

CHAPTER 5.2 Noise

The Tukwila to Renton Project will increase noise levels in some areas. Two new noise barriers are planned as part of this project. These walls will reduce traffic noise in the Renton Hill area and at the Berkshire Apartment complex.

Sound is an element of daily life that people call noise when they perceive it as unpleasant, unwanted, or disturbingly loud. WSDOT considered this project's effects on noise so that we could understand the potential effect of traffic and construction noise on public health and welfare.

How did WSDOT evaluate noise levels for this project?

WSDOT used the FHWA Traffic Noise Model Version 2.5 computer model³ to predict future noise levels. To validate the model, noise levels were measured for 15-minute periods at 18 locations near the study area. These measurements also help describe the existing noise levels, identify major noise sources in the study area, and characterize weekday background noise levels.

Predicted noise levels were based on the loudest hour of the day (when traffic volumes are high but not congested) to estimate worst-case noise levels. Noise levels in the study area were predicted for the baseline (year 2014) and the design year (year 2030) both with and without the project.

Once the data were modeled, the noise levels were compared to the FHWA Noise Abatement Criteria (NAC). In places where noise levels were modeled as approaching, meeting, or exceeding the NAC, noise specialists evaluated whether mitigation measures could reduce traffic noise substantially enough to warrant the cost of barrier construction. This evaluation was based on WSDOT's feasibility and reasonableness criteria.

Construction noise was considered using EPA reference levels. The analysis was based on noise levels from equipment typically used for roadway construction. Noise levels were



Noise is generated from vehicles traveling on the roadway

Please refer to the Tukwila to Renton Project Noise and Vibration Discipline Report in Appendix N for a complete discussion of the noise and vibration analysis.

What is the Noise Abatement Criteria (NAC)?

For residential and public use buildings or outdoor recreational areas, FHWA defines the NAC at 67 dBA.

WSDOT has adopted the NAC and states its own criteria at 66 dBA so that noise levels do not approach, meet, or exceed the NAC. If the NAC is approached, met, or exceeded, noise mitigation must be evaluated.

³ FHWA, 2005

reviewed at various distances from the proposed area of construction.

What do the terms feasible and reasonable mean?

WSDOT evaluates many factors to determine whether barriers will be feasible and/or reasonable. To be feasible, a barrier must be constructible where noise levels will be reduced by at least 7 dBA for one or more receptors and will be reduced by at least 5 dBA at most of the first row of receptors.

WSDOT determines reasonableness based on how many receptors benefit by a reduction in noise of at least 3 dBA, the cost effectiveness of the barriers, and concerns such as aesthetics, safety, and the desires of nearby residents.

How noisy is the study area?

Baseline conditions include the effects of the Renton Nickel Improvement Project. Under these conditions, some study area locations already approach, meet, or exceed the NAC. Locations that currently approach, meet, or exceed 67 dBA include approximately 98 residences, 2 hotels, 6 parks, and 3 trails. Eleven of these residences and the 2 hotels exceed the NAC because of noise from local traffic on Main Avenue, S Grady Way, Benson Road S, N 3rd Avenue, the SR 169/N 3rd Avenue connector, and/or SR 169.

How will construction activities affect noise levels?

Construction will usually be carried out in several steps, each with its own mix of equipment and its own noise characteristics. Adverse effects may result from construction noise levels generated by heavy equipment, including heavy trucks, excavators, jackhammers, and pile drivers. However, this noise will be temporary, occurring only during the construction period. Measures to minimize construction noise effects have been incorporated into the project and are detailed in Section 6.

How will noise levels change after the project is completed?

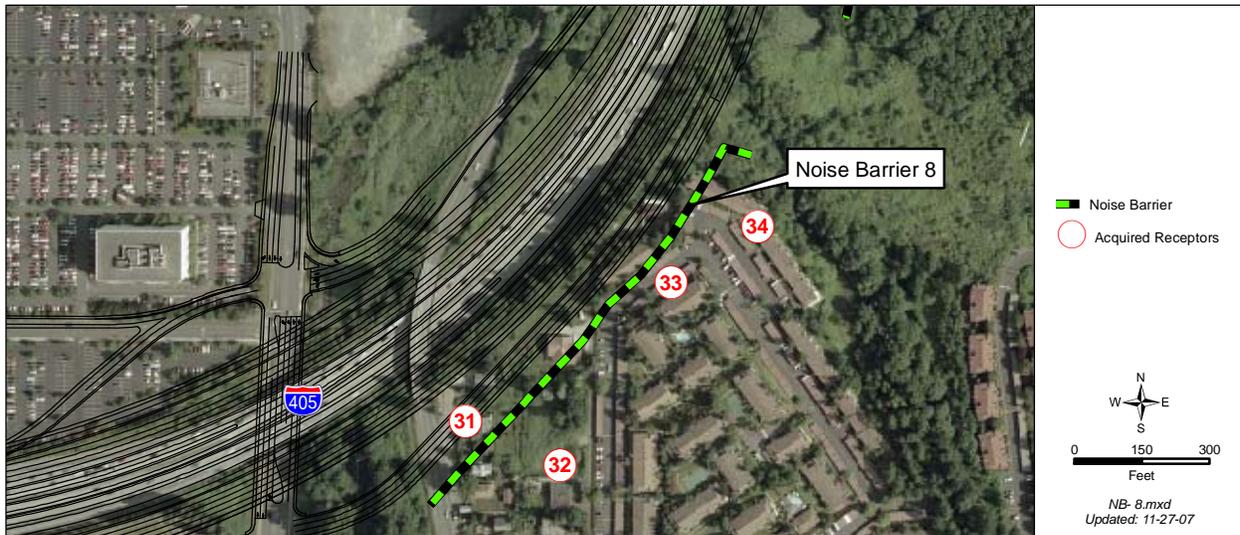
The Tukwila to Renton Project will increase noise levels throughout the entire study area, primarily affecting residences in the Renton Hill and Talbot Hill neighborhoods. Noise levels will grow over time with an increase of 0 to 12 dBA by the year 2030.

