Environmental Summary

Point Defiance Bypass Project

May 2008

Washington State Department of Transportation

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Prepared for the

Washington State Department of Transportation

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Chapter One *Introduction*

Washington State is incrementally upgrading Amtrak *Cascades* passenger rail service along the Pacific Northwest Rail Corridor (PNWR Corridor) in western Washington (see **Exhibit 1.1**). The state's vision is being implemented through a step-by-step approach, based on legislative funding and market demand. The Washington State Department of Transportation (WSDOT) is leading the planning and engineering efforts for the Amtrak *Cascades* program.

The state's goal for the PNWR Corridor is to provide safe, faster, more frequent, and more reliable intercity passenger rail service.

Exhibit 1.1
Pacific Northwest Rail Corridor

What is intercity passenger rail?

Intercity passenger rail connects cities along a railroad corridor. In the PNWR corridor, the Amtrak *Cascades* provides intercity rail service, connecting the cities between Vancouver, BC and Eugene, OR, as shown on Exhibit 1.1. Passengers aboard the *Cascades*, travel an average of 140 miles and typically travel to business meetings, to visit family and friends, to shop, and to attend special events.

Longer distance passenger rail trains also serve the Pacific Northwest. These trains, which travel over five hundred miles, include Amtrak's *Coast Starlight* (Seattle to Los Angeles) and the Seattle/Portland to Chicago *Empire Builder*.

Intercity passenger rail is different from commuter rail. Commuter rail typically serves commuters during morning and evening peak hours, Monday – Friday, or occasional sporting events such as Saturday baseball or football games. Commuter rail connects a central city to its surrounding suburban communities. In the PNWR Corridor, commuter rail is provided by Sound Transit's *Sounder*, and connects Seattle with the surrounding communities of Edmonds and Everett to the north, and Tukwila and Tacoma to the south. Often, as is the case in the PNWR Corridor, intercity passenger rail and commuter rail travel along the same corridor and share the same railroad tracks.

Where do passenger trains run?

Both Amtrak and Sound Transit trains in western Washington operate on the BNSF's north-south main line. Occasional delays to passenger service result because the tracks are shared with BNSF freight trains. South of Tacoma, the BNSF tracks used by Amtrak trains head first to the northwest to Point Defiance, and then southward to Lacey.

In order to extend service to Lakewood, which is not accessed by the present configuration of tracks through Point Defiance, Sound Transit purchased a segment of BNSF track in Pierce County (commonly referred to as the Lakeview Subdivision). WSDOT proposes to make improvements to the Point Defiance Bypass line south of Lakewood to Lacey and switch Amtrak *Cascades* service from the existing BNSF track to the Bypass.

Where is the Point Defiance Bypass Project located?

The project is located in Pierce County, and extends roughly 18 miles from South 66th Street (in Tacoma), through Lakewood and past DuPont to just east of I-5, where it connects with the BNSF main line. **Exhibit 1.2** on the following page shows the general project area.

The project area contains major transportation corridors, industrial and commercial facilities, military installations, and residences. Potential benefits and effects of the project to these surrounding uses are the focus of this *Environmental Summary*.

What is the purpose of this *Environmental Summary*?

This *Environmental Summary* is intended to provide the community and local agencies with general information about the effects of the project and the measures that have been incorporated into the project design to avoid, minimize or reduce those effects. The information in this summary is summarized from detailed environmental analyses performed by WSDOT as part of required federal and state environmental regulations.

Under Washington's *State Environmental Policy Act* (SEPA), any agency that proposes to take an official action is required to perform an environmental review to identify any benefits and/or impacts which may result from the action. At the federal level, pursuant to the *National*

Exhibit 1.2
General Vicinity of the Point Defiance Bypass Project

Environmental Policy Act (NEPA), a similar environmental review must be performed if the proposed action is being implemented by a federal agency, requires a federal permit, or has federal funding. In this case, two federal agencies have authority over the project, the Federal Highway Administration (FHWA) and the Federal Railroad Administration (FRA). The two agencies agreed that the FHWA should serve as the lead agency under NEPA and guide the NEPA review.

The Point Defiance Bypass Project — which is being initiated by a state agency and has federal funding — is subject to review under both SEPA and NEPA.

What type of NEPA/SEPA documentation did WSDOT prepare?

WSDOT and FHWA jointly determined that the Point Defiance Bypass Project is categorically excluded from NEPA under *40 CFR 1508.4* because it meets certain criteria as defined under FHWA guidelines: it does not

induce significant impacts to planned growth or land use for the area; does not require the relocation of significant numbers of people; does not have a significant impact on any natural, cultural, recreational, historic or other resource; does not involve significant air, noise, or water quality impacts; does not have significant impacts on travel patterns; or does not otherwise, either individually or cumulatively, have any significant environmental impacts (23 CFR 771.117).

In addition to meeting the categories, above, the project does not include any of the circumstances that the FHWA has determined to require additional analysis beyond a Categorical Exclusion (CE): it does not result in significant environmental impacts; does not create substantial controversy on environmental grounds; does not have significant impact on properties protected by section 4(f) of the DOT Act or section 106 of the National Historic Preservation Act; and is not inconsistent with any Federal, State, or local law, requirement or administrative determination relating to the environmental aspects of the action (FHWA 1987).

Under NEPA and FHWA regulations, if a proposed action is determined to be categorically excluded from NEPA, then neither an Environmental Assessment nor an Environmental Impact Statement is required. For the Point Defiance Bypass Project, WSDOT prepared a *Documented Categorical Exclusion (*DCE), which includes a standard FHWA *Environmental Review Summary,* and supporting technical material that demonstrates that the project will not result in significant impacts.

What information is contained in this environmental document?

This Environmental Summary explains the purpose and need for the Point Defiance Bypass Project (Chapter Two). Chapter Three discusses the proposed design of the project, and Chapter Four summarizes information regarding potential impacts and benefits to the community and the region. Community and agency outreach activities are presented in Chapter Five.

Chapter Two Purpose and Need

The State's vision for intercity passenger rail in the Pacific Northwest extends over a twenty-year horizon, and is described in the Long Range Plan for Amtrak Cascades (WSDOT, February 2006). The vision is to reduce travel times and provide safe, more frequent, and more reliable Amtrak *Cascades* service between Portland and Vancouver, BC.

Amtrak *Cascades* train—introduced to the Pacific Northwest Rail Corridor in January 1999.

The State's vision is being implemented through an incremental approach that allows immediate benefits to the traveling public in smaller segments of the entire corridor, through improvements such as additional or rehabilitated main line tracks, sidings, new train equipment, and more advanced signals and communications systems. Service continues to be improved while planning and engineering for future improvements move forward.

These improvements are needed because existing rail facilities are limited and cannot currently accommodate more frequent rail service or reduced travel times. In addition, the physical limitations of the existing rail line create conflicts between slower freight trains and higher speed passenger trains. These conflicts adversely affect both passenger and freight train scheduling and reliability.

State-sponsored research conducted for the Long Range Plan indicates that once all the infrastructure improvements are in place, passenger rail service can be increased to a level that will result in almost three million passengers per year, hourly service between Seattle and Portland, OR, and increased service between Seattle and Vancouver, BC.

What type of passenger rail service exists today?

Amtrak and the state of Washington operate daily intercity passenger rail service between Portland and British Columbia. Station stops are located in Portland, OR; Vancouver, WA; Kelso/Longview; Centralia; Olympia/Lacey; Tacoma; Tukwila; Seattle; Edmonds; Everett; Mount Vernon; Bellingham; and Vancouver, BC.

All stations on the corridor are served by Washington State's Amtrak *Cascades* trains. Two daily round trips connect Seattle and Bellingham, with one continuing north to Vancouver, BC. The second train will be extended to Vancouver, BC in summer 2008. Four Amtrak *Cascades* round trips are available daily between Seattle and Portland; two of these continue south to Eugene, OR.

Two Amtrak long-distance trains (sometimes called long-haul trains) also serve many of these communities. Amtrak's *Coast Starlight* travels daily between Seattle and Los Angeles, CA, via Tacoma; Olympia/Lacey; Centralia; Kelso/Longview; Vancouver, WA; and Portland, OR.

The *Empire Builder* travels daily between Seattle/Portland, OR and Chicago, IL via Spokane. Amtrak's *Empire Builder* has two routes. One train travels north from Seattle to Everett, and then travels east to Spokane. The other train travels north from Portland, OR to Vancouver, WA where it turns east and travels to Spokane. Neither of the *Empire Builder* trains travel on the Point Defiance Bypass corridor.

In addition to Amtrak intercity and long-distance service, Sound Transit – Puget Sound's regional transit agency – provides *Sounder* commuter rail service between Everett and Tacoma. These trains run only during morning and afternoon peak hours, Monday – Friday, and rarely on Saturdays for sporting events such as baseball or football games.

Where do the trains run?

Because Amtrak *Cascades* (and Sound Transit *Sounder*) trains currently operate on tracks owned by the BNSF Railway Company (BNSF), the passenger trains share the tracks with freight trains. With current and projected increases in freight rail service in this corridor, the tracks are becoming more congested.

Congestion has also resulted from physical limitations associated with single track tunnels or where curves require slower speeds (chokepoints). If passenger trains are to continue to provide fast, frequent, reliable and safe service, improvements must be made to bypass current chokepoints.

What is the purpose of the Point Defiance Bypass Project?

The Point Defiance Bypass Project will provide intercity passenger rail service that is:

- faster (decrease travel time up to six minutes);
- more frequent (add one additional daily, round trip);
- more reliable (eliminate delays);
- safe (improve roadway-rail grade crossings) ; and
- more efficient (reduce distance, fuel consumption and equipment wear).

Implementation of the project will also ease freight congestion by moving passenger trains off the BNSF main line through Point Defiance and moving them to a less congested route.

Why do we need the Point Defiance Bypass Project?

Passenger trains are often delayed because they share tracks with freight trains, or because tracks were designed for lower speeds. In order to improve passenger rail service and meet the goals of the State's long range plan, track improvements (and route relocations) need to be constructed to decrease travel time and provide service reliability. Implementation of the Point Defiance Bypass will meet these needs.

How will implementation of the project decrease travel time?

The Point Defiance Bypass reduces the rail distance between Seattle and Portland by 5.9 miles. In addition, because the new route does not have as many curves, trains can go faster along the proposed bypass route.[1] Using the Bypass line instead of the Point Defiance main line will decrease travel time for passenger trains by six minutes.

How will implementation of the project make the trains more reliable?

The Bypass will allow trains to move off the existing Point Defiance main line, which has several areas that frequently create delays. These trouble spots are shown on **Exhibit 2.1** and include the following:

- Topography: The current route extends along the shore of Puget Sound at the base of steep, heavily-wooded hillsides. These hillsides are subject to mudslides and fallen trees during rain and wind storms that occur with regularity from late fall through early spring. The Point Defiance Bypass route is not generally subject to such problems.
- Navigable water: Chambers Creek, just north of Steilacoom on the current route is a navigable waterway that the current route crosses on a drawbridge. Federal law requires trains to yield right of way to boats, so delays are created when the drawbridge must be raised.

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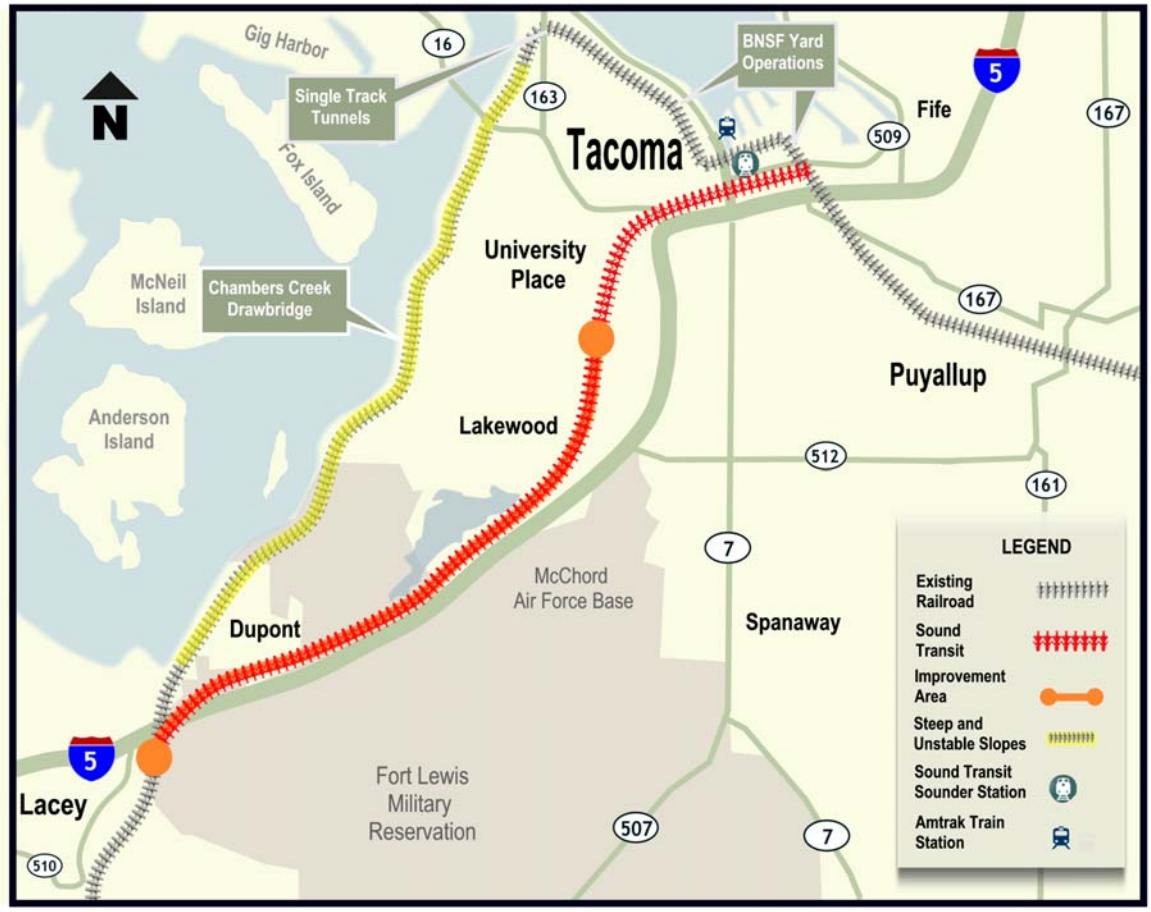
[1] *To achieve desirable travel time, passenger train speed limits are set to provide the highest speed that the track geometry will allow. To that end, there are 31 different speed limit zones (established by the BNSF) on the current Point Defiance route, with Amtrak Cascades train speed limits of 20 mph to 79 mph. In order to achieve the scheduled running time, trains must continually accelerate or brake for most of the length of this route. The Point Defiance Bypass will have only three different speed zones for Amtrak Cascades trains: 35, 40, and 79 mph.*

Exhibit 2.1
Location of Trouble Spots along Existing Route



- Single track: The current route has a high-volume (freight and passenger trains) single track segment through the Nelson Bennett and Ruston tunnels. Although the Point Defiance Bypass route will initially be single track for a majority of the route, the traffic volume is light and consists almost exclusively of passenger trains. Unlike typical freight trains, passenger trains operate on detailed schedules that permit conflict-free on-time operation on single track segments.
- Traffic: The increasing freight traffic on the existing route results in increasing conflict with passenger trains. In order to increase reliability and expand capacity of passenger service, an additional track would be needed for at least part of the distance between Tacoma and Nisqually, as well as a new tunnel. Construction along the Puget Sound shoreline would be extensive. The Point Defiance Bypass, although on a slightly different route, serves the function of the additional track by converting an existing line for passenger train use.

