Washington State Department of Transportation

Pacific Northwest Rail Corridor

Washington State Segment - Columbia River to the Canadian Border

Program Environmental Assessment

September 2009

Prepared for:
U.S. Department of Transportation
Federal Railroad Administration

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Program Environmental Assessment

Submitted pursuant to the National Environmental Policy Act
(42 U.S.C. 4332(2)(c))

Prepared for:
U.S. Department of Transportation
Federal Railroad Administration

Prepared by:
Washington State Department of Transportation
State Rail and Marine Office

9/30/09
Date of Approval

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Executive Summary

What is the Program Environmental Assessment for the Washington State Segment of the Pacific Northwest Rail Corridor?

The Washington segment of the PNWRC

The Washington State Segment of the Pacific Northwest Rail Corridor (PNWRC) links the cities in western Washington with Portland, OR and Vancouver, B.C. The rail corridor is used by Amtrak intercity passenger rail service and BNSF Railway freight service, and loosely parallels Interstate 5. The Washington State Department of Transportation (WSDOT) has been developing intercity passenger rail service in the state of Washington to serve the Pacific Northwest for over 16 years.

For the purposes of this document, intercity rail service refers to the passenger rail service operated by Amtrak and known as the *Cascades*. This service provides daily passenger service between Portland, OR and Vancouver, B.C. with intermediate stops at communities between these cities. The expansion plans of this service and of BNSF must be taken into account when considering improvements along the rail corridor. Service development to date has been guided by a series of plans and actions based on detailed rail corridor modeling performed in conjunction with BNSF.

The need for intercity passenger rail service in the Pacific Northwest has grown in urgency during the past 16 years as rail travel has become a more desirable and convenient mode of transportation compared to air and highway travel. Air travel, with heightened airport security, has become more challenging on the corridor since September 11, 2001. Highway traffic congestion on Interstate 5, which roughly parallels the entire PNWRC, has become a regular occurrence and is no longer restricted to peak times around major cities. People are searching for travel options for both business and leisure travel that is affordable and reliable. It is crucial to the economy of the state of Washington and the Pacific Northwest region that development of an alternative form of effective and efficient travel continues to move forward without delay.

Additionally, intercity passenger rail service is recognized by state and federal policy-makers as a means to address 21st century public policy goals. These goals include reducing the nation's dependency on foreign sources of energy, reducing greenhouse gas emissions that contribute to climate change, increasing public safety, and strengthening transportation system redundancies in the wake of natural and man-made disasters.

The PNWRC carries over 600,000 intercity travelers between Portland, Seattle, and Vancouver, B.C. each year. The round trip between Seattle and Portland is offered 4 times daily and takes 3 hours 30 minutes one way. The round trip between Seattle and Vancouver, B.C. is offered twice daily, and takes 3 hours 55 minutes one way.

The purpose of the program is to improve intercity passenger rail service by reducing travel times and achieving greater schedule reliability in order to accommodate growing intercity travel demand along the Washington State Segment of the Pacific Northwest Rail Corridor.

Improvements to the Washington rail corridor would help meet the region's needs of today, as well as helping to address the expected increase in intercity travel demand rising out of the growth in population over the next 20 years and beyond. This document describes the benefits and environmental impacts of improving the Washington rail corridor.

WSDOT's intercity passenger rail program is governed by both the State Environmental Policy Act (SEPA) and the National Environmental Policy Act (NEPA). SEPA requires that most proposed actions (policy and project) undergo a review to consider the likely environmental consequences of the action. As part of this review, a governmental agency acts as the lead agency, ensuring that the process meets state requirements. WSDOT is the lead agency under SEPA for the rail program.

Under a NEPA action, a federal agency is the designated lead agency; in this case the Federal Railroad Administration (FRA) serves as the lead agency. It is the lead agency's responsibility to ensure that the requirements and intent of NEPA are fulfilled. NEPA requires environmental consideration for all proposed actions by considering the possible impacts from and reasonable alternatives to those actions.