To accommodate the road widening, WSDOT will acquire 30 noise-affected residences and one park as right-of-way for the roadway project. If the project were built without noise barriers, 92 residences and 1 library would go from being below the NAC to approaching, meeting, or exceeding the NAC. Added to the 98 residences, 2 hotels, 6 parks, and 3 trails that are already at or above the NAC, a total of 190 residences, 2 hotels, 1 library, 6 parks, and 3 trails are

predicted to experience noise levels at or above the NAC of 66 dBA in 2030.

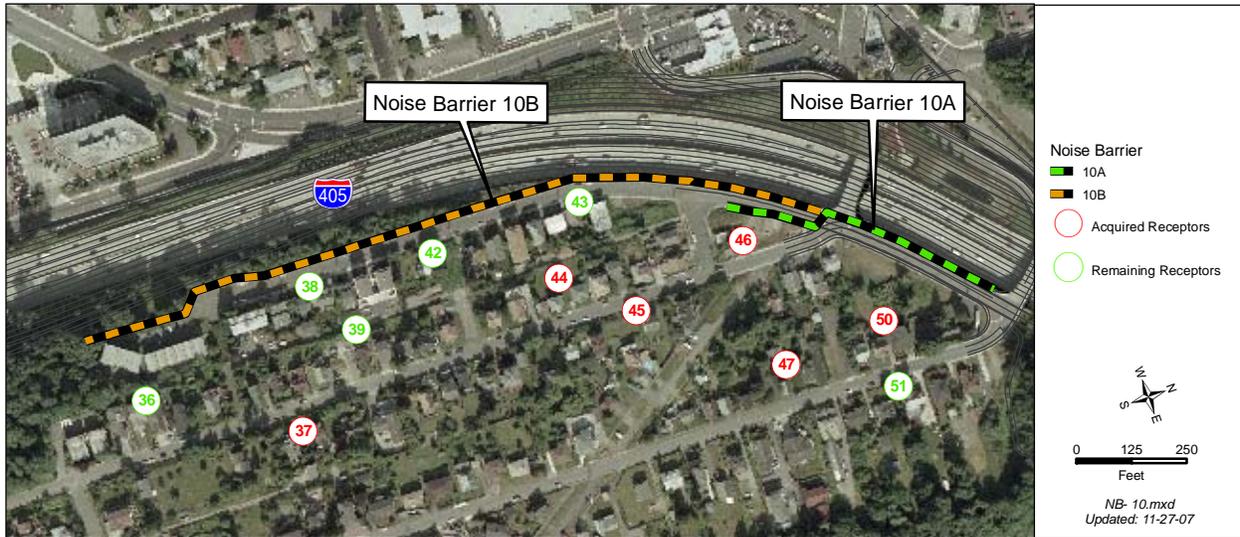
Fourteen noise barriers were evaluated for the Tukwila to Renton Project. Two of these noise barriers meet WSDOT's criteria for construction as part of the Tukwila to Renton Project. Noise Barrier 8 is planned for construction along the WSDOT right-of-way line east of Benson Road S and southeast of I-405 near the Berkshire Apartments. At a height of 20 feet, Noise Barrier 8 will reduce the number of residences that experience noise levels that approach, meet, or exceed the NAC from 27 to 5 residences in the area behind Noise Barrier 8. Exhibit 5-3 shows the location of this proposed barrier.

Exhibit 5-3: Location of Noise Barrier 8



Noise Barrier 10 is composed of two walls, Noise Barriers 10A and 10B, which work together as a system. The barrier system is planned for construction atop a retaining wall from Renton Avenue S to the end of Mill Avenue S. At a height of 14 to 20 feet and 20 feet respectively, Noise Barriers 10A and 10B would reduce the number of residences that experience noise levels that approach, meet, or exceed the NAC from 76 to 29 residences in the area behind Noise Barrier 10. Exhibit 5-4 shows the location of this proposed barrier.

Exhibit 5-4: Location of Noise Barrier 10



With these barriers in place, the 190 residences that approach, meet, or exceed the NAC will be reduced to 121 residences. These noise barriers will not change the noise levels at the 2 hotels, 1 library, 6 parks, and 3 trails that are also expected to approach, meet, or exceed the NAC after the project is complete.

Noise Barrier East 5, which was built under the Renton Nickel Improvement Project, will be relocated to a new location as part of the Tukwila to Renton Project. Exhibit 5-5 shows the new location of this barrier. The residences behind this barrier will experience additional noise effects, although the magnitude of these effects will be minimized by the shielding effects of the relocated noise barrier. The possibility of increasing the size of Noise Barrier East 5 was analyzed but this option was not found to be feasible.

Exhibit 5-5: Noise Barrier East 5 Modification



With the noise barriers in place for the Build Alternative, noise levels will approach, meet, or exceed the NAC at 36 locations (representing 121 residences, 2 hotels, 1 library, 6 parks, and 3 trails). The Tukwila to Renton Project will not cause any substantial (more than 10 dBA) increases in noise.

What would future noise levels be like if WSDOT did not build this project?

If this project is not built, no additional receptors will approach, meet or exceed the NAC. Under the No Build Alternative, the 98 residences, 2 hotels, 6 parks, and 3 trails that already approach, meet or exceed the NAC will continue to experience noise levels that approach, meet, or exceed the NAC in 2030.

This page intentionally blank.