- Rail yard operation: One segment of the existing Point Defiance route (between Reservation Junction on the BNSF main line and McCarver Street in Tacoma) is adjacent to both the BNSF Tacoma Yard and an active grain export terminal. Sound Transit improvements for the *Sounder* service to consolidate yard facilities in Tacoma will reduce route conflict among trains. The new configuration will reduce congestion to some degree, but it is designed to affect congestion north of Reservation Junction so that *Sounder* commuter trains may move more quickly to and from the Tacoma Dome station. In spite of these improvements, queuing will continue to occur south of Tacoma, causing congestion and delay for Amtrak trains. The Bypass route eliminates these potential conflicts by detouring passenger trains away from the congested area.

Existing Lakeview Subdivision tracks

Is WSDOT coordinating with Sound Transit?

WSDOT and Sound Transit meet regularly to discuss projects within their mutual service areas. Infrastructure and operation planning for *Sounder* was integrated with Amtrak *Cascades* planning beginning in the early 1990s. This early coordination and planning enabled the most economical use of infrastructure. It also ensured the absence of conflict between the two passenger rail services. More information about Sound Transit's *Sounder* program can be found in Chapter Three of this document.

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Chapter Three *Project Alternatives*

This chapter describes the project in more detail.

What alternatives were considered?

WSDOT and FHWA found only one alternative that met the primary purpose of improving passenger train service south of Tacoma. WSDOT determined that using an existing track corridor has several benefits: the right of way is generally already acquired, and the public is accustomed to trains running along the alignment.

WSDOT also considered Sound Transit's ongoing efforts to provide *Sounder* service to Lakewood. Sound Transit is proposing to use the Bypass corridor north of 108th Street, and it makes environmental, land use and economic sense to coordinate efforts. This is the Bypass project that is described below.

Environmental regulations generally require that the No Build Alternative also be evaluated. (See below: What will happen if the project is not built?)

What will happen if the project is not built?

If the project is not built, Amtrak trains will remain on the existing BNSF Railway Company's (BNSF) main line route. As freight traffic increases, passenger rail service will become unreliable as the current level of congestion increases. Trains will be forced to slower speeds, resulting in slower travel time, and it will not be possible to increase the number of passenger trains along the route.

Sound Transit Improvements and Future *Sounder* Service

Sound Transit already owns the track through Lakewood Subdivision and will continue with its plans to provide *Sounder* service south of Tacoma to Lakewood with new stations in South Tacoma and Lakewood independently of the Amtrak *Cascades* project. The expanded service will operate along a new 1.2-mile track extension in Tacoma, from the Tacoma Dome Station to the M Street overpass at South Tacoma Way, where it will connect to the existing Lakeview Subdivision tracks and continue south seven miles to Lakewood.

Sound Transit plans to upgrade the existing Lakeview Subdivision track with track, signal and grade crossing improvements from M Street in Tacoma to Bridgeport Way SW in Lakewood. Wayside horns will be installed at South 74th Street, 100th Street SW, and 108th Street SW. A wayside horn works in conjunction with other active warning systems (such as lights and gates) and is an automated warning system that is installed at a roadway-rail grade

crossing to substitute for the typical train horn.[2] **Exhibit 3.1** illustrates the general location of Sound Transit's proposed improvements.

Sound Transit performed an environmental analysis in May 2002 for these track improvements, new commuter stations and the layover facility (*Lakewood to Tacoma Commuter Rail and SR 512 Park- and-Ride Expansion NEPA/SEPA Final EIS*.) Sound Transit also prepared a *SEPA Addendum* in June 2005.

Exhibit 3.1
Location of Sound Transit Track, Station, and Rail Facility Improvements

[2]*Typically, a train's locomotive will normally sound its horn approximately 1/4 mile from an active road crossing. The horn will continue to sound until the train enters the crossing. The wayside horn replaces the locomotive horn. Because it focuses the sound of the horn to the road user, the wayside horn is substantially less intrusive to the general area, but still provides suitable warning to approaching drivers. The wayside horn is located at the crossing on a pole in close proximity to the crossbuck, and, like the locomotive horn, begins to sound when a train comes within ¼ mile of the crossing.*

New *Sounder* Stations

The new South Tacoma Station will be located just north of the Point Defiance Bypass Project area -- between South 56th and South 60th Streets, at Washington Street. This station is scheduled for completion by late 2008.

The new Lakewood Station, located near 47th Avenue SW and Pacific Highway SW will include a side platform for passengers, as well as shelters and kiosks to purchase tickets. A new parking garage near the station will provide more than six hundred parking spaces for commuters. The station will also serve as a bus transit facility for regional and local bus service.

Sound Transit is coordinating with the city of Lakewood as the City develops plans for street improvements along Pacific Highway SW near the station.

Sounder Layover Facility

The *Sounder* layover facility will be located adjacent to the existing rail track, approximately fifty feet from the existing main line centerline. The two layover tracks will extend from Steilacoom Boulevard SW (rail milepost 8.4) to 100th Street SW (rail milepost 9.0). The layover area will serve as a place where trains are stored when not in use and where routine operations such as interior cleaning of the trains occur.

The layover area will consist of two double-ended tracks with space for five trains, and will include a small office/storage building; crew parking for twenty cars; a gravel road along the tracks providing crew access to the trains; fencing; lighting; and utilities.

If the Bypass Project is built, how will Amtrak *Cascades* service change?

If the Bypass Project is constructed, ten Amtrak *Cascades* trains and two Amtrak *Coast Starlight* trains will travel daily along the new route. In addition, 12 *Sounder* commuter trains will travel between Tacoma and Lakewood on new rail being constructed by Sound Transit.

Freight trains, which are the only traffic that now use the rail line, are expected to continue at existing levels. Freight train operators include Tacoma Rail and BNSF (for Fort Lewis rail traffic).

Exhibits 3.2 and **3.3** provide general information regarding passenger and freight rail operations within the Point Defiance Bypass Project area.

Exhibit 3.2
Existing and Future Rail Operations along the
Point Defiance Bypass Project Rail Line

	South 66th Street (Tacoma) to 47th Avenue SW[1] (Lakewood)		47th Avenue SW[1] (Lakewood) to BNSF Connection	
Daily Trains	Current	Future	Current	Future
Freight[2]	2	2	2	2
Sound Transit *Sounder*	--	12	--	--
Amtrak *Cascades*	--	10	--	10
Amtrak *Coast Starlight*	--	2	--	2

[1]Sound Transit Lakewood station location.
[2]Tacoma Rail runs one round trip along this route and BNSF occasionally operates trains for Fort Lewis.

Exhibit 3.3
Existing and Future Train Speeds along the
Point Defiance Bypass Project Rail Line

	South 66th Street (Tacoma) to 47th Avenue SW[1] (Lakewood)		47th Avenue SW[1] (Lakewood) to BNSF Connection	
Train Type	Current	Future	Current	Future
Freight	10 mph	40 mph	10 mph	60 mph[2]
Sound Transit *Sounder*	--	60 mph	--	--
Amtrak *Cascades*	--	79 mph	--	79 mph
Amtrak *Coast Starlight*	--	79 mph	--	79 mph

[1]Sound Transit Lakewood station location.

[2]60 mph is a reasonable maximum speed; freight trains are likely to proceed at a lower speed of 40 mph.

What are the physical characteristics of the Point Defiance Bypass Project?

The Point Defiance Bypass Project consists of three major track elements: a new track adjacent to the existing main line; reconstruction of the existing main line track; and rehabilitation of the existing track. **Exhibit 3.4** identifies the location of these project elements. The *Conceptual*

Construction Plan for the Point Defiance Bypass Project (June 2007) contains more detailed information regarding specific project elements.[3]

Exhibit 3.4
Point Defiance Bypass Project: Location of Project Elements

Exhibit 3.5 presents more information about the new tracks and their location in relation to the existing main line. In addition, **Appendix A** presents the conceptual design for the proposed new tracks, as well as other construction activities. Specific locations of rail mileposts can be found on these engineering plan sheets.

[3]*This document can be obtained by contacting the State Rail Office at 360-705-7900.*

Exhibit 3.5
Point Defiance Bypass Project: Alignment for New Track

Main Line	Location of Main Lines	Distance of Shift (centerline to centerline)	Direction
1	South 66th Street to just north of 100th Street SW (mp 6.92 to mp 8.95)	Main line 1 is on its existing alignment	--
2	mp 6.92 to mp 8.95	Main line 2 is 15 feet east of main line 1	East side
1	Just north of 100th Street SW (mp 8.95) to 108th Street SW	By the time it reaches 108th Street, main line 1 is 105 feet from its original alignment. (At about mp 9.0, main line 1 is about 60 feet from its original alignment)	East side
2	mp 8.95 to 108th Street SW	By the time it reaches 108th Street, main line 2 is 120 feet from the original alignment of main line 1. (At about mp 9.0, the track is about 75 feet from the original alignment of main line 1.)	East side
1	108th Street SW to proposed Sound Transit Station location (near mp 9.96)	Just past 108th Street the tracks shift to the west, with the new main line 1 about 20 feet west of its original alignment	West side
2	108th Street SW to mp 9.96	Just past 108th Street the tracks shift to the west, with main line 2 shifting about 50 feet from the original alignment of main line 1	West side
1	mp 9.96 to one quarter mile south of Bridgeport Way SW	Main line 1 is back on its existing alignment	--
2	mp 9.96 to one quarter mile south of Bridgeport Way SW	Main line 2 is 15 feet east of main line 1	East side

New Track Adjacent to the Existing Main Line

A new track adjacent to the existing main line will be constructed from South 66th Street (rail milepost 6.92) to one quarter mile south of Bridgeport Way SW (rail milepost 10.67). This new 2.5-mile track will be constructed parallel to and east of (with 15-foot track centers[4]) the existing Sound Transit track. Tracks may be slightly further apart as a result of curves in the vicinity of Lakewood Station, Bridgeport Way and Clover Creek. Sound Transit's *Sounder* trains and freight trains will predominately use the eastern main track (new track, main line 2) in its service area (northern terminus of Point Defiance Bypass Project to Bridgeport Way SW). The second main line will be built on new embankment. Sound Transit's upgrades to the existing track (from South 66th Street to Steilacoom Boulevard SW) will be completed prior to construction of this Bypass project.

[4]*The distance between the center of the existing main line track and the center of the new parallel main line track.*

Neither the Sound Transit nor the new second main line to be constructed in this area will require substantial grading. There will be no in-water work as part of this new construction.

Reconstruction of the Existing Main Line

Starting at Steilacoom Boulevard SW (rail milepost 8.36), the existing track will be reconstructed to a location just north of Mounts Road SW (rail milepost 19.89). Reconstruction involves removal of the existing track and minor re-grading of the existing sub-grade to provide a slightly wider, re-graded and compacted stable surface on which to construct a new track. This reconstructed segment is approximately nine miles long.

For a short segment, between rail milepost 8.88 and 9.96, the existing track and the new track will be on a new alignment. Therefore, the existing track will be removed and both main lines constructed on a new sub-grade alignment. Upon removal of the track structure, the existing sub-grade will be graded and cleared of debris to match existing ground conditions in the general area. There will be no in-water work as part of this reconstruction.

Rehabilitation of the Existing Line

Just north of Mounts Road SW (rail milepost 19.89), for approximately two miles (to rail milepost 21.23), the existing single main line track will be rehabilitated. This work will consist of replacing existing worn or otherwise defective ties with new ties, and adding ballast. These activities are typical of the maintenance work regularly performed on most railroads and will be accomplished without removing the track. Existing drainage paths will be cleared of blockages. Little or no new grading work will be required. There will be no in-water work as part of this rehabilitation.

