed noise mitigation measures.																					
<b>-e- Change in Noise Levels</b>																					
Change in noise levels by subtracting the predicted cumulative light rail and traffic noise from the measured/estimated Ldn noise levels																					
<b>-f- Winters House Noise Analysis</b>																					
There is no FTA noise impact criteria for commercial land uses like the Winters House. The Winters House was evaluated using the FTA Category 3 criteria normally reserved for schools, libraries and other institutional uses.																					



**Table A3. Bellevue Way Existing and No-Build Traffic Analysis**

Receiver/Area Information	Parcel	Station Number (LRT)	WSDOT Traffic Noise Impact Criteria (dBA)	Existing Conditions (dBA Leq)	Residences meeting NAC	Future (2030) No-Build Conditions (dBA Leq)	Residences meeting NAC
SF residence on SE 27th Pl	2146	2047+00	66	61	--	62	--
SF residence on SE 27th Pl	2137	2047+00	66	64	--	65	--
SF residence on SE 27th Pl	2144	2047+00	66	<b>70</b>	1	<b>70</b>	1
SF residence on SE 27th Pl	2160	2048+00	66	<b>72</b>	1	<b>72</b>	1
SF residence on SE 27th Pl	2166	2048+00	66	<b>67</b>	1	<b>67</b>	1
SF residence on SE 27th Pl	2170	2048+00	66	60	--	60	--
SF residence on SE 26th St	2181	2050+00	66	59	--	59	--
SF residence on SE 26th St	2183	2050+00	66	65	--	65	--
SF residence on 111th Ave SE	2193	2051+00	66	<b>70</b>	1	<b>71</b>	1
SF residence on 111th Ave SE	2210	2052+50	66	<b>71</b>	1	<b>71</b>	1
SF residence on 111th Ave SE	2225	2053+00	66	<b>71</b>	1	<b>71</b>	1
SF residence on SE 26th St	2211	2052+50	66	57	--	57	--
SF residence on SE 25th St	2230	2053+50	66	56	--	57	--
SF residence on 111th Ave SE	2235	2054+00	66	<b>70</b>	1	<b>71</b>	1
SF residence on 111th Ave SE	2246	2054+75	66	<b>70</b>	1	<b>71</b>	1
SF residence on SE 25th St	2252	2055+50	66	<b>71</b>	1	<b>71</b>	1
SF residence on SE 25th St	2251	2055+50	66	57	--	57	--
SF residence on SE 24th Pl	2265	2056+50	66	<b>67</b>	1	<b>67</b>	1
SF residence on SE 24th Pl	2275	2057+00	66	<b>70</b>	1	<b>70</b>	1
SF residence on SE 24th Pl	2284	2058+00	66	<b>69</b>	1	<b>70</b>	1
SF residence on SE 24th Pl	2288	2059+00	66	<b>66</b>	1	<b>66</b>	1
SF residence on SE 23rd St	2296	2059+50	66	<b>68</b>	1	<b>68</b>	1
SF residence on SE 23rd St	2300	2060+80	66	<b>70</b>	1	<b>71</b>	1
SF residence on SE 23rd St	2306	2062+00	66	<b>69</b>	1	<b>69</b>	1
SF residence on SE 23rd St	2317	2063+15	66	65	--	65	--
SF residence on SE 23rd St	2326	2064+50	66	64	--	65	--
SF residence on SE 23rd St	2333	2065+25	66	<b>66</b>	1	<b>66</b>	1
SF residence on SE 23rd St	2345	2066+50	66	64	--	64	--
SF residence on SE 23rd St	2351	2067+00	66	59	--	60	--
SF residence on SE 22nd St	2361	2068+00	66	<b>66</b>	1	<b>67</b>	1
SF residence on 109th Ave SE	2378	2069+50	66	61	--	61	--
SF residence on 109th Ave SE	2385	2070+00	66	63	--	64	--
SF residence on 109th Ave SE	2393	2070+80	66	<b>66</b>	1	<b>66</b>	1
SF residence on 109th Ave SE	2401	2071+50	66	<b>67</b>	1	<b>68</b>	1
SF residence on 109th Ave SE	2407	2072+30	66	<b>70</b>	1	<b>70</b>	1
SF residence on 109th Ave SE	2413	2073+50	66	<b>72</b>	1	<b>73</b>	1
SF residence on 109th Ave SE	2421	2074+50	66	<b>72</b>	1	<b>72</b>	1
SF residence on 109th Ave SE	3001	2075+15	66	<b>71</b>	1	<b>72</b>	1
SF residence on 109th Ave SE	2414	2073+00	66	59	--	59	--
SF residence on 109th Ave SE	2418	2073+80	66	62	--	62	--
SF residence on 109th Ave SE	3000	2075+00	66	<b>66</b>	1	<b>67</b>	1
SF residence on Bellevue Way	2375	2069+50	66	<b>72</b>	1	<b>72</b>	1
SF residence on Bellevue Way	2384	2070+40	66	<b>68</b>	1	<b>69</b>	1
SF residence on Bellevue Way	2397	2071+50	66	<b>72</b>	1	<b>73</b>	1
Winters House Entrance	2358	2068+00	71	<b>71</b>	1	<b>71</b>	1
Winters House Back Yard	2358	2068+00	71	62	--	63	--

<b>Summary of Noise Levels and Impacts</b>	<b>Minimum Noise Level</b>	<b>56</b>	<b>57</b>
	<b>Maximum Noise Level</b>	<b>72</b>	<b>73</b>
	<b>Number of Impacts</b>	<b>29</b>	<b>29</b>

Mitigation assumes a noise wall on top of the retaining wall along the west side of Bellevue Way. Sound wall heights range from 6 to 18 feet on top of the retaining wall, but heights will likely vary once the retaining wall heights are finalized. This task will occur during final design.  
 Traffic noise levels in Bold Red font meet or exceed the FHWA/WSDOT noise abatement criteria.  
 Traffic noise levels calculated using the FHWA Traffic Noise Model (TNM version 2.5).