This Program Environmental Assessment is being prepared to determine if the impacts of implementing a corridor-wide rail service expansion plan are significant. The program-level approach provides the opportunity to mitigate or abandon environmentally unsound concepts before they are turned into projects.

What is the History of the Environmental Documentation for the PNWRC?

In 1993, under the five-year high-speed rail initiative, the Federal Railroad Administration (FRA) was charged with the responsibility of overseeing the high-speed rail program. For the WSDOT program, FRA partnered with the Federal Highway Administration (FHWA), which had staff and resources in the Pacific Northwest, giving FHWA the designation as co-lead agency. In addition, it was agreed that development of the PNWRC should follow FHWA environmental procedures. The Washington and Oregon Division of the FHWA, FRA, and WSDOT signed an MOU in October 1995 to address the roles and responsibilities for NEPA actions in the high-speed rail program.

In January 1996, FRA and FHWA issued a formal Notice of Intent to prepare an Environmental Impact Statement (EIS) for the Portland-Seattle-Vancouver, B.C. segment of the PNWRC that would be prepared in cooperation with WSDOT.[1] The purpose of the EIS was to provide background for the decision whether or not to implement high-speed passenger rail service on the corridor. It was also intended to provide background for decisions related to possible future investment in passenger rail service related facilities in the corridor, including daily levels of service and capital improvements needed to meet those levels of service.

One of the components to be included in the EIS was a corridor service plan. This plan would show how WSDOT and its partners would follow an incremental approach over a 20-year timeframe that would ultimately result in 13 daily round trips between Seattle and Portland and four daily round trips between Seattle and Vancouver, B.C. As WSDOT was working with the FRA and FHWA in 1997 and 1998 on the 20-year incremental plan and the EIS, it was determined by the federal agencies that an EIS would not be necessary since the first set of proposed projects listed in the 20-year plan had logical termini and independent utility as stand-alone projects that would improve existing service. Instead, a 20-year service plan that described incremental capital improvements to the Portland-Seattle-Vancouver, B.C. segment of the PNWRC and an Environmental Overview of the Washington segment of the PNWRC would be prepared in lieu of the NEPA EIS. [2] Further, it was determined that future environmental documentation would be project-specific and comply with SEPA and/or NEPA, depending on the existing and anticipated source of project funding. In August 2000, the Notice of Intent to prepare an EIS for the Portland-Seattle-Vancouver, B.C. segment of the PNWRC was rescinded.[3]

The first project to proceed with the new approach of project-specific environmental documentation was the Vancouver Rail Project in Southwest Washington. WSDOT, with FHWA as the federal co-lead and FRA as a cooperating agency, prepared a NEPA/SEPA EIS for the project. The project would eliminate conflicts between freight trains and passenger trains in the heavily-congested Vancouver Rail Yard. WSDOT obtained a Record of Decision for that project in 2003.

In 2001, WSDOT, FHWA, and FRA began to develop an EIS for the Kelso to Martin's Bluff Rail Project. This project would eliminate freight and passenger train conflicts near the Columbia River ports of Longview and Kalama. The environmental documentation for the Kelso to Martin's Bluff Rail Project only proceeded as far as a preliminary draft EIS due to state budget limitations and legislative direction.

WSDOT also completed environmental documentation for the Point Defiance Bypass Rail Project near Tacoma. FHWA and FRA were the federal co-leads for the project, and a FHWA NEPA Documented Categorical Exclusion was signed in 2008.

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[1] *Federal Register, Volume 61, No. 13. January 19, 1996, pp. 1431-1432.*
[2] *Pacific Northwest Rail Corridor Intercity Passenger Rail Plan for Washington State, 1997-2020 and Pacific Northwest Rail Corridor Environmental Overview 1998.*
[3] *Federal Register, Volume 65, No. 164, August 23, 2000, p. 51401.*

Other construction projects undertaken by WSDOT were relatively small in scale, used state funds only, and were issued Determinations of Non-Significance under SEPA. These projects were either crossovers or siding extensions, or a combination of both.