Other Rail-Related Activities

In addition to this track work, other rail-associated activities will include:

- Two new power turnouts[5] (at rail mileposts 6.92 and 10.67);
- Grading of existing natural ground, top of existing track sub-grade, side slopes and ditches. The majority of the grading work is within the existing railroad right of way (see Chapter Four for more information about right of way requirements);
- Additional railroad train control signal system components;
- Extension to the wing walls at BNSF Bridge 10.2, which spans I-5.

[5] *A turnout is a set of tracks that connect the main line to a siding or rail yard. The switch (a set of levers and gears) that guides the train over the track can either be moved electronically (power) or manually.*

- From rail mileposts 8.4 to rail milepost 9.0 Sound Transit will have two layover tracks that will be located approximately 65 feet from the existing main track centerline.
- Utility relocations or protection.

At-Grade Crossings

Ten at-grade crossings, listed in **Exhibit 3.6,** are located within the project area. For each crossing, specific design measures were agreed to during Grade Crossing Diagnostic meetings with WSDOT Traffic, City of Lakewood, City of Tacoma, and Pierce County Traffic (meeting notes are available to qualified reviewers at the WSDOT Rail Office). These designs have been incorporated into the project, and described below.

Exhibit 3.6
At-Grade Crossings within the Project Area

Jurisdiction	Location
City of Tacoma	South 74th Street
City of Lakewood	Steilacoom Boulevard SW
	100th Street SW
	108th Street SW
	Bridgeport Way SW
	Clover Creek Drive SW
	North Thorne Lane SW
	Berkeley Street SW
Fort Lewis	41st Division Drive (entrance to North Fort Lewis)
City of DuPont	Barksdale Avenue

Wayside Horns

Wayside horns will be installed at nine at-grade crossings along the corridor. Sound Transit's horns will remain in place at 100th Street SW and 108th Street SW. A wayside horn will also be installed at 74th Street. The Point Defiance Bypass Project will install wayside horns at Bridgeport Way SW, Clover Creek Drive SW, North Thorne SW, Berkeley Street SW, and Barksdale Street SW.

How much will the project cost and is it funded?

Based on 2007 cost estimates, the Point Defiance Bypass Project, as presented in this environmental document, will cost approximately $59 million, including engineering, right of way, and construction. The

Washington State Legislature has allocated $59.6 million for this project between July 1, 2005, and June 30, 2011.

How will the project be constructed?

Although the components, size, and dimensions of railroad tracks are standard, construction can be performed in a number of ways, depending on access to the site, environmental concerns, and geographic variables. **Exhibit 3.7** provides some general information about railroad tracks and their characteristics.

The conceptual construction plan, available from the WSDOT Rail Office, is summarized below, but does not necessarily define how the contractor will actually stage or perform the work.

The contractor is likely to employ a Track Laying Machine (TLM) for most of the railroad track construction. In the event the contractor chooses to build the railroad on-site, most of the sequences and activities in this description would remain substantially the same. However, it is likely that short sections of new track at each grade crossing will be constructed prior to reconstructing the intermediate portions of the railroad. Although less likely, this may also be the case if the contractor uses a TLM.

Construction offices (trailers), storage areas, and employee facilities will be established on the right of way, most likely between Steilacoom Boulevard SW and 100th Street SW, on the east side of the existing track, where there is sufficient width to accommodate access to the facilities. Large quantity items such as the concrete ties and other track materials will come by rail cars and be stockpiled on the right of way.

Signal, utility relocation, and grading work will be completed well ahead of the planned start of the TLM as the TLM's production rate is approximately one mile of track per day of completely assembled track.

Exhibit 3.7
Railroad Tracks and Their Characteristics

Characteristic	Why is it important?
Track Structure	Track structure has four elements: rails, ties, ballast and sub-ballast. **Rails** are made of steel. Even though the steel is very hard, the rail wears out, just as highway pavement wears out. The **ties**, typically made of wood or concrete, support the rails. **Ballast** is crushed rock used to support the ties and keep the track in correct alignment. **Sub-ballast** is a finer grade of crushed rock placed beneath the ballast to divert water from the ballast and distribute the weight of the track to the sub-grade below. The condition of each of these elements dictates the weight and type of equipment that can be used on the track, as well as the speeds allowed on the track.
Number of Tracks and Sidings	The number of tracks affects the capacity of the line. Two tracks (also called **double track**) have more capacity (the number of trains that can move through the area) than one track (**single track**). **Sidings** also increase the capacity of a rail line. Sidings located along the line allow faster trains to overtake slower trains without affecting train traffic on the other track. The capacity of the rail line and the reliability of operation are affected by the time required to move between sidings.
Grade (the steepness of the tracks at various locations)	The steepness of the track dictates the types of trains that can use the rail line. Typical **grades** for freight trains do not exceed two percent, while grades for passenger trains can be as high as four percent.
Curves (often presented in degrees)	The tightness of the **curve** dictates the speed that a train can travel. The higher the degree, the tighter the curve, the slower the speed. Amtrak *Cascades* trains can travel faster through tight curves (than most trains) because they use tilt technology.
Speed Regulations	Train **speed limits** are generally regulated by the Federal Railroad Administration (FRA). The Code of Federal Regulations (49 CFR 213, Track Safety Standards) establishes classes of track with associated speed limits and detailed physical requirements for tracks in a given class. Speeds may also be restricted by the Washington Utilities and Transportation Commission (WUTC).
Traffic (Number of Trains)	The **number and type of trains** along a rail line relate directly to capacity. The more trains that are put on a track, the more the need for additional track signals and controls. Without these signals and controls, the speed and capacity of the rail line would diminish as traffic increases.
Width (Gage and Track Centers)	The rails of a railroad track are spaced 56.5 inches apart (the **gage** of track). To allow sufficient clearance between vehicles on adjacent tracks, the tracks are spaced at least fifteen feet apart (the **track centers**). Recent FRA Safety Regulations dictate that if rail traffic is to continue while maintenance is performed on an adjacent track, the tracks must be placed at least 25 feet apart from the center of each track. This is often referred to as 25-foot centerline.
Length	Each track that is not a through-route must be long enough to serve the intended purpose. Just as a parking space for a tractor-trailer must be of sufficient length for the vehicle, a railroad track must be long enough to hold even the longest train. Depending on the type of train traffic handled, the **length** of a typical passenger train is between 500 feet and 1,700 feet. A typical freight train can be between 7,000 feet and 10,000 feet long.
Signals and Traffic Control	**Signals** help extend the engineer's sight distance and therefore allow greater speeds. **Traffic control** determines which trains can use which tracks – it increases safety and movement of trains.

Upon completion of the crossing signal warning protection, grading, and establishment of road closures, the TLM will begin constructing the new track on the graded embankment. Just prior to the TLM arriving at a crossing, the crossing will be closed (most likely on weekends or nights) and the roadway workers (gang) will saw cut and remove the street paving, thus creating a trench in which to construct the new track. The roadway gang will also install drainage and signal/communication conduits in the track trench. Following this work, the TLM will proceed through the road crossing and continue constructing track. Ballast will be placed on the newly constructed track and the track will be raised and installed on the alignment and grade. A new concrete crossing surface will be constructed and pavement tie-ins to the existing street paving will be completed.

A signal gang would return to the newly completed track crossing to finish the crossing signal warning system and Centralized Traffic Control (CTC)[6] system installation. Roadway and utility crews will complete installation of the utility work, curb and gutter, median, and pavement tie-ins. This process will continue until the project is completed.

During construction, it is anticipated that the work will proceed with the existing railroad out of service for four days per week, allowing free access to the project work areas. Once the signal gangs begin relocation of the existing crossing warning systems, many of the crossing signal warning systems will be out of service until the new track is constructed and the signal gang returns to complete the warning system installation. This will require the freight trains to stop and flag those crossings with out-of-service warning systems.

The amount of time to build the entire project has not been determined at this time but is likely to be about 24 months. The length and complexity of the project will require staging and scheduling by the contractor. WSDOT will work with Fort Lewis, Camp Murray, Pierce County, Sound Transit, and the cities of Tacoma, Lakewood, and DuPont to ensure that the public is adequately informed about the construction schedule and detours. Extensive public education will take place to ensure that minimal disruption occurs to the community and the environment.

[6] *CTC is a signaling system used by railroads. The system consists of a centralized train dispatcher's office that controls railroad switches in the CTC territory and the signals that railroad engineers must obey in order to keep the traffic moving safely and smoothly along the railroad. In the dispatcher's office is a graphical depiction of the railroad on which the dispatcher can keep track of train locations across the territory that the dispatcher controls.*

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Chapter Four Environmental Analysis

The feasibility of a project and its implementation often depends on whether it will have impacts on the communities that it is intended to serve, or if construction of its components will affect the surrounding natural environment.

The purpose of this chapter is to provide a discussion of the general environmental and community features within the Point Defiance Bypass Project study area, as well as evaluate the possibility of environmental impacts that may result from this project. Information contained in this *Environmental Summary* was summarized from technical environmental reports that were prepared specifically for this project, and which are on file with the WSDOT Rail Office.

What environmental and community features were reviewed?

Fifteen technical reports, listed in **Exhibit 4-1,** were prepared for this project. These issues are those which experience has shown are most likely to be affected by a project such as the Bypass.

Exhibit 4-1
Environmental and Community Resource Areas

Air Quality
Cultural Resources (Historic and Archeological)
Disruptions and Relocations
Energy
Fish, Vegetation, and Wildlife
Geology and Soil
Hazardous Materials
Hydrology and Water Quality
Land Use
Noise and Vibration
Public Services and Utilities
Social Elements (including Environmental Justice)
Traffic and Transportation
Visual Quality
Wetlands

How were community and environmental features analyzed?

The project team gathered information regarding the existing and future conditions of each environmental resource within the study area from sources such as agency plans, maps, and aerial photography. Next, the project team evaluated the effects of the project on these resources, and quantified the effects where appropriate. Finally, the team identified specific design measures whereby adverse effects could be avoided, eliminated or reduced. The project design incorporates these measures.

Will the project have adverse impacts?

Using the information in the technical reports listed in **Exhibit 4-1**, the project team determined that the community will experience increased noise and vibration, and increased traffic delays. In addition, WSDOT will need to acquire right of way from several properties.

Right of Way Acquisition

For the most part, the Point Defiance Bypass Project remains within Sound Transit's existing right of way for the length of the 18 miles. However, there are two locations where additional land will be needed. One area is slightly more than an acre of vacant land currently owned by the BNSF at the southeast quadrant of Steilacoom Boulevard SW and Lakeview Avenue SW. The second area is near the southeast quadrant of Lakeview Avenue SW and 112th Street SW where part of three properties will be required. **Exhibit 4.2** lists general information about these parcels. **Exhibit 4.3** illustrates the general location of these parcels.

Exhibit 4.2
Potential Properties Needed for the Point Defiance Bypass Project

Map Location	Location/Address	Current Use/ Improvements	Size of Entire Parcel	Area to be Acquired
1	Southeast quadrant of Steilacoom and Lakeview Avenue, SW/	Vacant railroad land	NA	48,000 sf
2	Lakeview Avenue, SW	Residential vacant land	22,100 sf	900 sf
2	11216 to 11230 Klein Street, SW	Multi-family apartment	46,200 sf	6,200 sf. Homes may be acquired due to proximity to track.
2	Kendrick Street, SW	Commercial vacant land	20,200 sf	600 sf

Source: Pierce County Assessor's Office, August 2007.

The *Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, amended 1987* (*Uniform Act)* is a federal regulation that WSDOT must follow to minimize adverse effects associated with property acquisition. Because these measures are required by federal law, they are automatically incorporated into the project whether a NEPA or SEPA review is conducted.

Exhibit 4.3
General Location of Properties

Relocation Assistance

Relocation resources are available without discrimination to all relocated residents and businesses.

Pursuant to the *Uniform Act*, the following relocation assistance programs are available to prospective displaced residents:

- Advisory Services: All persons displaced by this project are eligible for relocation advisory services. Such services include, but are not limited to, providing transportation necessary to secure replacement housing, assisting the displaced person in selecting replacement housing, filling out claim forms, and providing the person with continuing and current information on all available replacement housing options.

- Moving Payments: All persons displaced by this project are eligible for reimbursement for all reasonable, actual and necessary moving costs. A person may either select a scheduled payment amount and move him or herself, or elect to be moved by a commercial mover.
- Replacement Housing Payments: Homeowner-occupants who have occupied the residence to be acquired for at least 180 days prior to the date of the first written offer to purchase the property, are eligible for a number of monetary benefits in addition to relocation advisory services. All reasonable, actual and necessary costs for moving personal property are reimbursable. Certain types of closing costs, loan fees, and increased mortgage interest associated with a new loan are reimbursable. The displaced homeowner is also eligible for the price difference, if any, between the amount the agency pays for the displaced person's home and the asking price of the best available comparable property.
- 90-day Occupants: Residential occupants who have occupied the residence to be acquired for at least 90 days prior to the date of the first written offer to purchase the property, are eligible for a number of monetary benefits in addition to relocation advisory services and reimbursement for moving costs. A rent supplement payment, representing the difference between the base monthly rental of the residence acquired and the rent plus certain utilities at a comparable available replacement property is available for the displaced residents. This amount may be applied towards the purchase of a replacement property should the displaced resident so desire.
- Low-Income Tenants: To ensure that the problem of providing housing for low-income displaced tenants is addressed, an alternative method of calculating the rental supplement is used wherein the person's gross monthly income becomes part of the calculation. This method provides a payment that brings the cost of the comparable replacement property within the financial means of the displaced person.
- Housing of Last Resort: In the event that replacement housing is not available within the displaced resident's financial means through the application of any of the foregoing benefits, any number of other alternative solutions may be used. These alternatives, known as housing of "last resort", include but are not limited to:
    - Purchasing housing for the displaced resident and renting or selling the dwelling at a price within the person's financial means.
    - Renovating existing available housing.
    - Building new, comparable, dwelling units.