**Table A4. Bellevue Way Option 1 Traffic Noise Analysis without HOV Lane**

Receiver/Area Information	Parcel	Station Number (LRT)	WSDOT Traffic Noise Impact Criteria (dBA)	Future Build Traffic Noise Levels w/o HOV (dBA Leq)	Traffic Noise Impacts	Proposed Noise Mitigation	Future Traffic Noise Levels w/Mitigation (dBA Leq)	Units for Insulation
SF residence on SE 27th Pl	2146	2047+00	66	62	--	Noise Wall	60	--
SF residence on SE 27th Pl	2137	2047+00	66	65	--	Noise Wall	64	--
SF residence on SE 27th Pl	2144	2047+00	66	<b>71</b>	1	Noise Wall	65	--
SF residence on SE 27th Pl	2160	2048+00	66	<b>73</b>	1	Noise Wall	63	--
SF residence on SE 27th Pl	2166	2048+00	66	<b>68</b>	1	Noise Wall	64	--
SF residence on SE 27th Pl	2170	2048+00	66	61	--	Noise Wall	59	--
SF residence on SE 26th St	2181	2050+00	66	60	--	Noise Wall	58	--
SF residence on SE 26th St	2183	2050+00	66	<b>66</b>	1	Noise Wall	63	--
SF residence on 111th Ave SE	2193	2051+00	66	<b>72</b>	1	Noise Wall	63	--
SF residence on 111th Ave SE	2210	2052+50	66	<b>72</b>	1	Noise Wall	65	--
SF residence on 111th Ave SE	2225	2053+00	66	<b>72</b>	1	Noise Wall	64	--
SF residence on SE 26th St	2211	2052+50	66	57	--	Noise Wall	56	--
SF residence on SE 25th St	2230	2053+50	66	57	--	Noise Wall	56	--
SF residence on 111th Ave SE	2235	2054+00	66	<b>70</b>	1	Noise Wall	61	--
SF residence on 111th Ave SE	2246	2054+75	66	<b>72</b>	1	Noise Wall	60	--
SF residence on SE 25th St	2252	2055+50	66	<b>72</b>	1	Noise Wall	65	--
SF residence on SE 25th St	2251	2055+50	66	57	--	Noise Wall	55	--
SF residence on SE 24th Pl	2265	2056+50	66	<b>67</b>	1	Noise Wall	62	--
SF residence on SE 24th Pl	2275	2057+00	66	<b>70</b>	1	Noise Wall	65	--
SF residence on SE 24th Pl	2284	2058+00	66	<b>70</b>	1	Noise Wall	64	--
SF residence on SE 24th Pl	2288	2059+00	66	<b>67</b>	1	Noise Wall	63	--
SF residence on SE 23rd St	2296	2059+50	66	<b>70</b>	1	Noise Wall	65	--
SF residence on SE 23rd St	2300	2060+80	66	<b>73</b>	1	Noise Wall	65	--
SF residence on SE 23rd St	2306	2062+00	66	<b>71</b>	1	Noise Wall	65	--
SF residence on SE 23rd St	2317	2063+15	66	65	--	Noise Wall	65	--
SF residence on SE 23rd St	2326	2064+50	66	65	--	Noise Wall	64	--
SF residence on SE 23rd St	2333	2065+25	66	<b>67</b>	1	Noise Wall	64	--
SF residence on SE 23rd St	2345	2066+50	66	63	--	Noise Wall	60	--
SF residence on SE 23rd St	2351	2067+00	66	60	--	Noise Wall	57	--
SF residence on SE 22nd St	2361	2068+00	66	<b>67</b>	1	Noise Wall	64	--
SF residence on 109th Ave SE	2378	2069+50	66	60	--	Noise Wall	59	--
SF residence on 109th Ave SE	2385	2070+00	66	62	--	Noise Wall	62	--
SF residence on 109th Ave SE	2393	2070+80	66	<b>66</b>	1	Noise Wall	63	--
SF residence on 109th Ave SE	2401	2071+50	66	<b>69</b>	1	Noise Wall	65	--
SF residence on 109th Ave SE	2407	2072+30	66	<b>73</b>	1	Noise Wall	65	--
SF residence on 109th Ave SE	2413	2073+50	66	<b>75</b>	1	Noise Wall	62	--
SF residence on 109th Ave SE	2421	2074+50	66	<b>74</b>	1	Noise Wall	65	--
SF residence on 109th Ave SE	3001	2075+15	66	<b>72</b>	1	Noise Wall	63	--
SF residence on 109th Ave SE	2414	2073+00	66	59	--	Noise Wall	57	--
SF residence on 109th Ave SE	2418	2073+80	66	62	--	Noise Wall	60	--
SF residence on 109th Ave SE	3000	2075+00	66	<b>67</b>	1	Noise Wall	64	--
SF residence on Bellevue Way	2375	2069+50	66	Displaced	--	--	--	--
SF residence on Bellevue Way	2384	2070+40	66	Displaced	--	--	--	--
SF residence on Bellevue Way	2397	2071+50	66	Displaced	--	--	--	--
Winters House Entrance	2358	2068+00	71	69	--	--	--	--
Winters House Back Yard	2358	2068+00	71	69	--	--	--	--
<b>Minimum Noise Level</b>				<b>57</b>			<b>55</b>	
<b>Maximum Noise Level</b>				<b>75</b>			<b>65</b>	
<b>Number of Impacts</b>					<b>26</b>			<b>0</b>
Mitigation assumes a noise wall on top of the retaining wall along the west side of Bellevue Way. Sound wall heights range from 6 to 18 feet on top of the retaining wall, but heights will likely vary once the retaining wall heights are finalized. This task will occur during final design. Traffic noise levels in Bold Red font meet or exceed the FHWA/WSDOT noise abatement criteria. Traffic noise levels calculated using the FHWA Traffic Noise Model (TNM version 2.5).								