In early 2009, the federal government introduced the new High-Speed Intercity Passenger Rail (HSIPR) grant program. The $8 billion grant program was established to assist with financing for state development of improved intercity and high-speed passenger rail services. The 2009 HSIPR grant program has four funding tracks. Track 2 of this grant program requires that NEPA documentation be completed for proposed corridor projects in order to be eligible for federal funds. This documentation is to be in the form of a Program NEPA Environmental Assessment or EIS for the corridor improvements; an EA has been prepared for this program as the impacts do not warrant an EIS.

What are the Benefits of the Intercity Passenger Rail Program?

The Washington State Legislature issued a mandate in 1993 directing WSDOT to provide a safe, efficient, environmentally responsible alternative to increasing highway capacity through development of a regional intercity passenger rail service. The intercity passenger rail service is intended to complement and enhance air transportation systems, help accommodate future intercity travel demand, ensure state economic vitality, save energy, and protect the state's quality of life.[4] The mandate serves to guide future development on the rail corridor.

WSDOT responded to this mandate by making improvements to the BNSF main line tracks so that freight, intercity passenger, and commuter trains can share the tracks safely and with increasing degrees of operational efficiencies for all carriers using the tracks. WSDOT also purchased new train sets and worked with local jurisdictions to make improvements to train stations so that intercity travelers have safe and convenient places to board and disembark trains.

The purpose and need for intercity passenger rail service in the Pacific Northwest has grown in urgency as rail travel has become a more desirable and convenient mode of transportation compared to air and highway travel. The identified goal of WSDOT is to increase service to the ultimate levels of 13 daily round trips between Seattle and Portland and four daily round trips between Seattle and Vancouver, B.C.

It is crucial to the economy of the state of Washington and the Pacific Northwest region that development of this alternative form of effective and efficient travel continues to move forward without delay. Additionally, intercity passenger rail service is recognized by state and federal policy-makers as a means to address 21st century public policy goals. These goals include reducing the nation's dependency on foreign sources of energy, reducing greenhouse gas emissions that contribute to climate change, increasing public safety, and strengthening transportation system redundancies in the wake of natural and man-made disasters.

[4] *Revised Code of Washington 47.79.010 (1993)*

The HSIPR grant program of 2009 is intended to help states like Washington that have already established a purpose and need for intercity passenger rail service but lack sufficient funding resources to significantly implement a program. The funding will allow WSDOT to accelerate efforts to increase the level of public utility derived from expanded passenger rail.

What are the Alternatives Considered in this Program EA?

The two alternatives that are evaluated in this environmental document are the No Build Alternative and the Corridor Service Expansion Alternative. The No Build Alternative examines what will happen with the intercity passenger rail service if there are no further improvements to the corridor. The Corridor Service Expansion Alternative looks at the increased passenger rail service provided by implementing the projects contained in Service Blocks 1, 2, and 3.

What is the No Build Alternative?

If no further improvements are made to the existing corridor, the capacity of the rail line will remain the same, and intercity passenger rail service will not improve beyond the three round trips that currently operate between Seattle and Portland, the one round trip between Portland and Vancouver, B.C., and the one round trip between Seattle and Vancouver, B.C.

- Ridership growth on intercity passenger trains will be limited by the seating capacity of the existing levels of service;
- The average on-time performance of the trains will remain at 62% to 69%, and may be degraded over time by increasing freight traffic on the shared rail corridor;
- Travel times between cities will remain the same as they are today;
- Reduced use of fuel consumed by automobiles and commercial aircraft transporting intercity travelers will not be realized;
- The anticipated reductions in greenhouse gas emissions generated by intercity auto and air travel will not be realized through increased levels of daily intercity passenger rail service.
- Mobility in the PNWRC will be constrained, making the region a less attractive location for businesses, which may relocate to areas with improved intercity passenger rail systems.