- Providing financing for low income and/or bad credit homeowner-occupants.
- Entering into partnerships with public or private agencies which provide housing for low-income persons.

- Ninety-Day Requirement: No residential occupant can be required to vacate their dwelling unless a comparable replacement property has been made available within their financial means at least 90 days prior to the date upon which they would be required to vacate.
- Executive Order No. 12898: This order requires that agencies ensure that Federal programs, policies, and activities do not allow for disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. The agency assures that there are no disproportionately high and adverse human health or environmental effects on minority and low-income populations.
- Business, Farm and Not-for-Profit Organization Displacements: Displaced businesses, farms, and not for profit organizations are entitled to the following relocation benefits under the *Uniform Act*.
  - Moving Cost Reimbursement: This category covers a wide variety of eligible reimbursable costs related to moving including, but not limited to: disconnecting and reconnecting personal property; packing, moving, and unpacking all personal property required to be moved as a result of the agency's acquisition; costs incurred in searching for a replacement property; costs incurred in changing invoices, business cards, and any other items requiring an address or telephone number change.
  - Re-establishment Costs: This category also covers a wide variety of eligible reimbursable expenses such as the increased costs of doing business at the new location, modifications to the replacement property, new signing, and certain other expenses. This is limited to a maximum total of $10,000.
  - Fixed Schedule Move Option: This option is available in lieu of all other moving expenses. It is based upon the net operating income of the business or farm. This benefit is limited to a maximum of $20,000. It is particularly attractive to smaller organizations with a minimum of personal property to be moved.
- Availability of Residential Housing Opportunities: The type of housing that could be eliminated is older, single-family housing that serves lower-income residents. Based on conversations with local real estate professionals and other published resources, there is more than adequate local inventory of single-family and multi-family rental housing in the area that could accommodate lower income

families. Vacancy rates for multi-family rentals are around 12 percent, and vacancy rates for single-family rental housing is around eight percent.

Noise

Existing and future noise and vibration levels within the project study area were evaluated in a General Noise Assessment according to guidelines and methodologies from the FRA (*High-Speed Ground Transportation Noise and Vibration Impact Assessment*, October 2005) and the Federal Transit Administration (FTA) (*Transit Noise and Vibration Impact Assessment*, May 2006).

Existing Noise Levels

The primary existing noise sources in the Point Defiance Bypass Project corridor are traffic from I-5, surface arterials and local streets. Because of the proximity of much of the corridor to I-5, noise levels in the corridor are fairly uniform.

The project team measured noise levels at four locations (see **Exhibits 4.4 and 4.5)**. Although these measurements were not comprehensive, they do provide an indication of general noise levels in the corridor.

Exhibit 4.4
Spot Check Measurement Results

Measurement Site	Time of Measurement	Average Noise Level During Period
Site 1 (> ¼ mile from I-5)	8:25 AM	58 dBa
Site 2 (> ¼ mile from I-5)	10:42 AM	58 dBa
Site 3 (close to I-5)	4:57 PM	64 dBa
Site 4 (close to I-5)	5:18 PM	69 dBa

Noise is generally defined as unwanted sound and is a fluctuating pressure wave. Noise is measured in terms of sound pressure level expressed in decibels (dB). The number of fluctuation cycles or pressure waves per second of a particular sound is the frequency of the sound. The human ear is less sensitive to higher and lower frequencies than to mid-range frequencies. Therefore, sound level meters used to measure environmental noise generally incorporate a filtering system that discriminates against higher and lower frequencies in a manner similar to the human ear to produce noise measurements that approximate the normal human perception of noise. Measurements made using this filtering system are termed "A-weighted decibels," abbreviated as dBA. The A-weighting is used in most environmental ordinances and standards.

Noise levels referred to in this analysis are stated as hourly-equivalent sound pressure levels (Leq) or day-night sound pressure levels (Ldn) in terms of dBA. Leq is commonly used and describes a property's average noise exposure over a given time period, usually one hour. The Leq is the noise metric used by FTA to assess impacts at institutional properties. The day-night sound level describes a property's average

noise exposure over a full 24-hour period, with events between 10 p.m. and 7 a.m. increased by 10 dBA to account for people's greater nighttime sensitivity to noise. The Ldn is the noise metric used by FTA to assess impacts at residential properties

Source: ATS Consulting 2007.

Exhibit 4.5
General Location of Site Measurements

Based on the site visit, the spot check measurements, and the project team's general experience with community noise, the following noise levels were used as the average 24-hour noise levels, adjusted to reflect the greater sensitivity of most people to nighttime noise (Ldn):

- Areas less than a quarter mile from I-5: 65 dBA Ldn
- Areas more than a quarter mile from I-5: 60 dBA Ldn

Because Ldn is typically about two decibels greater than the daytime Leq, these values are consistent with the four spot check measurements. These are average levels: there are undoubtedly some areas in the corridor where Ldn is greater than 65 dBA and others where it is less than 60 dBA.

Although more accurate information on the existing ambient noise would affect the noise impact assessment at specific receptors, the project team felt that there would be only a marginal effect on the total amount of predicted noise impact.

Project Noise

Noise is generated by trains from locomotive engines, wheels rolling on the rail, wheels hitting the rails, wheel squeal, and audible warnings (locomotive horns or wayside horns sounded at grade crossings). In general, the highest levels of noise would be generated by warning horns at crossings. All of these types of train noise were included in the noise assessment.

The project design includes wayside horns at all crossings (except Steilacoom and 41st Division where there are no residences or other uses close by to hear the horn noise). Wayside horns eliminate the need for locomotive horns and generate less noise than locomotive horns. The following discussion reflects the lower noise from wayside horns, but also includes locomotive engines, wheels on rails, wheels hitting rails, and wheel squeal.

Exhibit 4.6 shows the expected impact of noise generated by the combined effect of existing freight trains and *Sounder* trains without any Amtrak trains. Because the *Sounder* only goes as far south as just past the 108th Street crossing, there are no impacts to the southern section (Lakewood to Nisqually). With only Sound Transit and freight trains, a total of 31 residences, plus one church, will be subject to noise from trains, with 6 of those experiencing severe noise.

Noise levels for the Amtrak trains (without any Sound Transit or freight trains) is shown in **Exhibit 4.7** In this case, three single family residences, plus one church, will be subject to effects from noise, with none experiencing severe noise.

Exhibit 4.8 shows the noise generated by the combined freight, Amtrak and Sound Transit trains. In this cumulative situation, 33 residences, plus one school and one church, will experience noise, with three subject to severe noise.

Sound Transit conducted a Detailed Noise Assessment (a more detailed study than the General Noise Assessment prepared for the Amtrak *Cascades* project), which predicted 20-40 moderate impacts and determined that no severe impacts within the 100th Street to Lakewood area would result from the *Sounder* trains (the Future No Build scenario). A General Noise Assessment uses a limited number of noise measurements, and estimates of existing noise are intentionally low to ensure that all potential noise impacts are identified. A General Noise Assessment tends to overestimate the noise impact.

For the Detailed Noise Analysis, the Sound Transit study used more detailed noise data for the Lakewood Train Storage Study and a higher ambient noise

level at the 108th Street grade crossing based on more and longer ambient noise testing. This is appropriate for the Detailed Analysis, and results in a more accurate, less conservative assessment.

Noise levels are greater for the *Sounder* and for the cumulative freight + *Sounder* + *Cascades* not only because the total number of trains is greater, but also because the *Sounder* commuter train passes by residences in the early morning, before 7 a.m. Noise between 10 p.m. and 7 a.m. is weighted more heavily in the analysis and creates a greater impact than the same noise occurring during the day.

Exhibit 4.6
Noise From Future Sound Transit and Freight Trains
(Amtrak not included)

Section	Description	SFR	MFR[b]	Other	Severe	Moderate.
S. Tacoma to 100th	S 74th Street Crossing	--	--	--	--	--
	Steilacoom Blvd Crossing	--	--	--	--	--
	Total	--	--	--	--	--
100th to Lakewood	100th Street Crossing	6	--	--	--	6
	East side of tracks between 100th and 108th [a]	--	--	--	--	--
	108th Street Crossing	3	22	1 Church	6	20
	Total	9	22	1	6	26
				TOTAL	**6**	**26**

Notes:
[a] At this location, noise caused by train noise only (no crossing warning horns).
[b] Estimates of units within multi-family residences

Exhibit 4.7
Noise for Amtrak *Cascades* Only

Wayside Horns at all Crossings except Steilacoom and 41st Division

Section	Description	SFR	MFR[(a)]	Other	Severe	Moderate
S. Tacoma to 100th	S 74th Street Crossing	--	--	--	--	--
	Steilacoom Blvd Crossing	--	--	--	--	--
	Total	--	--	--	--	--
100th to Lakewood	100th Street Crossing	--	--	--	--	--
	East side of tracks between 100th and 108th	--	--	--	--	--
	108th Street Crossing	--	--	I church	--	1
	Total	--	--	1	--	1
Lakewood to Nisqually	Bridgeport Way Crossing	2	--	--	--	2
	Clover Creek Drive Crossing	1	--	--	--	1
	North Thorne Lane Crossing	--	--	--	--	--
	Berkeley Street Crossing	--	--	--	--	--
	41st Division Drive	--	--	--	--	--
	Barksdale Avenue Crossing	--	--	--	--	--
	Total	3	--	--	--	3
				TOTAL	**--**	**4**

Notes:
[(a)] Estimates of units within multi-family residences.

Exhibit 4.8
Noise for Sound Transit, Amtrak *Cascades* and Freight Trains

Wayside Horns at all Crossings except Steilacoom and 41st Division

Section	Description	SFR	MFR[b]	Other	Severe	Moderate
S. Tacoma to 100th	S 74th Street Crossing	--	--	--	--	--
	Steilacoom Blvd Crossing	--	--	--	--	--
	Total	--	--	--	--	--
100th to Lakewood	100th Street Crossing	6	--	--	--	6
	East side of tracks between 100th and 108th [a]	6	--	1 School	--	7
	108th Street Crossing	5	12	1 Church	3	15
	Total	17	12	2	3	28
Lakewood to Nisqually	Bridgeport Way Crossing	2	--	--	--	2
	Clover Creek Drive Crossing	2	--	--	--	2
	North Thorne Lane Crossing	--	--	--	--	--
	Berkeley Street Crossing	--	--	--	--	--
	41st Division Drive Crossing	--	--	--	--	--
	Barksdale Avenue Crossing	--	--	--	--	--
	Total	4	--	--	--	4
				TOTAL	**3**	**32**

Notes:
[a] Noise caused by train noise only.
[b] Estimates of units within multi-family residences.

Vibration

The project team assessed vibration using methodologies contained in *Transit Noise and Vibration Impact Assessment* (FTA, May 2006) and the *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (FRA, October 2005). Although Amtrak *Cascades* trains will travel initially at a maximum speed of 79 mph within the project area, future improvements to tracks, crossings, train control and safety systems will give the new trains a capability of traveling at speeds exceeding 125 mph. Because the FRA criteria covers high speed rail and the Point Defiance Bypass Project is part of the federally-designated Pacific Northwest High Speed Rail Corridor, the FRA criteria have been used for this assessment.

Existing Vibration Levels

It is relatively rare that building occupants experience perceptible vibration from external sources unless the building is near a construction site, a mining operation where blasting is used, or a rail line. Although vehicular traffic always generates vibration, the vibration is usually below the threshold of human perception unless the roadway has potholes, wide expansion joints, or other significant surface irregularities. Existing train traffic in the Point

Defiance Bypass corridor is the only source of perceptible vibration in the majority of the corridor.

Nevertheless, because the existing train traffic in the corridor is infrequent, the vibration impact of the proposed project has been evaluated as a new source of vibration and not as an existing vibration source that will occur more frequently. In accordance with the *FRA General Assessment* procedures, it is not necessary to estimate existing vibration levels for a *General Vibration Assessment.* However, based on general projection curves, it is unlikely that vibration from existing train traffic is perceptible inside buildings that are farther than 60 feet from the tracks.

Vibration Impacts

For the entire study area, the project team found that perceptible vibration will be present at a total of two single family residences, four dwelling units within multi-family buildings, and one hotel. Perceptible vibration is not predicted for either the South 66th Street to 100th Street SW section or 100th Street SW to Lakewood Station. **Exhibit 4.9** provides a summary.