**Table A5. Bellevue Way Option 1 Traffic Noise Analysis with HOV Lane**

Receiver/Area Information	Parcel	Station Number (LRT)	WSDOT Traffic Noise Impact Criteria (dBA)	Future Build Traffic Noise Levels w/HOV (dBA Leq)	Traffic Noise Impacts	Proposed Noise Mitigation	Future Traffic Noise Levels w/Mitigation (dBA Leq)	Units for Insulation
SF residence on SE 27th Pl	2146	2047+00	66	62	--	Noise Wall	60	--
SF residence on SE 27th Pl	2137	2047+00	66	65	--	Noise Wall	64	--
SF residence on SE 27th Pl	2144	2047+00	66	<b>70</b>	1	Noise Wall	65	--
SF residence on SE 27th Pl	2160	2048+00	66	<b>72</b>	1	Noise Wall	63	--
SF residence on SE 27th Pl	2166	2048+00	66	<b>67</b>	1	Noise Wall	64	--
SF residence on SE 27th Pl	2170	2048+00	66	61	--	Noise Wall	59	--
SF residence on SE 26th St	2181	2050+00	66	59	--	Noise Wall	58	--
SF residence on SE 26th St	2183	2050+00	66	<b>66</b>	1	Noise Wall	63	--
SF residence on 111th Ave SE	2193	2051+00	66	<b>70</b>	1	Noise Wall	63	--
SF residence on 111th Ave SE	2210	2052+50	66	<b>71</b>	1	Noise Wall	65	--
SF residence on 111th Ave SE	2225	2053+00	66	<b>71</b>	1	Noise Wall	64	--
SF residence on SE 26th St	2211	2052+50	66	57	--	Noise Wall	56	--
SF residence on SE 25th St	2230	2053+50	66	57	--	Noise Wall	56	--
SF residence on 111th Ave SE	2235	2054+00	66	<b>70</b>	1	Noise Wall	61	--
SF residence on 111th Ave SE	2246	2054+75	66	<b>70</b>	1	Noise Wall	60	--
SF residence on SE 25th St	2252	2055+50	66	<b>71</b>	1	Noise Wall	65	--
SF residence on SE 25th St	2251	2055+50	66	56	--	Noise Wall	55	--
SF residence on SE 24th Pl	2265	2056+50	66	<b>67</b>	1	Noise Wall	62	--
SF residence on SE 24th Pl	2275	2057+00	66	<b>70</b>	1	Noise Wall	65	--
SF residence on SE 24th Pl	2284	2058+00	66	<b>69</b>	1	Noise Wall	64	--
SF residence on SE 24th Pl	2288	2059+00	66	<b>66</b>	1	Noise Wall	63	--
SF residence on SE 23rd St	2296	2059+50	66	<b>67</b>	1	Noise Wall	65	--
SF residence on SE 23rd St	2300	2060+80	66	<b>69</b>	1	Noise Wall	65	--
SF residence on SE 23rd St	2306	2062+00	66	<b>68</b>	1	Noise Wall	65	--
SF residence on SE 23rd St	2317	2063+15	66	<b>66</b>	1	Noise Wall	65	--
SF residence on SE 23rd St	2326	2064+50	66	<b>66</b>	1	Noise Wall	64	--
SF residence on SE 23rd St	2333	2065+25	66	<b>68</b>	1	Noise Wall	64	--
SF residence on SE 23rd St	2345	2066+50	66	<b>66</b>	1	Noise Wall	60	--
SF residence on SE 23rd St	2351	2067+00	66	60	--	Noise Wall	57	--
SF residence on SE 22nd St	2361	2068+00	66	65	--	Noise Wall	64	--
SF residence on 109th Ave SE	2378	2069+50	66	62	--	Noise Wall	59	--
SF residence on 109th Ave SE	2385	2070+00	66	64	--	Noise Wall	62	--
SF residence on 109th Ave SE	2393	2070+80	66	<b>67</b>	1	Noise Wall	63	--
SF residence on 109th Ave SE	2401	2071+50	66	<b>69</b>	1	Noise Wall	65	--
SF residence on 109th Ave SE	2407	2072+30	66	<b>72</b>	1	Noise Wall	65	--
SF residence on 109th Ave SE	2413	2073+50	66	<b>75</b>	1	Noise Wall	62	--
SF residence on 109th Ave SE	2421	2074+50	66	<b>73</b>	1	Noise Wall	65	--
SF residence on 109th Ave SE	3001	2075+15	66	<b>73</b>	1	Noise Wall	63	--
SF residence on 109th Ave SE	2414	2073+00	66	59	--	Noise Wall	57	--
SF residence on 109th Ave SE	2418	2073+80	66	62	--	Noise Wall	60	--
SF residence on 109th Ave SE	3000	2075+00	66	<b>67</b>	1	Noise Wall	64	--
SF residence on Bellevue Way	2375	2069+50	66	Displaced	--	--	--	--
SF residence on Bellevue Way	2384	2070+40	66	Displaced	--	--	--	--
SF residence on Bellevue Way	2397	2071+50	66	Displaced	--	--	--	--
Winters House Entrance	2358	2068+00	71	69	--	--	--	--
Winters House Back Yard	2358	2068+00	71	59	--	--	--	--

<b>Summary of Noise Levels and Impacts</b>	<b>Minimum Noise Level</b>	<b>56</b>	<b>55</b>
	<b>Maximum Noise Level</b>	<b>75</b>	<b>65</b>
	<b>Number of Impacts</b>	<b>28</b>	<b>0</b>

Mitigation assumes a noise wall on top of the retaining wall along the west side of Bellevue Way. Sound wall heights range from 6 to 18 feet on top of the retaining wall, but heights will likely vary once the retaining wall heights are finalized. This task will occur during final design.  
 Traffic noise levels in Bold Red font meet or exceed the FHWA/WSDOT noise abatement criteria.  
 Traffic noise levels calculated using the FHWA Traffic Noise Model (TNM version 2.5).

**Table A6. Comparison of Existing Traffic Noise Levels with Build and No-Build Alternatives Traffic Noise with and without Noise Mitigation**