What is the Corridor Service Expansion Alternative?

The Corridor Service Expansion Alternative includes projects that, when completed, will result in improvements to daily service levels, and improved on-time performance and schedule reliability.

These projects have been grouped into service blocks that will provide distinct improvements to daily service levels, on-time performance, and scheduled running times between cities. To gain maximum benefit from the incremental infrastructure improvements to the corridor, the service blocks must be constructed in sequence. This is

the service development method WSDOT has successfully followed since 1994 and intends to follow in the future. The following projects are evaluated in this Environmental Assessment:

Service Block 1 Proposed Projects

Service Block 1 projects will add one daily round trip between Seattle and Portland (for a total of five round trips), will help achieve greater schedule reliability, and will reduce the travel time between Seattle and Portland by six minutes. Projects will also improve reliability for existing train service operating between Portland and Vancouver, B.C. and Seattle and Vancouver, B.C.

- Tacoma – D to M Street Connection
  1.2 miles of new railroad track and a new railroad bridge will be constructed over Pacific Avenue in downtown Tacoma.

- Tacoma – Point Defiance Bypass
  3.5 miles of new track will be constructed, 10.5 miles of existing track will be reconstructed, and five at-grade crossings will be improved.

- Vancouver – Yard Bypass Track
  A new crew-change track and an additional connection between the east-west and north-south main lines will be provided.

- Vancouver – New Middle Lead
  A second connection between the east-west and north-south main lines will be provided.

- Vancouver – West Side Port Associated Trackage
  Nearly 36,000 feet of new track and a new roadway bridge will be constructed on port property.

- Cascades Corridor Reliability Upgrades – South
  Track quality improvements will be made between Nisqually and the Columbia River.

- Cascades Corridor Reliability Upgrades – North
  Track quality will be improved between Everett and the Canadian border.

- King Street Station – Seismic Retrofit
  The structural integrity of King Street Station will be strengthened to withstand earthquakes.

- Blaine – Swift Customs Facility Siding
  A second siding track for freight trains awaiting U.S. Customs inspections near the Canadian border will be provided.

- Everett – Storage Track
  Two new receiving/departure tracks will be constructed through Everett's Delta Yard.

- Amtrak *Cascades* – New Train Set
  One new train set will be purchased, but only if the purchase of 4 new train sets listed in Service Block 2 as "Amtrak *Cascades* – New Train Sets" is not fully funded.

Service Block 2 Proposed Projects

Service Block 2 includes all the projects listed in Service Block 1 (with the exception of the purchase of one new Amtrak *Cascades* train set as noted in Service Block 1) plus the projects listed below. It will enable WSDOT and Amtrak to add a fifth and sixth daily round trip between Seattle and Portland and will reduce the travel time between these cities by 10 minutes. The projects also improve reliability for existing train service operating between Portland and Vancouver, B.C. and Seattle and Vancouver, B.C.

- Amtrak *Cascades* – New Train Sets
  Four new train sets will be purchased.

- Amtrak *Cascades* – High Speed Locomotives
  18 new, fuel-efficient, high-speed locomotives will be purchased.

- Advanced Signal System – Positive Train Control
  A new train control system between locomotives, trackside signals, and road/rail crossings will be installed. This is a federally mandated project.

- Kelso to Martins Bluff – New Siding
  A new siding and other improvements will be constructed near the Port of Kalama.

- Kelso to Martins Bluff – Toteff Siding Extension
  A siding track will be extended and a new grade separation carrying Toteff Road over the siding, main line, and yard tracks will be constructed.

- Kelso to Martins Bluff – Kelso to Longview Junction
  A new 4.5-mile main line will be construed adjacent to the existing main line and a new grade separation will be constructed at Hazel Avenue in Kelso.

- King Street Station Track Upgrades
  New tracks will be added at King Street Station to support more daily trains; and two roadway structures near the station will be rebuilt to accommodate the new tracks.