Exhibit 4.9
Perceptible Vibration

Section	Description	SFR	MFR	Other	Total
South 66th Street to 100th Street SW	Entire segment	0	0	0	0
100th Street SW to Sound Transit Lakewood Station	Entire segment	0	0	0	0
Sound Transit Lakewood Station to BNSF Main Line Connection	West side of right of way between 108th St SW and Bridgeport Way SW	2	4	--	6
	East side of right of way between Clover Creek Drive SW and Nyanza Road	--	--	1 Hotel	1
	Total	2	4	1	7

Source: ATS Consulting, 2007

108th Street SW to Bridgeport Way SW

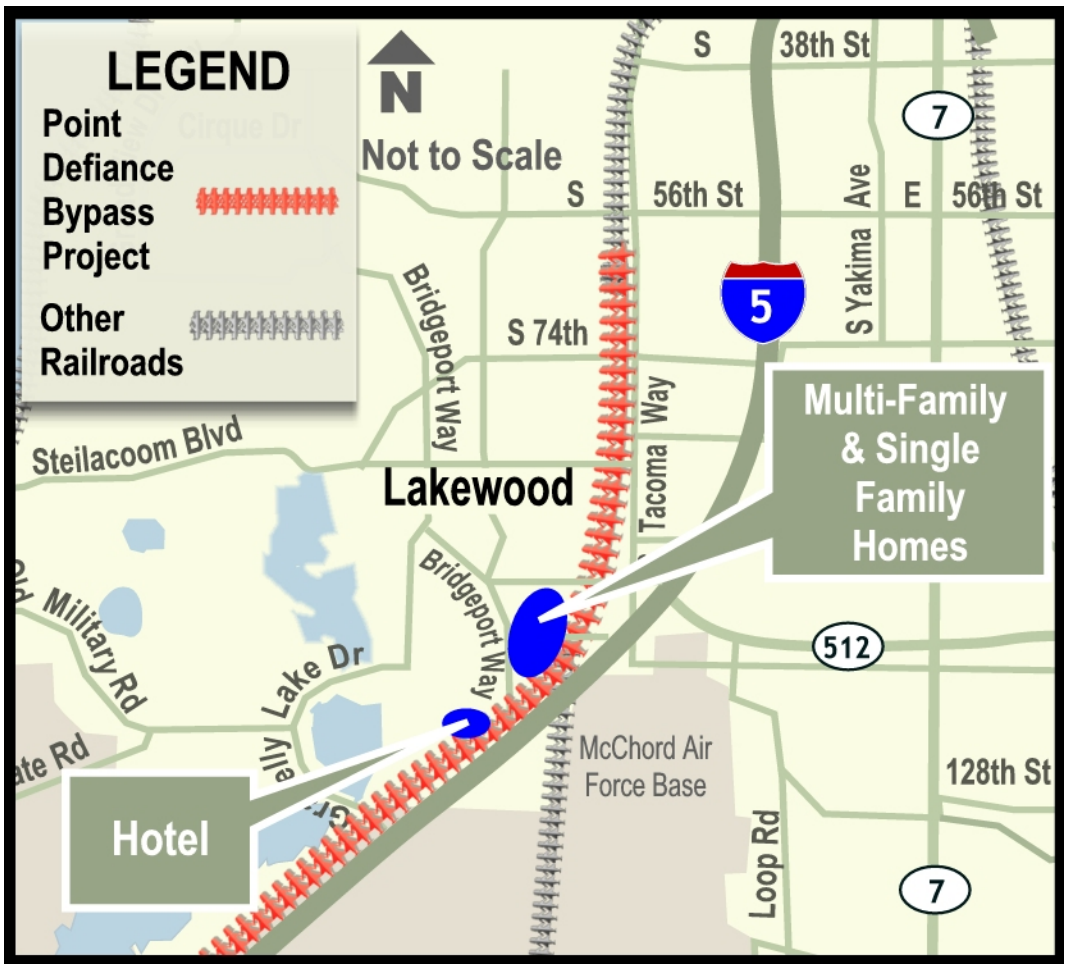
Two single family residences and four dwelling units within multi-family buildings located on the west side of the right of way between 108th Street and Bridgeport Way SW. **Exhibit 4.10** shows the location of these receivers.

Clover Creek Drive SW to Nyanza Road

One hotel located on the east side of the right of way between Clover Creek Drive and Nyanza Road. **Exhibit 4.10** shows the location of this receiver.

Some of the trains that contribute to vibration are currently scheduled to run before 7 a.m. (*Sounder*).

Exhibit 4.10
General Location of Vibration Impact Locations



Traffic and Transportation

The roadway network within and surrounding the study area is comprised of major and secondary arterial streets and the I-5 freeway. The Point Defiance Bypass Project will not result in an increase of traffic or a change in traffic patterns. However, operations of the Amtrak *Cascades* passenger rail service through the study area will result in delays at the ten at-grade crossings located within the study area.

Traffic delay for at-grade crossings was estimated at the following ten locations along the Point Defiance Bypass route:

- South 74th Street.
- Steilacoom Boulevard SW.

- 100th Street SW.
- 108th Street SW.
- Bridgeport Way SW.
- Clover Creek Drive SW.
- North Thorne Lane SW.
- Berkeley Street SW.
- 41st Division Drive.
- Barksdale Avenue.

Traffic delay is described using queue length, which is the number of cars that stop while the crossing gates are down. Where there are more vehicles on the road, the queue is longer. Both *Sounder* and Amtrak *Cascades* trains will typically result in a blockage time (including the raising and lowering of the crossing gates) of 45 seconds. Freight trains travel more slowly and therefore have a longer blockage time of 100 seconds. For the Amtrak *Coast Starlight*, which is longer than the *Cascades*, the blockage time is 50 seconds per train, while for the Sound Transit equipment trains, which travel more slowly, blockage time is 80 seconds per train.

When the crossing gates rise, the first car in the queue will be able to move ahead immediately to cross the tracks, but the final car in the queue must wait for all the preceding cars to move, before moving ahead. Thus, the longer the queue, the longer the delay is for the final driver.

Existing 2006 Delay and Queue Lengths

With only one round-trip freight train daily, it is unusual for any freight train to run during the a.m. peak hour (one hour between 5 a.m. and 9 a.m.) as it takes time to load the cargos. To evaluate the worst-case condition, the project team assumed that one freight train operated during the most congested hour (one hour between 4 p.m. and 6 p.m. for all crossings except for Berkeley Street; at that location, worst case occurs during the noon peak hour). The highest traffic delay occurs at the 100th Street SW and 108th Street SW crossings where the greater number of cars results in a slightly longer wait to cross the tracks after stopping for a train.

Queue lengths were calculated based on the estimated number of vehicles stopped during a train event. This average number of vehicles stopped was then multiplied by an average vehicle length of 20 feet to arrive at an average queue length by direction. Even with the close proximity of the tracks to the freeway, vehicles are unlikely to queue onto I-5 from the Bridgeport Way/Pacific Highway intersection during the p.m. or noon (for Berkeley Street) peak hour.

A number of scenarios were considered when calculating potential delay and queue lengths at the at-grade crossings. The study team reviewed a future base scenario – *Sounder* service fully implemented by year 2020, as well as future scenarios with *Sounder* and Amtrak service along the corridor. Preliminary train schedules for both services were used as the basis for the review. The following discussion presents these various scenarios and the potential impacts associated with the different passenger rail services.

At-Grade Crossing Queue Lengths with only Sounder Trains (no Amtrak trains)

This scenario assumes that, by year 2020, there would be one *Sounder* train in the common morning peak hour of 7:15 to 8:15 AM and two *Sounder* trains during the common afternoon peak hour of 4:30 to 5:30 PM. No Amtrak *Cascades* trains would run on the bypass tracks under this scenario. The *Sounder* trains will affect the study crossings at S 74th Street, Steilacoom Boulevard SW, 100th Street SW, and 108th Street SW. **Exhibit 4.11** provides detailed information about delay resulting from future *Sounder* only service.

Morning Peak Hour

With one morning *Sounder* train in 2020, the 100th Street SW crossing will experience the longest queue length of 18 cars, or 360 feet in the westbound direction. Vehicles at the end of this queue will experience the longest delay time, as shown on **Exhibit 4.11**

Afternoon Peak Hour

With two afternoon *Sounder* trains in 2020, the 100th Street SW crossing will experience the longest queue of 21 cars, or 420 feet in the eastbound direction, as can be seen on **Exhibit 4.11**. Vehicles at the end of this queue will experience the longest delay time.

At-Grade Crossing Queue Length with only Amtrak (no Sounder trains)

The Amtrak delay information was calculated without including the *Sounder* and freight trains. Currently, Amtrak trains do not run along the Point Defiance Bypass corridor.

For the design year of 2020, there are no Amtrak trains in the common morning peak hour of 7:15 to 8:15 AM. There will be one Amtrak *Cascades* train during the noon peak

Steilacoom Boulevard looking east

hour and one train during the common afternoon peak hour of 4:30 to 5:30 PM that will affect all of the study crossings. **Exhibit 4.12** provides more detail regarding delays resulting from this one train.

In 2020, the Bridgeport Way SW crossing will experience the longest queue length of 25 cars, or 500 feet in the northbound direction.

Exhibit 4.11
Sounder: At-Grade Crossings Queue Lengths

Crossing Location		2006 AM Peak Hour		2006 PM Peak Hour		2020 AM Peak Hour[1]				2020PM Peak Hour[2]			
		Peak Volume	Average Queue Length (feet)	Peak Volume	Average Queue Length (feet)	Peak Volume	Blockage Time (seconds)	Average Number of Vehicles Stopped	Average Queue Length (feet)	Peak Volume	Blockage Time (seconds)	Average Number of Vehicles Stopped	Average Queue Length (feet)
South 74th Street	EB	766	No Train During AM Peak Hour	1015	No Train During PM Peak Hour	1049	45	14	280	1390	45	18	360
	WB	686		1103		939	45	12	240	1511	45	19	380
Steilacoom Blvd. SW	EB	559		1057		766	45	10	200	1448	45	19	380
	WB	888		960		1217	45	16	320	1316	45	17	340
100th Street SW	EB	628		1213		860	45	11	220	1662	45	21	420
	WB	1004		1092		1375	45	18	360	1496	45	19	380
108th Street SW	EB	251		634		344	45	5	100	869	45	11	220
	WB	391		510		537	45	7	140	699	45	9	180
Bridgeport Way SW	NB	710		710		977	No Train During AM Peak Hour			1948	No Train During PM Peak Hour		
	SB	697		697		961				1553			
Clover Creek Drive SW	EB	56		45		77				61			
	WB	25		82		34				113			
North Thorne Lane SW [3]	EB	183		387		344				727			
	WB	202		355		379				668			
Berkeley Street SW	EB	222		485		306				668			
	WB	403		349		556				481			
41st Division Drive	NB	609		544		839				749			
	SB	504		765		694				1053			
Barksdale Avenue [3]	EB	557		695		1048				1306			
	WB	719		704		1351				1323			

Notes:
[1]One *Sounder* commuter train during the peak hour with an average blockage time of 45 sec/train (including gates down & up).
[2]Two *Sounder* commuter trains during the peak hour with an average blockage time of 45 sec/train (including gates down & up).
[3]A 4% annual growth rate was applied at this location to project traffic to 2020.

Exhibit 4.12
Amtrak: At-Grade Crossings Queue Lengths

Crossing Location		2006 AM Peak Hour		2006 PM Peak Hour		2020 AM Peak Hour		2020PM Peak Hour[1]			
		Peak Volume	Average Queue Length (feet)	Peak Volume	Average Queue Length (feet)	Peak Volume	Average Queue Length (feet)	Peak Volume	Blockage Time (seconds)	Average Number of Vehicles Stopped	Average Queue Length (feet)
South 74th Street	EB	766	No Train During AM Peak Hour	1015	No Train During PM Peak Hour	1049	No Train During AM Peak Hour	1390	45	18	360
	WB	686		1103		939		1511	45	19	380
Steilacoom Blvd. SW	EB	559		1057		766		1448	45	19	380
	WB	888		960		1217		1316	45	17	340
100th Street SW	EB	628		1213		860		1662	45	21	420
	WB	1004		1092		1375		1496	45	19	380
108th Street SW	EB	251		634		344		869	45	11	220
	WB	391		510		537		699	45	9	180
Bridgeport Way SW	NB	710		710		977		1948	45	25	500
	SB	697		697		961		1553	45	20	400
Clover Creek Drive SW	EB	56		45		77		61	45	1	20
	WB	25		82		34		113	45	2	40
North Thorne Lane SW [2]	EB	183		387		344		727	45	10	200
	WB	202		355		379		668	45	9	180
Berkeley Street SW	EB	222		485		306		668	45	9	180
	WB	403		349		556		481	45	7	140
41st Division Drive	NB	609		544		839		749	45	10	200
	SB	504		765		694		1053	45	14	280
Barksdale Avenue [2]	EB	557		695		1048		1306	45	17	340
	WB	719		704		1351		1323	45	17	340

Notes:
[1]One Amtrak *Cascades* train during the peak hour with an average blockage time of 45 sec/train (including gates down & up).
[2]A 4% annual growth rate was applied at this location to project traffic to 2020.

Future At-Grade Crossing Queue Lengths with both Amtrak Cascades and Sounder Trains (Cumulative Effects)

This scenario assumes that both the *Sounder* trains and the Amtrak *Cascades* trains will run on the bypass tracks. Queue lengths are described below and are shown in **Exhibit 4.13**.

On average, there will be one *Sounder* commuter train crossing the study area with an average blockage time of 45 seconds per train during the morning peak hour. The commuter train will affect the four crossings at S 74th Street, Steilacoom Boulevard SW, 100th Street SW, and 108th Street

SW. There will also be one equipment train during the morning peak hour that will affect the 100th Street SW crossing.

During the noon and afternoon peak hours, there will be one Amtrak *Cascades* train that will affect all of the study crossings. In addition, the same four crossings (S 74th Street, Steilacoom Boulevard SW, 100th Street SW and 108th Street SW) will be affected by two afternoon *Sounder* trains with the same average blockage time as for the morning peak. There will also be two equipment trains during the afternoon peak hour that will affect only the 100th Street SW and 108th Street SW crossings. (The Amtrak train affects all of the crossings because it passes through the entire study area on its route between Seattle and Oregon, while the *Sounder* affects only the four northern crossings because the *Sounder* terminates just south of the 108th SW crossing.)

The average queue lengths for 2020 are shown in **Exhibit 4.13**. During the morning peak hour, the 100th Street SW crossing will experience the longest queue length of 25 cars, or 500 feet in the westbound direction. In the afternoon peak hour, it is the 100th Street SW eastbound traffic that will wait in the longest queue of 28 cars, or 560 feet.