Receiver/Area Information	Parcel	Existing Conditions (dBA Leq)	Future (2030) No-Build Conditions (dBA Leq)	Future Build Traffic Noise Levels w/o HOV (dBA Leq)	Future Build Traffic Noise Levels w/HOV (dBA Leq)	Future Build with Noise Wall	Future Build w/o HOV - Existing	Future Build with HOV - Existing	Build w/o or with HOV and Noise Wall - Existing	Build w/o or with HOV and Noise Wall - No-Build
SF residence on SE 27th Pl	2146	61	62	62	62	60	1	1	-1	-2
SF residence on SE 27th Pl	2137	64	65	65	65	64	1	1	0	-1
SF residence on SE 27th Pl	2144	70	70	71	70	65	1	0	-5	-5
SF residence on SE 27th Pl	2160	72	72	73	72	63	1	0	-9	-9
SF residence on SE 27th Pl	2166	67	67	68	67	64	1	0	-3	-3
SF residence on SE 27th Pl	2170	60	60	61	61	59	1	1	-1	-1
SF residence on SE 26th St	2181	59	59	60	59	58	1	0	-1	-1
SF residence on SE 26th St	2183	65	65	66	66	63	1	1	-2	-2
SF residence on 111th Ave SE	2193	70	71	72	70	63	2	0	-7	-8
SF residence on 111th Ave SE	2210	71	71	72	71	65	1	0	-6	-6
SF residence on 111th Ave SE	2225	71	71	72	71	64	1	0	-7	-7
SF residence on SE 26th St	2211	57	57	57	57	56	0	0	-1	-1
SF residence on SE 25th St	2230	56	57	57	57	56	1	1	0	-1
SF residence on 111th Ave SE	2235	70	71	70	70	61	0	0	-9	-10
SF residence on 111th Ave SE	2246	70	71	72	70	60	2	0	-10	-11
SF residence on SE 25th St	2252	71	71	72	71	65	1	0	-6	-6
SF residence on SE 25th St	2251	57	57	57	56	55	0	-1	-2	-2
SF residence on SE 24th Pl	2265	67	67	67	67	62	0	0	-5	-5
SF residence on SE 24th Pl	2275	70	70	70	70	65	0	0	-5	-5
SF residence on SE 24th Pl	2284	69	70	70	69	64	1	0	-5	-6
SF residence on SE 24th Pl	2288	66	66	67	66	63	1	0	-3	-3
SF residence on SE 23rd St	2296	68	68	70	67	65	2	-1	-3	-3
SF residence on SE 23rd St	2300	70	71	73	69	65	3	-1	-5	-6
SF residence on SE 23rd St	2306	69	69	71	68	65	2	-1	-4	-4
SF residence on SE 23rd St	2317	65	65	65	66	65	0	1	0	0
SF residence on SE 23rd St	2326	64	65	65	66	64	1	2	0	-1
SF residence on SE 23rd St	2333	66	66	67	68	64	1	2	-2	-2
SF residence on SE 23rd St	2345	64	64	63	66	60	-1	2	-4	-4
SF residence on SE 23rd St	2351	59	60	60	60	57	1	1	-2	-3
SF residence on SE 22nd St	2361	66	67	67	65	64	1	-1	-2	-3
SF residence on 109th Ave SE	2378	61	61	60	62	59	-1	1	-2	-2
SF residence on 109th Ave SE	2385	63	64	62	64	62	-1	1	-1	-2
SF residence on 109th Ave SE	2393	66	66	66	67	63	0	1	-3	-3
SF residence on 109th Ave SE	2401	67	68	69	69	65	2	2	-2	-3
SF residence on 109th Ave SE	2407	70	70	73	72	65	3	2	-5	-5
SF residence on 109th Ave SE	2413	72	73	75	75	62	3	3	-10	-11
SF residence on 109th Ave SE	2421	72	72	74	73	65	2	1	-7	-7
SF residence on 109th Ave SE	3001	71	72	72	73	63	1	2	-8	-9
SF residence on 109th Ave SE	2414	59	59	59	59	57	0	0	-2	-2
SF residence on 109th Ave SE	2418	62	62	62	62	60	0	0	-2	-2
SF residence on 109th Ave SE	3000	66	67	67	67	64	1	1	-2	-3
SF residence on Bellevue Way	2375	72	72	Displaced	Displaced	--	--	--	--	--
SF residence on Bellevue Way	2384	68	69	Displaced	Displaced	--	--	--	--	--
SF residence on Bellevue Way	2397	72	73	Displaced	Displaced	--	--	--	--	--
Winters House Entrance	2358	71	71	69	69	69	69	-2	-2	-3
Winters House Back Yard	2358	62	63	61	59	59	59	-3	-2	-3
Summary of Noise Levels	Minimum	56	57	57	56	55	-1	-3	-10	-11
	Maximum	72	73	75	75	69	69	3	0	0

This table is provided to present a comparison of the existing, No-Build, Build with Shift Bellevue Way Option and Build with Shift Bellevue Way Option with the HOV lane. Traffic noise levels in Bold Red font meet or exceed the FHWA/WSDOT noise abatement criteria. The last two columns provide the potential noise reduction under the Build Alternatives with noise mitigation Traffic noise levels calculated using the FHWA Traffic Noise Model (TNM version 2.5).

Table A7. SE 4th Street Emergency Access Design Option: Changes from 112th Avenue SE "Y" to Surrey Downs Park (Page 1 of 2)