Service Block 3 Proposed Projects

Service Block 3 includes all the projects in Service Blocks 1 and 2 (with the exception of the purchase of one new Amtrak *Cascades* train set as noted in Service Block 1) plus the projects listed below. It will enable WSDOT and Amtrak to add a fifth, sixth, seventh and eighth daily round trip between Seattle and Portland, maintain a high level of schedule reliability, and reduce travel times between Seattle and Portland by up to

18 minutes. The service block 3 projects will also improve reliability for existing train service operating between Portland and Vancouver, B.C. and Seattle and Vancouver, B.C.

- Kelso to Martins Bluff – Kalama New Main Line
  This project adds 2.9 miles of new third main line track adjacent to the existing main line near the Port of Kalama.

- Bellingham Main Line Relocation
  4,000 feet of track near Bellingham's waterfront will be relocated and a new roadway bridge over the realigned tracks will be constructed.

- Everett Curve Realignment
  The main line will be realigned, the signal system improved, and the mechanical portions of the Snohomish River Bridge upgraded.

- King Street Station Renovation
  The passenger, baggage, and adjoining offices in Seattle's King Street Station will be restored to accommodate higher volumes of rail travelers.

- Tukwila Station
  A passenger waiting shelter will be added at Sound Transit's commuter station and an Amtrak *Cascades* passenger information system will be installed at nearby Sea-Tac International Airport.

- Vancouver Port Access
  New east-west tracks will be constructed beneath the BNSF north-south main line near the Port of Vancouver.

- Tacoma Trestle Replacement
  A single track functionally-obsolete timber trestle will be replaced with a modern multiple track structure and retained earth fill.

How Will the Program Affect the Future Environment?

The Program EA describes the existing conditions for a number of areas of environmental concern and assesses the potential impacts to these areas from both the No Build and Corridor Service Expansion Alternatives. Chapter 5 contains a more detailed discussion of these potential impacts. After evaluating the expected impacts caused by the rail improvement projects listed in the Corridor Service Expansion Alternative, the conclusion is that any potential impacts can be avoided, minimized, or mitigated.

The following is an overview of potential environmental impacts that could result from the proposed alternatives.

Waterways and Hydrological Systems

No Build Alternative

Surface water, ground water and floodplains will not be affected because there will be no rail improvements constructed and no additional intercity passenger trains will operate on the railroad main line. BNSF railroad maintenance will continue to support the current rail traffic.

Corridor Service Expansion Alternative

The rail corridor crosses a number of rivers and streams, and their associated floodplains and habitats. In addition, a number of other water features are located within close proximity to the corridor. In order to expand the passenger rail service, new rail crossings would be constructed over the Coweeman River, Schoolhouse Creek, and some unnamed streams. In addition, rail improvements would be constructed directly adjacent to the Columbia River, Vancouver Lake, Burnt Bridge Creek, Cowlitz River, Kalama River, Owl Creek, China Creek, and Snohomish River. Although most types of potential project improvements will occur within the existing rail right of way, some improvements will require between 15 and 20 acres of fill placement in floodplains (including wetlands and non-wetlands) in Clark, Cowlitz, and Snohomish counties and less than 5 acres of increased impervious areas outside the existing developed rail line in Clark, Cowlitz, Lewis, Pierce, King, Snohomish, and Whatcom counties.

Physical improvements will be designed to meet standard engineering practices to avoid and minimize impacts to floodplains and hydrological connection of waterways. Engineering design and facility construction will be consistent with all regulatory requirements for protection of water resources. Further, restrictions and confinements of waterways are regulated by state and federal agencies; mitigation conditions will be determined during the project permitting process. Temporary water quality impacts during construction over and adjacent to waterways would be avoided or minimized through compliance with the Washington Department of Ecology's Stormwater Management Manual for Western Washington, and city and county grading/drainage ordinances and BMPs, as appropriate. For construction sites disturbing more than one acre, an NPDES permit would be required. In addition, a 401 Water Quality Certification would be required for projects that include filling wetlands to verify that water quality standards would not be violated. (The 401 Water Quality Certification will be issued in conjunction with the U.S. Corps of Engineers Section 404 permit for wetland fill.)