Exhibit 4.13
Cumulative (*Sounder*, Amtrak, and Freight): At-Grade Crossings Queue Lengths

Crossing Location		2006 AM Peak Hour		2006 PM Peak Hour[1]				2020 AM Peak Hour[2]				2020PM Peak Hour[3]			
		Peak Volume	Average Queue Length (feet)	Peak Volume	Blockage Time (seconds)	Average Number of Vehicles Stopped	Average Queue Length (feet)	Peak Volume	Blockage Time (seconds)	Average Number of Vehicles Stopped	Average Queue Length (feet)	Peak Volume	Blockage Time (seconds)	Average Number of Vehicles Stopped	Average Queue Length (feet)
South 74th Street [6]	EB	766	No Train During AM Peak Hour	1015	100	29	580	1049	45	14	280	1390	45	18	360
	WB	686		1103	100	31	620	939	45	12	240	1511	45	19	380
Steilacoom Blvd. SW [4]	EB	559		1057	100	30	600	766	45	10	200	1448	45	19	380
	WB	888		960	100	27	540	1217	45	16	320	1316	45	17	340
100th Street SW [4,6]	EB	628		1213	100	34	680	860	63	16	320	1662	60	28	560
	WB	1004		1092	100	31	620	1375	63	25	500	1496	60	25	500
108th Street SW [5,6]	EB	251		694	100	18	360	344	45	5	100	969	60	15	300
	WB	391		510	100	15	300	537	45	7	140	699	60	12	240
Bridgeport Way SW	NB	710		710	100	20	400	977	No Train During AM Peak Hour.			1948	45	25	500
	SB	697		697	100	20	400	961				1553	45	20	400
Clover Creek Drive SW	EB	56		45	100	2	40	77				61	45	1	20
	WB	25		92	100	3	60	34				113	45	2	40
North Thorne Lane SW [7]	EB	193		387	100	11	220	344				727	45	10	200
	WB	202		355	100	10	200	379				668	45	9	180
Berkeley Street SW	EB	222		485	100	14	280	306				668	45	9	180
	WB	403		349	100	10	200	556				481	45	7	140
41st Division Drive	NB	609		544	100	16	320	839				749	45	10	200
	SB	504		765	100	22	440	694				1053	45	14	280
Barksdale Avenue [7]	EB	557		695	100	20	400	1048				1306	45	17	340
	WB	719		704	100	20	400	1351				1323	45	17	340

Notes:
[1]One freight train during the peak hour with an estimated blockage time of 100 sec/train (including gates down and up).
[2]One *Sounder* commuter train during the peak hour with an average blockage time of 45 sec/train (including gates down & up).
[3]One Amtrak *Cascades* train during the peak hour with an average blockage time of 45 sec/train (including gates down & up).
[4]One additional equipment train during the AM peak hour and two additional equipment trains during the PM peak hour in 2020. The average blockage time is 90 sec/train (including gates down & up).
[5]Two additional equipment trains during the PM peak hour in 2020. The average blockage time is 80 sec/train (including gates down & up).
[6]Two additional commute trains during the PM peak hour in 2020 with an average blockage time of 45 sec/train (including gates down & up).
[7]A 4% annual growth rate was applied at this location to project traffic to 2020.

Traffic Improvements

The following improvements will be constructed and installed at the grade crossings along the project. These measures have been incorporated into the project design.

The project has incorporated design features to promote safety for trains, motor vehicles, and non-motorized users. With the increase in rail service, train speed, and traffic volume in 2020, these features will provide advanced warning of the arrival of a train at grade crossings. These features include:

- Interconnection between traffic signals and rail signals, which will assist the modified signal phasing schemes to help dissipate vehicles which may be near the railroad tracks.
- Constant warning time units (also called "predictors"), which will provide a consistent duration of advanced warning prior to the arrival of a train at a crossing. The predictor units control the operation of the new warning devices, including flashing lights, bells, and crossing gates. Rather than have the warning devices operate for a variable amount of time prior to the arrival of a train (ie, provide longer warning times for slower-moving trains while providing shorter warning times for faster-moving trains), the predictor units will start the warning devices a consistent, predetermined amount of time prior to the arrival of a train at a crossing.
- Detection loops, which will help detect the presence of queues which may extend across the railroad tracks.
- Coordinated pre-signals to deter traffic from queuing in the crossing area.

In conjunction with new or upgraded crossing gates, flashing lights, roadway striping, and signage, the project will provide better warning to the road users of the presence of the grade crossing and the possibility of approaching trains.

South 74th Street

The current configuration of warning devices (gate and cantilevers) will be preserved. The following measures will be installed:

- Interconnection with the South Tacoma Way traffic signal.
- A pre-signal in the eastbound lanes to deter motorists from queuing on the tracks. The pre-signal will be coordinated with the signal at South 74th Street to help manage queue lengths.
- Constant-warning time predictors for both tracks.
- New channelization features, primarily medians on both sides of the crossing, to reduce the likelihood of motorists evading lowered gates.
- Pedestrian crossing.
- Improvements to roadway striping.

- "Do not stop on tracks" signage.
- "Gate Delay," which allows the flashing lights to operate and the bells to ring for a few additional seconds before the gates descend. This can help provide additional warning to vehicles which may move slowly up the hill at this location.

Steilacoom Blvd SW

The following measures will be installed or constructed:

- Advance pre-emption to clear the relatively short westbound queue length.
- Median in the two-way left turn lane east of the grade crossing.
- C-curb barrier (between the westbound left turn pocket and the northernmost eastbound traffic lane) extending from the west side of the crossing to the Lakeview Ave intersection.
- "Do not stop on tracks" signage.
- Relocation of the bus stop to the east side of the crossing.
- Pedestrian crossing.
- Improvements to roadway striping.

100th Street SW

The following measures will be constructed and installed:

- Crossing gates.
- Medians on both sides of the crossing, though the median on the west side of the crossing will be relatively short, tapering to a C-curb barrier to allow for the westbound left turn pocket on 100th Street.
- "Do not stop on tracks" signage.
- Widening of the roadway at the westbound right-turn lane to allow for improved drainage and WB 50 truck right-turn movements.
- Additional illumination.
- Pedestrian crossing.
- Improvements to roadway striping.

108th Street SW

The following measures will be constructed and installed:

- Cantilevers, gates, and an automated horn system.
- Interconnection with the traffic signal at 108th Street SW and Lakeview Avenue.
- Reconstruction of the T-intersection with Halcyon Street to right-in/right-out only to keep eastbound traffic on 108th St SW from stopping on the crossing. Alternately, a "third" exit gate located on eastbound 108th St SW could be installed. This gate would prevent left turning traffic from Halcyon Street from driving the wrong-way westbound

along 108th St SW, then changing lanes in the wide area (which lacks a median), where the two tracks cross 108th St SW.
- Medians on both sides of the crossing, developed in conjunction with the City of Lakewood.
- Alteration of the profile of the roadway to allow for the two new tracks.
- "Do not stop on tracks" signage.
- Pedestrian crossing.
- Improvements to roadway striping.

All measures will match the widths and landscaping of the current lanes and medians per City of Lakewood requirements.

Bridgeport Way SW

The project will install or construct the following measures:

- Revise the roadway profile to provide a smoother surface at the tracks.
- Medians on both sides of the track.
- Crossing gates and flashing lights.
- Interconnection between the railroad signals and traffic signals.
- A pre-signal (coordinated with the signal at Pacific Highway) for southbound traffic on Bridgeport Way.
- "Do not stop on tracks" signage.

Clover Creek Drive SW

The project will install or construct the following measures:

- Widen the roadway approximately 2 feet to allow for a short median on the south and a somewhat longer median on the north side of the crossing.
- Extend C-curb northward beyond the end of the median.
- Crossing gates and flashing lights.
- "Do not stop on tracks" signage.
- Pedestrian crossing.
- Improvements to roadway striping.

North Thorne Lane SW

The project will install or construct the following measures:

- A narrow median on the north side of the crossing.
- C-curb is proposed for the south side of the crossing to help deter motorists from evading the crossing gates.
- A new traffic signal at the intersection with Union Avenue SW. That signal will act in a manner similar to a pre-signal.
- Interconnection between the railroad signals and traffic signals.
- Coordination between traffic signals on both sides of the freeway and at Union Avenue SW.

- "Do not stop on tracks" signage.
- Improvements to the existing substandard right-turn pockets to improve turning movements for large vehicles.
- At least one ADA-compliant path of travel for pedestrians to access the overpass over I-5.
- Improvements to roadway striping.

Future plans for the construction of a separated crossing at this intersection are being considered by WSDOT as part of the Cross-Base Highway project. If those plans are sufficiently developed, they will be addressed during final design.

Berkeley Street SW

The project would construct or install the following measures:

- Maintain the existing interconnection.
- Additional coordination with adjacent traffic signals.
- C-curb is proposed for the south side of the crossing to help deter motorists from evading the crossing gates.
- Interconnection between the railroad signals and traffic signals.
- The traffic signal at the Berkeley Street SW and Union Street SW intersection will be activated (it currently operates only as a flashing red light) and coordinated with the adjacent traffic signals at Interstate 5. This signal will function as a pre-signal.
- Coordination between the traffic signals on both sides of the freeway and at Union Avenue SW.
- "Do not stop on tracks" signage.
- Improvements to existing substandard right–turn pockets to improve turning movements for large vehicles.
- At least one ADA-compliant path of travel for pedestrians to access the overpass over I-5.
- Improvements to roadway striping.

During final design, in conjunction with WSDOT's Olympic Region and with the City of Lakewood, the project team will consider reconfiguring the placement of the traffic signals at the southbound I-5 ramps for better visibility; instituting a blank out sign during railroad preemption that will block the right turn off the southbound off ramp to help mitigate queue lengths; coordinating a no-right-on-red signal with loop detection at the crossing so that when queue lengths extend across the tracks, no additional right turns would be permitted, and relocating the southbound signals at the freeway ramp intersection in front of the cantilever. The project will also consider ways to make the crossing more pedestrian friendly.

41st Division Drive

The project will construct or install the following measures:

- New cantilevers and gates for the two southbound lanes of this crossing.
- Where the two northbound lanes of 41st Division Drive narrow to a single lane, a new right-side curb median and taper to define the free-flow right off the freeway, since the current northbound merge is defined only by traffic cones.
- New crossing gate in the right-side median to protect the northbound traffic.
- Additional flashing lights on the crossing gates, pointing toward the freeway off ramp, to provide warning to motorists exiting the freeway that a train is approaching.
- New crossing gate and flashers for motorists exiting the freeway at the free-flow right.
- A warning sign (and flashing lights) at the southbound I-5 off-ramp "Prepare to stop when flashing," to provide motorists exiting I-5 advance warning if a train were approaching and the crossing gates were lowered.
- "Do not stop on tracks" signage.
- Pedestrian crossing.
- Improvements to roadway striping.
- New traffic signals for both northbound and southbound lanes, coordinated with loop detectors to deter vehicles from queuing on the tracks.

Barksdale Ave SW (Steilacoom – DuPont Rd)

The project will construct or install the following measures:

- Traffic signals at the off ramps will be interconnected with the railroad crossing signals.
- A short median will be added between the northbound and southbound lanes on the south side of the tracks (the side nearest the freeway).
- Sidewalks and curbs will be revised to meet current regulatory standards.
- Improvements to roadway striping.

Will other resource areas be affected by the proposed project?

Through analysis, the project team found that the other resource areas would not experience any long-term impacts. The following description summarizes the major points and findings from these reports.

Air Quality

Polluted air can cause or worsen lung-related diseases, such as emphysema, chronic bronchitis and asthma; and can cause breathing difficulty and even death. Easily inhaled small particles, called particulate matter, are perhaps the most significant health concern related to poor air quality.

The primary cause of poor air quality in Washington is motor vehicle exhaust. Exhaust from motor vehicles contains many toxic pollutants,

including carbon monoxide. Motor vehicles are also a source of particulate matter and ground-level ozone. Particulate matter also includes tiny particles of soot, dust and unburned fuel from woodstoves, fireplaces, backyard burning, agricultural burning and industry.

The project area is currently designated as meeting all *National Air Quality Standards* (NAAQS). However, all of Pierce County was previously a nonattainment area, and is now a maintenance area, for ozone (O_3). A portion of Pierce County, including most of the project corridor, was previously a nonattainment area, and is now a maintenance area, for carbon monoxide (CO). A small part of Pierce County, known as the Tacoma Tideflats, was previously designated as a nonattainment area for particles smaller than ten microns in diameter (PM_{10}) and is now a maintenance area for PM_{10}. However, this PM_{10} maintenance area is outside of the project corridor. Depending on the pollutant, the nearest monitor site is located anywhere from approximately one mile to 25 miles from the north end of the project study area.

Methodology

The project team analyzed air quality impacts from an assessment of the potential change in air quality from existing conditions and an assessment of the project's air quality conformity with the *State Implementation Plan* (SIP) developed to attain or maintain compliance with *National Ambient Air Quality Standards* (NAAQS). The team collected existing air quality data and used it as the basis for the analysis, along with the NAAQS and state of Washington air quality standards. The team then performed traffic operational and level of service (LOS) analyses at the existing intersections within the study area. They then used this traffic information with an air quality screening software package known as the *Washington State Intersection Screening Tool* (WASIST), to evaluate potential carbon monoxide impacts near intersections.

Findings

After running the models, the team found that the conservatively-predicted CO impacts for the study area intersections are shown to be below the applicable NAAQS for CO. In addition, the proposed project corridor crosses areas that are designated as maintenance areas with respect to NAAQS for CO and O_3. As a federally-funded or federally-approved action, the proposed project must be determined to conform to *Clean Air Act* requirements, in that the project must not interfere with approved state implementation plans to attain or maintain compliance with NAAQS in the area. The team's analysis shows that the project emissions, due to construction or operation, would be below the *de minimis* levels listed in *General Conformity* rules. Therefore, the team concluded that implementation of the proposed project would be in conformance with *Clean Air Act* requirements. Also, the project screening analysis demonstrates that intersections affected by the project will not adversely impact local air quality.