Receiver and Data Input Section					Impact Analysis								Project Mitigation						
					Noise Sources		Project Analysis		FTA Criteria		Number		Type of mitigation proposed			Mitigated	Unmitigated		
Area	Parcel	Description	Units	Ldn/Leq	FTA-CAT	Bells	X-Over	Ldn/Leq	Type	Mod	Sev	Mod	Sev	Sound Wall	X-Over	Insulation	Ldn/Leq	Outdoor	
Shift Bellevue Option - with or without HOV Lane 112th SE Road Over Rail Option SE 4th Street Emergency Access Only NE 6th St. Station																			
<b>Cost Savings Alternative:</b>																			
<b>MF Units at the 112th "Y"</b>																			
3	3010	MF Units at Y	4	69	2	No	No	60	Ldn	64	70	--	--	No Wall	N/A	No	60	None	
3	3010	MF Units at Y	4	69	2	No	No	61	Ldn	64	70	--	--	No Wall	N/A	No	61	None	
3	3010	MF Units at Y	4	69	2	No	No	61	Ldn	64	70	--	--	No Wall	N/A	No	61	None	
3	3010	MF Units at Y	4	69	2	No	No	53	Ldn	64	70	--	--	No Wall	N/A	No	53	None	
3	3010	MF Units at Y	4	69	2	No	No	52	Ldn	64	70	--	--	No Wall	N/A	No	52	None	
3	3010	MF Units at Y	4	67	2	No	No	54	Ldn	63	68	--	--	No Wall	N/A	No	54	None	
<b>SF Units north of Y, south of Bellefield Park</b>																			
3	4000	SF up hill on retaining wall, north of Apts	1	60	2	No	No	57	Ldn	58	64	--	--	Near tracks at-grade (6 ft.)	N/A	No	50	None	
3	4001	SF up hill on retaining wall, north of Apts	1	60	2	No	No	63	Ldn	58	64	1	--	Near tracks at-grade (6 ft.)	N/A	No	57	None	
3	4004	SF up hill on retaining wall, north of Apts	1	60	2	No	No	63	Ldn	58	64	1	--	Near tracks at-grade (6 ft.)	N/A	No	57	None	
3	4005	SF up hill on retaining wall, north of Apts	1	60	2	No	No	62	Ldn	58	64	1	--	Near tracks at-grade (6 ft.)	N/A	No	55	None	
3	4007	SF up hill on retaining wall, north of Apts	1	60	2	No	No	62	Ldn	58	64	1	--	Near tracks at-grade (6 ft.)	N/A	No	55	None	
3	4010	SF up hill on retaining wall, north of Apts	1	60	2	No	No	63	Ldn	58	64	1	--	Near tracks at-grade (6 ft.)	N/A	No	56	None	
3	4017	SF up hill on retaining wall, north of Apts	1	60	2	No	No	62	Ldn	58	64	1	--	Near tracks at-grade (6 ft.)	N/A	No	55	None	
3	4024	Lot	--	60	2	No	No	63	Ldn	58	64	--	--	Near tracks at-grade (6 ft.)	N/A	No	56	None	
3	4025	SF up hill on retaining wall, north of Apts	1	60	2	No	No	55	Ldn	58	64	--	--	Near tracks at-grade (6 ft.)	N/A	No	49	None	
3	4029	SF up hill on retaining wall, north of Apts	1	60	2	No	No	56	Ldn	58	64	--	--	Near tracks at-grade (6 ft.)	N/A	No	49	None	
<b>Bellefield Park</b>																			
4	4050	MF units at Bellefield Park	2	64	2	No	No	55	Ldn	61	66	--	--	No Wall	N/A	No	55	None	
4	4050	MF units at Bellefield Park	2	64	2	No	No	53	Ldn	61	66	--	--	No Wall	N/A	No	53	None	
4	4050	MF units at Bellefield Park	2	63	2	No	No	46	Ldn	60	66	--	--	No Wall	N/A	No	46	None	
4	4050	MF units at Bellefield Park	2	65	2	No	No	52	Ldn	61	67	--	--	No Wall	N/A	No	52	None	
4	4050	MF units at Bellefield Park	3	63	2	No	No	50	Ldn	60	66	--	--	No Wall	N/A	No	50	None	
4	4050	MF units at Bellefield Park	4	64	2	No	No	52	Ldn	61	66	--	--	No Wall	N/A	No	52	None	
4	4050	MF units at Bellefield Park	2	64	2	No	No	50	Ldn	61	66	--	--	No Wall	N/A	No	50	None	
4	4050	MF units at Bellefield Park	2	63	2	No	No	46	Ldn	60	66	--	--	No Wall	N/A	No	46	None	
4	4050	MF units at Bellefield Park	2	64	2	No	No	63	Ldn	61	66	2	--	Near tracks at-grade (6 ft.)	N/A	No	57	None	
4	4050	MF units at Bellefield Park	2	63	2	No	No	62	Ldn	60	66	2	--	Near tracks at-grade (6 ft.)	N/A	No	57	None	
<b>SF Units along 111th Place</b>																			
5	4065	SF residence	1	62	2	No	No	59	Ldn	59	65	1	--	Near tracks at-grade (6 ft.)	N/A	No	47	None	
5	4063	SF residence	1	66	2	No	No	69	Ldn	62	68	--	1	Near tracks at-grade (6 ft.)	N/A	No	57	None	
5	4067	Displaced	--	66	2	No	No	72	Ldn	62	68	--	--	Near tracks at-grade (6 ft.)	N/A	No	60	None	
5	4074	Displaced	--	66	2	No	No	72	Ldn	62	68	--	--	Near tracks at-grade (6 ft.)	N/A	No	61	None	
5	4079	SF residence	1	65	2	No	No	66	Ldn	61	67	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	55	None	
5	4084	SF residence	1	65	2	No	No	67	Ldn	61	67	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	57	None	
5	5000	SF residence	1	65	2	No	No	71	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	60	None	
5	5006	SF residence	1	65	2	No	No	69	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	58	None	
5	5013	SF residence	1	65	2	No	No	67	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	55	None	
5	5021	SF residence	1	65	2	No	No	68	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	56	None	
5	5026	SF residence	1	65	2	No	Yes	68	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	Special	No	55	None	
5	5036	SF residence	1	65	2	No	Yes	69	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	Special	No	55	None	
5	5039	Displaced	--	66	2	No	Yes	74	Ldn	62	68	--	--	On retaining wall or at-grade (10 ft.)	Special	No	58	None	
5	5050	SF residence	1	64	2	No	Yes	68	Ldn	61	66	--	1	On retaining wall or at-grade (10 ft.)	Special	No	53	None	
<b>Hotel south of Main Street Station</b>																			
6	4001	Bellevue Club - East of 112th	1	68	2	No	No	62	Ldn	63	69	--	--	No Wall	N/A	No	62	None	

Table A7. SE 4th Street Emergency Access Design Option: Changes from 112th Avenue SE “Y” to Surrey Downs Park (Page 2 of 2)