Cultural Resources

Cultural resources include districts, sites, buildings, structures, objects and landscapes significant in American history, prehistory, architecture, archaeology, engineering, and culture.

The need for federal funding and permits requires compliance with *Section 106* of the *National Historic Preservation Act* (NHPA) *of 1966* (16 USC 470), as amended. The NHPA is the nation's central historic preservation law. The NHPA provides for establishment of the National Register of Historic Places (NRHP), the State Historic Preservation Office/Officer (SHPO), and directs federal agencies to consider the effect on historic properties in carrying out their activities. Cultural resources studied for the project are subject to the procedures of and review by FHWA and WSDOT, in consultation with the Washington State Department of Archaeology and Historic Preservation (DAHP), and any affected Native American tribe. WSDOT provides opportunities for the affected Native American tribes to consult on the cultural resources report prior to finalizing it and submitting it to DAHP for approval.

Methodology

Section 106 of the NHPA requires that a federal agency must take into account the effects of any undertaking on historic properties, and must afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on these actions. The *Section 106* process has six basic steps:

1. Initiate consultation and public involvement.
2. Identify and evaluate historic properties.
3. Assess effects of the project on historic properties.
4. Consult with the SHPO regarding adverse effects on historic properties, resulting in a *Memorandum of Agreement* (MOA).
5. Submit the MOA to the ACHP.
6. Proceed in accordance with the MOA.

For federal projects, cultural resource significance is evaluated in terms of eligibility for listing in the NRHP.

Findings

A total of 37 historic buildings and/or structures were identified and evaluated within the Project APE. In addition, several historic period archaeological resources (both sites and isolated finds) were identified and recorded during the fieldwork effort.

No prehistoric archaeological sites and/or ethnographic and ethnohistoric sites were identified within the project's Area of Potential Effect (APE). Three historic-period archaeological sites were identified within the project APE. In addition, two historic-period archaeological isolated finds were

identified within the proposed project APE. The historic period archaeological sites and isolated finds identified do not appear to meet National Register eligibility criteria. No traditional cultural properties have been identified within the proposed project APE. In addition, no traditional cultural properties study has been conducted within the APE to date.

One National Register listed property, the Salvation Army Red Shield Inn (currently known as the Fort Lewis Military Museum), is located within the APE. The Northern Pacific Railroad Bridge, Northern Pacific Undercrossing, South Tacoma Way near 11th Street SW in Lakewood was determined eligible for listing in the Washington Heritage Register and for local register designation. (Artifacts consulting Inc. 2000). Based on the evaluation, the Northern Pacific Railway alignment appears eligible for listing in the National Register on the state level, the 66th Street overcrossing (OC) bridge appears eligible for listing in the National Register on the local level, the Arsenal at the Camp Murray Armory appears to be eligible for listing in the National Register on the state level and the Barbeque Inn, located at 8102 Maple Street SW appears to be eligible for listing in the National Register on the local level. None of the other properties inventoried appear to meet National Register eligibility criteria. The findings were that this project would result in No Adverse Effects to Historic Properties.

Energy

Energy is consumed during the construction of tracks and the operation of passenger trains. The diesel fuel required to operate trains is a nonrenewable fossil fuel energy resource. The efficient use of energy by trains is one approach to reduce the demand for energy and minimize the impacts on the environment.

This section discusses the energy consumed by passenger trains (Amtrak *Cascades* and Amtrak *Coast Starlight*) using the proposed route (Lakewood Subdivision) instead of the current route along the BNSF main line along Commencement Bay.

Methodology

The energy consumed by passenger trains was estimated as part of the operations analysis conducted for the Point Defiance Bypass Project. Information collected for the operations analysis included the fuel consumed by trains along the existing route as well as along the proposed route.

Findings

The proposed project will reduce rail traffic congestion because Amtrak passenger trains will no longer be competing with freight traffic along the existing BNSF main line route.

The miles traveled via the proposed project route will be shorter (20.7 miles verses 26.6 miles) than the existing BNSF main line route. Fuel

consumption will decrease by 17,155 gallons annually (47 gallons per day) for the current service of ten trains per day. The additional pair of trains made possible by the completion of the proposed project will consume 4,380 gallons less fuel annually (12 gallons per day) than they would on the existing BNSF main line route.

Fish, Vegetation, and Wildlife

The study team defined the affected environment as that confined by I-5 to the east and the railroad right of way to the west. The team observed that most of the project area has been developed, with commercial and residential properties, military bases, and roadways. Therefore most of the vegetation that occurs near the edge of the railroad right of way is already disturbed and dominated by plant species tolerant of recent or ongoing disturbances. Vegetation types found in the study area include: maintained vegetation, disturbed mixed forest, scattered trees, and wetlands. The study area provides little or poor habitat for most animals, except those that have adapted to urban areas. Wildlife likely to use the study area includes, but is not limited to, resident songbirds, crows, hawks, mice, voles, and urban wildlife, such as feral cats and dogs. Five streams were identified in the study area. Of the five species of fish identified in the study area, only the Puget Sound/Strait of Georgia populations of steelhead, coho salmon and chum salmon are present in stream reaches.

Of the endangered species that could occur in the project vicinity, only bald eagles occur within one mile of the railroad. Designated northern spotted owl critical habitat is present in the study area. Near the southern project terminus, forested areas located on Fort Lewis property are designated critical habitat. These habitats are located immediately east of the study area. No other federally designated or proposed critical habitat occurs in the study area.

Methodology

The study team collected information on fish, wildlife, and vegetation through background research of available existing documents related to the area, and several site visits. To conduct field surveys, the team walked the right of way and documented all resources. For fisheries, the team performed visual inspections of streams and potential habitat for threatened and endangered species, and identification of fish passage barriers (i.e., culverts) in the study area. The team recorded wildlife species and plant communities observed during the site visits. The team identified and mapped vegetation types based on aerial photo interpretation, supplemented with field notes.

Findings

Based on a review of the existing and future conditions, the project team concluded that fish, wildlife, and vegetation will not be permanently affected

by the proposed project. However, they further concluded that temporary impacts may result during construction. These temporary impacts may include disruption to wildlife due to noise and temporary removal of vegetation. However, most of the vegetation in the study area is already disturbed, especially in the northern portion of the study area, and high quality habitat and high quality native plant communities will not be affected.

Geology and Soils

Most of the study area is situated on a broad upland plateau with elevations ranging from 200 to 400 feet above sea level. The western side of the upland descends to the Puget Sound along coastal bluffs. The northeast and southwest sides descend to the lowland floodplains of the Nisqually and Puyallup Rivers. The topography and near-surface geology has a pattern of north-trending ridges and swales with large topographic channels that trend westerly, created by the last regional glaciation called the Vashon glaciation. This event, along with six or more previous glaciations in the last 15,000 years, deposited a sequence of sands and gravels separated by finer grained silts and clays approximately 1,000 to 1,700 feet below the ground surface in the study area. The surficial deposit for the majority of the study area is covered by Steilacoom Gravel. The lack of fine-grained particles makes this deposit highly permeable. Precipitation primarily infiltrates directly into the ground instead of flowing overland. The groundwater table in the area is shallow, on the order of 10 to 40 feet below the ground surface.

Methodology

To conduct the geology and soils analysis, the study team collected and reviewed existing data, and performed geologic and geotechnical field reviews. The team collected information from published sensitive area, soil survey, geologic and topographic maps; previous geotechnical and environmental consultant reports; and recent and historical stereo-pair aerial photographs. They obtained existing subsurface information from the Washington State Department of Transportation (WSDOT), the BNSF, and project team files. At various times between November 2006 and January 2007, the project team conducted field visits to assess surface conditions, geologic hazards, and likely subsurface conditions. Reconnaissance was restricted to Sound Transit and public right of way.

Findings

The design and construction of the proposed project will be based on existing geologic and soil conditions in the area and will follow well established WSDOT design procedures and criteria for managing the types of soils and geologic conditions found in the study area. Design elements will be incorporated into the project specifications to address the identified conditions.

Hazardous Materials

For this project, the study team defined the affected environment for hazardous materials as an area up to 3,280 feet from the proposed project railroad centerline. The study team's research concluded that the study area contains known or suspected hazardous materials sites. These sites are divided into two broad categories based on the type of contamination risk: reasonably predictable sites or substantially contaminated sites.

Methodology

The project team obtained information on hazardous materials within the study area through a search of agency databases, review of previous Phase I and Phase II Site Assessment reports within the study area, contacts with government agencies, and review of aerial photographs. The project team also contacted WSDOT and Sound Transit in order to identify any additional documentation or additional information about known spills or hazardous materials within the study area.

Findings

Based on the database search, 252 reasonably predicable sites are found within the study area. In addition to the database search, the team found that there are two other reasonably predictable sites: Sound Transit railroad property and the Tacoma Smelter Plume. The team also found that there are thirteen substantially contaminated sites within the study area, but these sites are outside the area that would be disturbed by project construction.

Hydrology and Water Quality

The study team defined the affected environment for water quality and hydrology as the distinct sub-basins for surface water bodies that interface with the rail line, downstream receiving water bodies that could see effects from modification of these resources, and the actual rail corridor and adjacent areas that could be affected by right of way acquisition, construction, displacement, or operation. The study area occurs within two Water Resource Inventory Areas (WRIAs): WRIA 12 Chambers/Clover Creek and WRIA 11 Nisqually River. The team found that water quality that did not meet standards or was inconclusive in portions of five water bodies: American Lake, Chambers Creek, Clover Creek, Puget Sound, and Steilacoom Lake. The team identified five perennial creeks that cross the railroad. Receiving waters to those creeks include American Lake, Chambers Creek and eventually Puget Sound. Groundwater within WRIAs 12 and 11 is replenished solely from precipitation that falls within the watersheds.

Methodology

Assessment of hydrology and water quality impacts were based on examining whether the proposed project will: impede the flow of surface

water in the study area; reduce the quantity of ground water recharge in the study area; increase the amount of pollution within nearby surface waterbodies; or degrade the quality of ground water supply within the study area.

Findings

The study team determined that there will be no long-term impacts to hydrology and water quality as a result of this project. The relative contribution from new impervious surface is small when compared with the remaining drainage basin areas, and is generally distributed along the entire railroad corridor.

Land Use

For the land use analysis, the study team examined the existing and planned uses within Pierce County portions of the cities of DuPont, Lakewood, and Tacoma, as well as unincorporated Pierce County just north of the Nisqually River and between the river and I-5. The majority of the project site is railroad right-of-way, and is thus dedicated to transportation and industrial uses. In general, the study area includes residential, industrial, commercial, recreational, transportation and open space land uses adjacent to the existing railroad.

Methodology

The study team gathered information on existing and planned land uses through the review of study area mapping, aerial photography, preliminary engineering drawings, comprehensive plans and zoning for Pierce County and the cities of DuPont, Lakewood, and Tacoma. For military areas, aerial photography and windshield surveys were used to identify land uses on the bases.

The team then compared this information with the plans for the proposed project to determine if the project would conflict with existing and/or planned land uses. The comprehensive plans for each jurisdiction also were reviewed to determine the designated land use categories, as well as the long-term vision, for the study area.

Findings

The study team concluded that the proposed improvements would occur within railroad right of way which currently contains land uses that would be compatible and consistent with the proposed project. Therefore the project would not result in changes to existing land use or change planned land uses for the areas affected. They also determined that there would be no impacts to farmland.

Public Services and Utilities

The cities of Tacoma, Lakewood, and DuPont, as well as Fort Lewis, McChord Air Force Base, and Camp Murray, all provide various forms of public utility service. The study area contains three public school districts, four jurisdictions that provide fire and police protection, three religious facilities, three agencies that provide transit service, and two hospitals.

Methodology

The team gathered information on existing locations of public service providers and utility lines through review of geographic information system (GIS) maps, review of available documents and drawings, and information collected from agency and provider websites. In addition, the team examined the potential effect on utilities at the rail crossings with public streets where the majority of municipal utility infrastructure is located. Any potential conflicts were noted and described with available detail.

Findings

School buses, transit buses, and emergency service vehicles will experience slight delays at the ten at-grade crossings located within the project study area. Delay will also occur if an equipment malfunction or unscheduled track issue arises where a train unintentionally blocks a crossing. Water, sewer, storm drainage, power (buried and overhead), natural gas, television cable, fiber optic cable and phone lines are present in most if not all crossing locations. Utility plans were developed as part of the final engineering design package.

Social Elements (including Environmental Justice)

The planning of any transportation or infrastructure improvement project must consider the existing environmental and social conditions and the potential impacts that the improvement could have on those conditions.

Understanding social elements such as community cohesion, recreation, and public services and the potential project-related impacts on those elements is vital to balancing the project and community needs, and for planning for the avoidance and minimization of those impacts.

In addition, review of social elements includes the population and income characteristics of the study area, allowing consideration of the potential impacts of the proposed project on environmental justice populations. Executive Order 12898 and U.S. Department of Transportation Order 5610.2 require consideration of the health and environmental impacts on minority populations and/or low-income populations in planning transportation improvement projects.

Methodology

Information was collected from: aerial photography, available maps, reports and data provided by local jurisdictions, consultations with local officials, and year 2000 U.S. Census data for Pierce County and block groups within the study area. A site visit was conducted to view at-grade crossings and neighborhoods within the study area.

Findings

The proposed physical changes will not impact mobility or access to neighborhoods or public services in the study area. The project will not result in separation of residential areas from retail, service, or employment centers. The proposed project includes improvements to at-grade crossings, such as replacement of traveling surfaces, upgrades to traffic signal systems, and increased or improved roadway approaches to the track. These improvements will provide a benefit to the communities in the study area by improving public safety and traffic flow.