Receiver and Data Input Section		Impact Analysis										Project Mitigation						
		Noise Sources		Project		Analysis		FTA Criteria		Number		Type of mitigation proposed			Mitigated	Unmitigated		
Parcel #, Description, Existing Noise Levels and FTA Category	Units	Ldn/Leq	FTA-CAT	Bells	X-Over	Ldn/Leq	Type	Mod	Sev	Mod	Sev	Sound Wall	X-Over	Insulation	Ldn/Leq	Outdoor		
<b>Shift Bellevue Option - with or without HOV Lane</b>																		
<b>112th SE Road Over Rail Option</b>																		
<b>SE 4th Street Emergency Access Only</b>																		
<b>NE 6th St. Station</b>																		
<b>Single family residences from Surrey Downs Park to Tunnel Portal</b>																		
6	2001	SF residence	1	67	2	No	No	66	Ldn	63	68	1	--	Near tracks at-grade (6 ft.)	N/A	No	54	None
6	2002	SF residence	1	64	2	No	No	58	Ldn	61	66	--	--	Near tracks at-grade (6 ft.)	N/A	No	46	None
6	4004	SF residence	1	64	2	No	No	58	Ldn	61	66	--	--	Near tracks at-grade (6 ft.)	N/A	No	46	None
6	4003	SF residence	1	67	2	No	No	67	Ldn	63	68	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	55	None
6	4005	SF residence	1	64	2	Yes	No	64	Ldn	61	66	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	52	None
6	4007	SF residence	1	64	2	Yes	No	64	Ldn	61	66	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	52	None
6	4009	SF residence	1	64	2	Yes	No	65	Ldn	61	66	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	53	None
6	4011	SF residence	1	64	2	Yes	No	66	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54	None
6	4015	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54	None
6	4019	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54	None
6	4024	SF residence	1	64	2	Yes	No	68	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54	None
6	4028	SF residence	1	64	2	Yes	No	68	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54	None
6	4032	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	52	None
6	4036	SF residence	1	64	2	Yes	No	66	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	50	None
6	4040	SF residence	1	64	2	Yes	No	66	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	50	None
6	4041	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	49	None
6	4042	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	49	None
6	5010	SF residence	1	64	2	Yes	No	58	Ldn	61	66	--	--	On retaining wall or at-grade (8 ft.)	N/A	No	44	None
6	5011	SF residence	1	64	2	Yes	No	58	Ldn	61	66	--	--	On retaining wall or at-grade (8 ft.)	N/A	No	41	None
<b>Receivers East of 6th Street Tunnel Portal</b>																		
<b>Multi-Family on NE 6th St</b>																		
7	C8031	MF Bravern	48	67	2	Yes	No	65	Ldn	63	68	48	--	No Wall	N/A	Yes	65	Balconies
<b>Hotels</b>																		
7	10001	Coast Hotel	36	69	2	No	No	68	Ldn	64	70	36	--	Elevated Structure (3 ft.)	N/A	No	61	None
<b>Meydenbauer Center</b>																		
7	9005	Performing Arts Center	1	69	1	No	No	64	Leq	70	75	--	--	No Wall	N/A	No	64	None
<b>Bellevue Lake Condominiums</b>																		
7	10045	Bellevue Lake Condos	8	58	2	No	No	64	Ldn	57	63	--	8	On retaining wall or at-grade (8 ft.)	N/A	No	54	None
7	10045	Bellevue Lake Condos	4	58	2	No	No	63	Ldn	57	63	--	4	On retaining wall or at-grade (8 ft.)	N/A	No	54	None
7	10045	Bellevue Lake Condos	4	58	2	No	No	63	Ldn	57	63	--	4	On retaining wall or at-grade (8 ft.)	N/A	No	53	None

**Table A8. Bellefield Access Suboption: Changes from 111th Place SE to Tunnel Portal**

Receiver and Data Input Section				Impact Analysis										Project Mitigation			
				Noise Sources		Project		Analysis		FTA Criteria		Number		Type of mitigation proposed		Mitigated	
Parcel #	Description	Existing Noise Levels	FTA Category	Bells	X-Over	Ldn	Type	Mod	Sev	Mod	Sev	Sound Wall	X-Over	Insulation	Ldn		
<b>Cost Savings Design Option:</b>																	
Shift Bellevue Option - with or without HOV Lane				112th Road Over Rail Option													
112th Road Over Rail Option				SE 4th Emergency Access Suboption with Bellefield Access Variator													
Changes between 111th Place and Main St				NE 6th St. Station													
<b>Receiver and Data Input Section</b>				<b>Impact Analysis</b>										<b>Project Mitigation</b>			
Parcel #	Description	Existing Noise Levels	FTA Category	Noise Sources		Project		Analysis		FTA Criteria		Number		Type of mitigation proposed		Mitigated	
Area	Parcel	Description	Units	Ldn	FTA-CAT	Bells	X-Over	Ldn	Type	Mod	Sev	Mod	Sev	Sound Wall	X-Over	Insulation	Ldn
<b>SF Units along 111th Place</b>																	
5	4065	SF residence	1	62	2	No	No	64	Ldn	59	65	1	--	Near tracks at-grade (6 ft.)	N/A	No	52
5	4063	Displaced	--	66	2	No	No	69	Ldn	62	68	--	--	Near tracks at-grade (6 ft.)	N/A	No	57
5	4067	Displaced	--	66	2	No	No	72	Ldn	62	68	--	--	Near tracks at-grade (6 ft.)	N/A	No	60
5	4074	Displaced	--	66	2	No	No	72	Ldn	62	68	--	--	Near tracks at-grade (6 ft.)	N/A	No	61
5	4079	SF residence	1	65	2	No	No	66	Ldn	61	67	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	55
5	4084	SF residence	1	65	2	No	No	67	Ldn	61	67	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	57
5	5000	SF residence	1	65	2	No	No	71	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	60
5	5006	SF residence	1	65	2	No	No	69	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	58
5	5013	SF residence	1	65	2	No	No	67	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	55
5	5021	SF residence	1	65	2	No	No	68	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	56
5	5026	SF residence	1	65	2	No	Yes	68	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	Special	No	55
5	5036	SF residence	1	65	2	No	Yes	69	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	Special	No	55
5	5039	Displaced	--	66	2	No	Yes	74	Ldn	62	68	--	--	On retaining wall or at-grade (10 ft.)	Special	No	58
5	5050	SF residence	1	64	2	No	Yes	68	Ldn	61	66	--	1	On retaining wall or at-grade (10 ft.)	Special	No	53
<b>Hotel south of Main Street Station</b>																	
6	4001	Bellevue Club - East of 112th	1	68	2	No	No	62	Ldn	63	69	--	--	No wall	N/A	No	62
<b>Single family residences from Surry Downs Park to Tunnel Portal</b>																	
6	2001	SF residence	1	67	2	No	No	66	Ldn	63	68	1	--	Near tracks at-grade (6 ft.)	N/A	No	54
6	2002	SF residence	1	64	2	No	No	58	Ldn	61	66	--	--	Near tracks at-grade (6 ft.)	N/A	No	46
6	4004	SF residence	1	64	2	No	No	58	Ldn	61	66	--	--	Near tracks at-grade (6 ft.)	N/A	No	46
6	4003	SF residence	1	67	2	No	No	67	Ldn	63	68	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	55
6	4005	SF residence	1	64	2	Yes	No	64	Ldn	61	66	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	52
6	4007	SF residence	1	64	2	Yes	No	64	Ldn	61	66	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	52
6	4009	SF residence	1	64	2	Yes	No	65	Ldn	61	66	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	53
6	4011	SF residence	1	64	2	Yes	No	66	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54
6	4015	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54
6	4019	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54
6	4024	SF residence	1	64	2	Yes	No	68	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54
6	4028	SF residence	1	64	2	Yes	No	68	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54
6	4032	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	52
6	4036	SF residence	1	64	2	Yes	No	66	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	50
6	4040	SF residence	1	64	2	Yes	No	66	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	50
6	4041	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	49
6	4042	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	50
6	5010	SF residence	1	64	2	Yes	No	58	Ldn	61	66	--	--	On retaining wall or at-grade (8 ft.)	N/A	No	44
6	5011	SF residence	1	64	2	Yes	No	58	Ldn	61	66	--	--	On retaining wall or at-grade (8 ft.)	N/A	No	41