The proposed project will not have physical impacts on the recreational facilities within the study area. Most changes will occur within 500 feet of the existing railroad corridor; no parks or recreational facilities are located in this proximity.

For the most part, community cohesion will remain intact if the proposed project is implemented. Traffic delays are expected to increase at some of the at-grade crossings. Increases in noise due to additional passenger rail traffic are also expected. These issues are discussed earlier in this chapter.

The operational impacts of the proposed project, including increased noise and decreased public access and mobility due to traffic delays, will affect low-income and minority populations in the project study area. This effect will not be appreciably more severe or greater in magnitude than the effect on non-minority or non-low-income populations in the vicinity of the project. No disproportionately high or adverse effect on Environmental Justice populations will result from the project.

The transfer of passenger rail service from the existing BNSF main line route to the proposed route will decrease noise, and to a lesser extent traffic delays, along the existing BNSF main line route. These impacts will result in a benefit to the population living along Point Defiance.

Visual Quality

Six key viewpoints were chosen to evaluate the existing visual conditions within the study area. The study area, from north to south, begins in an area in Tacoma and extends to an area south of DuPont, before the BNSF main line connection. The majority of the study area is railroad right of way, and is thus dedicated to transportation and industrial uses. Most of the study area

parallels I-5, which is to the east. The surrounding land uses include mostly residential, industrial, and commercial, with one area of open space used currently for a country club in Tacoma. The railroad tracks and associated facilities have been present in the regional landscape for over one hundred years.

Methodology

The study team used the methodology from the *Federal Highway Administration Visual Impact Assessment for Highway Projects* which assesses visual quality from a quantitative perspective and from physical and physiological factors (which include the perspective or experience of the potential viewer, including viewer distance, duration of view, viewer position, viewer activity, and number of viewers). The visual character of the study area was assessed through site visits and a review of aerial photographs, design plan sheets prepared for the project, and topographic maps.

Findings

The study team concluded that the railroad track improvement will be within the railroad right of way and will be similar in appearance to the existing tracks and supporting structures. The visual quality assessment indicated that visual quality conditions in the study area will be similar with the construction of the proposed project. There will be negligible changes in visual quality for nearby residents and for motorists.

Wetlands

The study team defined the affected environment as the existing railroad right of way for the project. The right of way width varies from approximately 80-feet to 100-feet wide. The team determined that the project setting is part of the larger *Tsuga heterophylla* Zone (Western Hemlock Zone), a vegetative zone that occupies extensive areas of western Washington. The team identified four wetlands in the study area that provide a variety of functions, including: flood storage and sediment or nutrient/toxicant removal functions;

100th Street SW looking east

stabilization to the streams that run through them; generation and exportation of organic matter; and low to moderate habitat functions. None of the wetlands provides opportunities for educational or scientific use due to access restrictions.

Methodology

To analyze potential wetland impacts, the study team delineated, classified, and rated wetlands, and then evaluated their functions and values. The team delineated wetlands using the three parameter methods described in the *Washington State Wetlands Identification and Delineation Manual* (Washington State Department of Ecology [Ecology] 1997) and the *Corps of Engineers Wetland Delineation Manual* (U.S. Army Corps of Engineers 1987). For areas within federal reservations (Fort Lewis, Camp Murray), wetland delineations were not performed. In Fort Lewis, existing documents were supplemented by a site review with on-site biologists. Staff members at Camp Murray have indicated that no wetlands are located in the area, and access was not allowed.

Findings

The study team determined that the project will not have permanent or temporary impacts to wetlands or buffers. Grading and bed widening activities will not take place in any of the wetland or buffer areas.

Will there be any temporary impacts as a result of construction?

Construction of the Point Defiance Bypass Project will result in short-term, temporary impacts which are typical for any construction project. These potential temporary impacts may include increased noise and vibration, dust, water quality, and traffic disruptions. Environmental practices for construction are universal for transportation projects and typically are designed to minimize or avoid as many impacts as possible. *Best Management Practices* (BMPs) are used to minimize harm to the community and are written into project plans and construction contracts.

What environmental practices will be used during project construction?

Examples of environmental practices for potential construction-related impacts will include typical BMPs and other standard measures such as:

- Mulch, sodding, or plastic covering will be used to prevent erosion in these areas.
- Clearing will be limited to the footprint of the proposed cut.

- Water trucks will provide water as needed for compaction and dust control.
- The earthwork staging areas and equipment turnaround sites will be located in previously disturbed areas that support routine railroad access and maintenance activities as much as possible.
- The staging areas will not be located within 150 feet of a fish bearing or potentially fish bearing water, or a water body that drains into fish bearing waters.
- Silt fences and temporary sediment traps will be installed along critical areas.
- Site stabilization techniques will be implemented during construction, prior to the wet season, and before final site preparation.
- Disturbed areas will be restored once construction is complete.
- All temporary and permanent erosion and sediment control best management practices will be maintained and repaired as needed to assure the continued performance.
- All pollutants other than sediment that occur on-site during construction will be handled and disposed of in a manner that does not contaminate stormwater.
- Washout from concrete trucks will not be dumped into storm drains, or onto soil or pavement which carries stormwater runoff.

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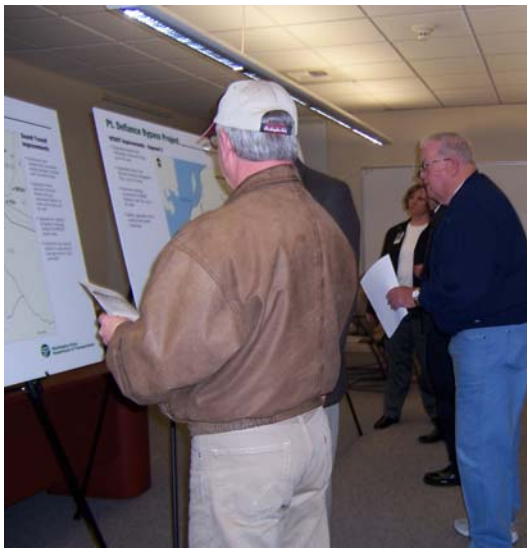
Chapter Five Public, Agency, and Tribal Involvement

Public and agency outreach efforts for the Point Defiance Bypass Project began in the Fall of 2006. The first phase of outreach entailed public, agency, and tribal scoping for the project's environmental process.



Community members review project information at a public open house

Additional public involvement efforts have continued to keep interested parties informed of project progress. This section describes outreach activities and informational materials that were prepared in support of general public and agency outreach activities, as well as tribal coordination. The initial phase of these activities included a public open house and local agency and tribal scoping meetings.

What is scoping?

Scoping is a formal step early in the environmental review process that allows the public, tribes, and agencies to identify issues and concerns related to a proposed project.

The *National Environmental Policy Act* (NEPA) and the *State Environmental Policy Act* (SEPA) require that project proponents notify citizens, tribes, and agencies about a proposed project which could have impacts to the natural or built environment and to give them opportunities to provide comments on what should be considered in preparation of the environmental review.

What were the goals of the Point Defiance Bypass Project's scoping activities?

The main goals of the project's scoping activities were to:

- Inform interested citizens, tribes, agencies, organizations, and businesses about the purpose, approach, and schedule of the Point Defiance Bypass Project.

- Offer opportunities for interested citizens, tribes, agencies, organizations, and businesses to comment on the scope of the environmental review.
- Identify effective ways to inform and involve local citizens in the process.
- Gain public, tribal, and agency understanding and support for the project.
- Satisfy NEPA and SEPA requirements and policies.

What were the results of scoping?

After learning about the Point Defiance Bypass Project, most agencies and citizens did not indicate any significant environmental issues or concerns. Specific concerns of affected tribes in the study area are discussed later in this chapter.

Other issues and concerns that emerged through the agency and public scoping process included the following:

- Grade-crossing safety due to the proposed increase in passenger trains and speeds along the route.
- Air quality impacts of train engine emissions in South Tacoma where air quality is near non-attainment (this was of particular concern to the city of Tacoma).
- Noise to surrounding homes and businesses.
- Increased congestion and traffic back-ups at crossings, especially at crossings that have the potential to back traffic up onto I-5.
- Potential loss of property value in areas adjacent to the tracks.

These issues were addressed and analyzed as part of the environmental review process. Findings are presented in Chapter Four of this document.

What approach was used to engage the public and local agencies?

Public and agency involvement activities for the scoping process included stakeholder interviews, agency meetings, agency scoping meetings, and a public open house. Each activity is described in more detail below.

Pre-Scoping Meetings

In September 2006, the Point Defiance Bypass Project team held pre-scoping meetings with agencies that were expected to have an interest in or to be affected by the project. Participants received informational handouts about the purpose of the project, its geographic scope, specific improvements proposed, expected benefits, and funding. **Exhibit 5.1** lists the agencies which met with project team members.

Exhibit 5.1
Pre-Scoping Agency Participants

Agency	Number of Agency Staff in Attendance
City of DuPont	2
Fort Lewis	2
City of Lakewood	4
Lakewood City Council	5
City of Tacoma	3
Environment and Public Works Subcommittee of the Tacoma City Council	4
Pierce County	5

Public Scoping Meeting

On November 14, 2006, the project team hosted a public open house in Lakewood at Lakewood Fire Station 20, 10928 Pacific Highway SW, from 4:30 p.m. to 7:30 p.m. The purpose of the meeting was to give agencies and interested citizens an opportunity to learn more about the project and to identify issues or concerns to be addressed in the environmental review. Participants were able to provide verbal or written comments at the meeting; they were also encouraged to send written comments by mail, by telephone, or electronically.

The project team advertised the open house in local newspapers in advance and sent letters to agencies on November 6, inviting them to submit formal comments at the open house or to send written comments by December 8, 2006.

Newspaper Coverage

An additional and unplanned opportunity for scoping was provided by the *Tacoma News Tribune*. On November 15, 2006, the newspaper published an article on the Point Defiance Bypass Project. On the same day, and for several days afterwards, the newspaper invited visitors to its website to vote "yes" or "no" to the following question: *Do you think Amtrak should reroute its passenger trains through Lakewood and Tacoma? By* November 18, approximately 211 votes had been cast: 136 votes (64 percent) supported the

project; 75 votes (36 percent) opposed the project. Many of those who voted also wrote comments to explain their votes. Many of these comments identified issues and concerns about the project that were legitimate scoping comments; many also described what they saw as the potential benefits of the project.

What informational materials supported scoping efforts?

To support scoping efforts, the project team prepared the following materials:

Project materials available at the open houses

- A letter to local jurisdictions (sent August 23, 2006) requesting a meeting to present information about the project and to discuss potential issues and concerns.
- An informational handout for agency briefings that included a map of the proposed route, a description of the project, a list of at-grade crossings along the route, the purpose of and need for the project, funding for the project, the schedule, and contact information to learn more.
- A second letter to agencies mailed on November 6, 2006, inviting their participation in the formal scoping process, with a request for comments by December 8, 2006.
- A four-page project folio, which was distributed at the open house, that presented basic information about the project.
- A project website at www.wsdot.wa.gov/Projects/Rail/PNWRC_PtDefiance that provided information about the project.
- A paid ad in the *Tacoma News Tribune* advertising the November 14, 2006, open house.

Has additional agency coordination taken place?

The Washington State Department of Transportation (WSDOT) has continued to work directly with representatives from Sound Transit, Pierce County, the cities of Tacoma, Lakewood and DuPont, and Fort Lewis and Camp Murray. This coordination will continue throughout the course of this environmental process and through design and construction.

Has there been other public outreach?

A four-page project folio was mailed in November 2007 to over 200 adjoining property owners and interested parties.

Has tribal consultation taken place?

On September 1, 2006, WSDOT sent letters to the chairpersons of the Nisqually Tribe, the Puyallup Tribe, the Snoqualmie Nation, and the Squaxin Island Tribe, initiating formal government-to-government consultation concerning the Point Defiance Bypass Project. Pursuant to *Section 106* of the *National Historic Preservation Act*[7], the letters requested a meeting to discuss the project, focusing particularly on cultural and historic resource issues.

The Snoqualmie Nation and the Squaxin Island Tribe declined the invitation. The Nisqually Tribe and the Puyallup Tribe accepted the invitation. On October 12, 2006, the project team met with two representatives of the Nisqually Tribe. On October 13, 2006, the project team met with four representatives of the Puyallup Tribe. Additional meetings were held October 30, 2007, to address Tribal comments on the cultural resources report.

What were the tribes' main comments and concerns?

Following a presentation and discussion by the project team, each tribe had specific concerns and questions.

Nisqually Tribe

Although tribal representatives had many questions about the project, they raised only one concern – safety. Their concerns related to the future safety of fishermen who might use the railroad trestle to cross the river and of pedestrians in the vicinity of the tracks along Fort Lewis and the golf course.

Puyallup Tribe

Representatives of the Puyallup Tribe asked many questions about the project and raised two sets of issues. The first related to potential impacts of

[7] *36 CFR 800.2(c)(4)*

the project to cultural and historic resources in the project area, especially if track rehabilitation work were needed in the vicinity of the existing track.

The second issue related to potential impacts to stream crossings, wetlands, and functioning habitat if track rehabilitation work was needed in these critical areas. The specific areas they identified included Clover Creek, Murray Creek, and other areas that are now best known by their contemporary names of Tacoma Mall and Nalley Valley.

Can the public comment on this *Environmental Summary*?

Yes. Interested residents and agency representatives can contact WSDOT directly (see front inside cover for contact information) regarding this document and the Point Defiance Bypass Project in general.

Is there a project web site?

Yes. Updated project information is available on the project web site:

http://www.wsdot.wa.gov/Projects/Rail/PNWRC_PtDefiance/