**Table A9. 4th Street Open Access Suboption: Changes from 111th Place SE to Tunnel Portal**

Receiver and Data Input Section		Impact Analysis											Project Mitigation				
		Noise Sources				Project		Analysis		FTA Criteria		Number		Type of mitigation proposed			Mitigated
Parcel #	Description	Existing Noise Levels	FTA Category	Bells	X-Over	Ldn	Type	Mod	Sev	Mod	Sev	Sound Wall	X-Over	Insulation	Ldn		
<b>Cost Savings Design Option:</b>																	
<i>Changes between 111th Place and Main St</i>																	
Shift Bellevue Option - with or without HOV Lane																	
112th Road Over Rail Option																	
SE 4th Open Suboption																	
NE 6th St. Station																	
<b>SF Units along 111th Place</b>																	
5	4065	SF residence	1	62	2	No	No	59	Ldn	59	65	1	--	Near tracks at-grade (6 ft.)	N/A	No	47
5	4063	SF residence	1	66	2	No	No	69	Ldn	62	68	--	1	Near tracks at-grade (6 ft.)	N/A	No	57
5	4067	Displaced	--	66	2	No	No	72	Ldn	62	68	--	--	Near tracks at-grade (6 ft.)	N/A	No	60
5	4074	Displaced	--	66	2	No	No	72	Ldn	62	68	--	--	Near tracks at-grade (6 ft.)	N/A	No	61
5	4079	SF residence	1	65	2	No	No	66	Ldn	61	67	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	55
5	4084	SF residence	1	65	2	No	No	67	Ldn	61	67	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	57
5	5000	SF residence	1	65	2	No	No	71	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	60
5	5006	SF residence	1	65	2	No	No	69	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	58
5	5013	SF residence	1	65	2	No	No	67	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	55
5	5021	SF residence	1	65	2	No	No	68	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	56
5	5026	SF residence	1	65	2	No	Yes	68	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	Special	No	55
5	5036	SF residence	1	65	2	No	Yes	69	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	Special	No	55
5	5039	Displaced	--	66	2	No	Yes	74	Ldn	62	68	--	--	On retaining wall or at-grade (10 ft.)	Special	No	58
5	5050	SF residence	1	64	2	No	Yes	68	Ldn	61	66	--	1	On retaining wall or at-grade (10 ft.)	Special	No	53
<b>Hotel south of Main Street Station</b>																	
6	4001	Bellevue Club - East of 112th	1	68	2	Yes	No	63	Ldn	63	69	1	--	No wall	N/A	Yes	63
<b>Single family residences from Surry Downs Park to Tunnel Portal</b>																	
6	2001	SF residence	1	67	2	Yes	No	68	Ldn	63	68	--	1	Near tracks at-grade (6 ft.)	N/A	No	54
6	2002	SF residence	1	64	2	Yes	No	61	Ldn	61	66	1	--	Near tracks at-grade (6 ft.)	N/A	No	46
6	4004	SF residence	1	64	2	Yes	No	61	Ldn	61	66	1	--	Near tracks at-grade (6 ft.)	N/A	No	46
6	4003	SF residence	1	67	2	Yes	No	68	Ldn	63	68	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	55
6	4005	SF residence	1	64	2	Yes	No	65	Ldn	61	66	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	52
6	4007	SF residence	1	64	2	Yes	No	64	Ldn	61	66	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	52
6	4009	SF residence	1	64	2	Yes	No	65	Ldn	61	66	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	53
6	4011	SF residence	1	64	2	Yes	No	66	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54
6	4015	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54
6	4019	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54
6	4024	SF residence	1	64	2	Yes	No	68	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54
6	4028	SF residence	1	64	2	Yes	No	68	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	54
6	4032	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	52
6	4036	SF residence	1	64	2	Yes	No	66	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	50
6	4040	SF residence	1	64	2	Yes	No	66	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	50
6	4041	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	49
6	4042	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	50
6	5010	SF residence	1	64	2	Yes	No	58	Ldn	61	66	--	--	On retaining wall or at-grade (8 ft.)	N/A	No	44
6	5011	SF residence	1	64	2	Yes	No	58	Ldn	61	66	--	--	On retaining wall or at-grade (8 ft.)	N/A	No	41



Table A10. Light Rail Under 4th Street Access Suboption: Changes from 111th Place SE to Main Street

Receiver and Data Input Section		Impact Analysis										Project Mitigation					
		Noise Sources				Project Analysis		FTA Criteria		Number		Type of mitigation proposed			Mitigated		
Area	Parcel	Description	Units	Ldn	FTA-CAT	Bells	X-Over	Ldn	Type	Mod	Sev	Mod	Sev	Sound Wall	X-Over	Insulation	Ldn
<b>Cost Savings Design Option:</b>																	
Changes between 111th Place and Main St		Shift Bellevue Option - with or without HOV Lane															
		112th Road Over Rail Option															
		Rail Under SE 4th Suboption															
		NE 6th St. Station															
<b>SF Units along 111th Place</b>																	
5	4065	SF residence	1	62	2	No	No	59	Ldn	59	65	1	--	Near tracks at-grade (6 ft.)	N/A	No	47
5	4063	SF residence	1	66	2	No	No	69	Ldn	62	68	--	1	Near tracks at-grade (6 ft.)	N/A	No	57
5	4067	Displaced	--	66	2	No	No	72	Ldn	62	68	--	--	Near tracks at-grade (6 ft.)	N/A	No	60
5	4074	Displaced	--	66	2	No	No	72	Ldn	62	68	--	--	Near tracks at-grade (6 ft.)	N/A	No	61
5	4079	SF residence	1	65	2	No	No	66	Ldn	61	67	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	55
5	4084	SF residence	1	65	2	No	No	67	Ldn	61	67	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	57
5	5000	SF residence	1	65	2	No	No	71	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	60
5	5006	SF residence	1	65	2	No	No	69	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	58
5	5013	SF residence	1	65	2	No	No	67	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	55
5	5021	SF residence	1	65	2	No	No	68	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	N/A	No	56
5	5026	SF residence	1	65	2	No	Yes	68	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	Special	No	55
5	5036	SF residence	1	65	2	No	Yes	69	Ldn	61	67	--	1	On retaining wall or at-grade (10 ft.)	Special	No	55
5	5039	Displaced	--	66	2	No	Yes	74	Ldn	62	68	--	--	On retaining wall or at-grade (10 ft.)	Special	No	58
5	5050	SF residence	1	64	2	No	Yes	68	Ldn	61	66	--	1	On retaining wall or at-grade (10 ft.)	Special	No	53
<b>Hotel south of Main Street Station</b>																	
6	4001	Bellevue Club - East of 112th	1	68	2	No	No	50	Ldn	63	69	--	--	No wall	N/A	No	50
<b>Single family residences from Surry Downs Park to Tunnel Portal</b>																	
6	2001	SF residence	1	67	2	No	No	56	Ldn	63	68	--	--	Near tracks at-grade (6 ft.)	N/A	No	56
6	2002	SF residence	1	64	2	No	No	49	Ldn	61	66	--	--	Near tracks at-grade (6 ft.)	N/A	No	49
6	4004	SF residence	1	64	2	No	No	54	Ldn	61	66	--	--	Near tracks at-grade (6 ft.)	N/A	No	54
6	4003	SF residence	1	67	2	No	No	60	Ldn	63	68	--	--	On retaining wall or at-grade (8 ft.)	N/A	No	60
6	4005	SF residence	1	64	2	Yes	No	60	Ldn	61	66	--	--	On retaining wall or at-grade (8 ft.)	N/A	No	55
6	4007	SF residence	1	64	2	Yes	No	64	Ldn	61	66	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	55
6	4009	SF residence	1	64	2	Yes	No	64	Ldn	61	66	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	55
6	4011	SF residence	1	64	2	Yes	No	65	Ldn	61	66	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	56
6	4015	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	56
6	4019	SF residence	1	64	2	Yes	No	66	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	56
6	4024	SF residence	1	64	2	Yes	No	68	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	56
6	4028	SF residence	1	64	2	Yes	No	68	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	57
6	4032	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	55
6	4036	SF residence	1	64	2	Yes	No	66	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	52
6	4040	SF residence	1	64	2	Yes	No	66	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	52
6	4041	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	52
6	4042	SF residence	1	64	2	Yes	No	67	Ldn	61	66	--	1	On retaining wall or at-grade (8 ft.)	N/A	No	52
6	5010	SF residence	1	64	2	Yes	No	58	Ldn	61	66	--	--	On retaining wall or at-grade (8 ft.)	N/A	No	46
6	5011	SF residence	1	64	2	Yes	No	58	Ldn	61	66	--	--	On retaining wall or at-grade (8 ft.)	N/A	No	43

**Table A11. 112th Road Over Rail Option with Front-Line Structures along 111th Place SE Displaced; Analysis of Second-Line Residences Only**

Receiver and Data Input Section				Impact Analysis								Project Mitigation					
				Type of mitigation proposed		Mitigated											
Parcel #	Description	Existing Noise Levels and FTA Category	Units	Ldn	FTA-CAT	Noise Sources		Project	Analysis	FTA Criteria		Number		Type of mitigation proposed		Mitigated	
Area	Parcel	Description	Units	Ldn	FTA-CAT	Bells	X-Over	Ldn	Type	Mod	Sev	Mod	Sev	Sound Wall	X-Over	Insulation	Ldn
<b>SF Units along 111th Place</b>																	
5	4065	SF residence	1	62	2	No	No	64	Ldn	59	65	1	--	Near tracks at-grade (6 ft.)	N/A	No	52
5	4066	SF residence	1	62	2	No	No	55	Ldn	59	65	--	--	Near tracks at-grade (6 ft.)	N/A	No	43
5	4069	SF residence	1	62	2	No	No	57	Ldn	59	65	--	--	Near tracks at-grade (6 ft.)	N/A	No	45
5	4073	SF residence	1	62	2	No	No	63	Ldn	59	65	1	--	Near tracks at-grade (6 ft.)	N/A	No	51
5	4079	SF residence	1	65	2	No	No	66	Ldn	61	67	1	--	On retaining wall or at-grade (8 ft.)	N/A	No	55
5	4077	SF residence	1	62	2	No	No	54	Ldn	59	65	--	--	On retaining wall or at-grade (8 ft.)	N/A	No	42
5	4082	SF residence	1	62	2	No	No	54	Ldn	59	65	--	--	On retaining wall or at-grade (10 ft.)	N/A	No	42
5	4086	SF residence	1	62	2	No	No	57	Ldn	59	65	--	--	On retaining wall or at-grade (10 ft.)	N/A	No	45
5	5001	SF residence	1	62	2	No	No	63	Ldn	59	65	1	--	On retaining wall or at-grade (10 ft.)	N/A	No	51
5	5008	SF residence	1	62	2	No	No	63	Ldn	59	65	1	--	On retaining wall or at-grade (10 ft.)	N/A	No	51
5	5015	SF residence	1	62	2	No	No	63	Ldn	59	65	1	--	On retaining wall or at-grade (10 ft.)	N/A	No	51
5	5023	SF residence	1	62	2	No	No	63	Ldn	59	65	1	--	On retaining wall or at-grade (10 ft.)	N/A	No	51
5	5033	SF residence	1	62	2	No	No	63	Ldn	59	65	1	--	On retaining wall or at-grade (10 ft.)	N/A	No	51
5	5041	SF residence	1	62	2	No	Yes	60	Ldn	59	65	1	--	On retaining wall or at-grade (10 ft.)	Special	No	46
5	5050	SF residence	1	64	2	No	Yes	68	Ldn	61	66	--	1	On retaining wall or at-grade (10 ft.)	Special	No	53