Hazardous Materials

No Build Alternative

There will be no impacts to existing hazardous waste sites if no rail improvement projects are constructed.

Corridor Service Expansion Alternative

A total of 7 Superfund sites, 401 state cleanup sites, and 781 leaking underground storage tank sites were found within a 2,000 foot buffer along the rail corridor. Impacts of the

Corridor Service Expansion Alternative on the environment and human health are expected to be minimal. When project-level analysis is begun, procedures to further investigate known or potentially contaminated sites that may be disturbed will be conducted in order to identify and implement standard mitigation measures to ensure construction does not cause, contribute to or spread contamination and expose the public to hazardous materials. With respect to hazardous materials, construction impacts are typically positive to the environment when excavation removes contamination. However, project-specific investigations will determine if hazardous materials will be impacted by future projects.

Hazardous materials investigations will be performed to identify contaminated sites and the potential type and extent of contamination as individual improvements are designed. Mitigation will be required to properly manage pre-existing contaminated soil or ground water so that it does not spread, and so that clean water does not come into contact with contaminated stockpiled soil. The plans put in place to properly manage the potential contact with hazardous materials will result in minimized impacts for the improvements due to hazardous materials. During construction, Spill Prevention, Control and Countermeasures (SPCC) Plans will also be required. Preventing a spill is the primary goal; however, the contractor is expected to be prepared to minimize the impacts of a spill through immediate and appropriate response actions. Requiring an SPCC for all projects will result in minimized risk of contamination due to a hazardous materials spill during construction.

Biological Resources / Ecology

No Build Alternative

Wetlands and aquatic resources will not be affected because there will be no rail improvements constructed and no additional intercity passenger trains will operate on the railroad main line. BNSF railroad maintenance will continue to support the current rail traffic.

Corridor Service Expansion Alternative

The rail corridor crosses a number of rivers and streams as well as sensitive wetland and plant communities, and a number of other water features and species occurrences are located within close proximity to the corridor. In the case of fill or cut areas, especially near streams or wetlands, moderate impacts to fisheries, vegetation, and wildlife could be expected. In these areas, critical, suitable or available habitat for species could be lost or modified in ways that limits usability by species. Most types of potential project improvements will occur within the existing rail right of way. However, some of these habitats could be impacted by improvements in Cowlitz and Snohomish counties. It is anticipated that the improvement projects could create between 8 and 12 acres of wetland fill in Cowlitz County and between 1 and 2 acres of wetland fill in Snohomish County. It is anticipated that the improvement projects could affect between 18 and 25 acres of vegetation and wildlife sites in Clark, Cowlitz, Lewis, Pierce, King, Snohomish, and Whatcom counties. It is anticipated that the improvement projects could affect less than

1 river mile of fish designated critical habitat within Schoolhouse Creek and the Coweeman River in Cowlitz County.

Mitigation measures would follow a hierarchy of avoidance, minimization, and compensation for impacts. Sensitive areas will be avoided as much as possible. Engineering designs are developed to minimize impacts to aquatic resources. Restoration of degraded wetlands, enhancement of existing wetlands or creation of new wetland habitat is often used to replace impacted wetlands. Enhancement of existing wetlands within the immediate project area may involve eradicating invasive plant species and planting native vegetation. Projects will be assessed individually and regulatory compensatory mitigation will be completed.

Air Quality

No Build Alternative

No improvements will be made to the rail corridor or the existing intercity passenger rail service. Therefore, the air quality along the corridor will not be impacted.

Corridor Service Expansion Alternative

The air quality analysis that was performed for rail operations indicates that the level for each criteria pollutant was not exceeded. As such, this analysis confirms that the rail program's increased operations conform to the purpose and intent of the State Implementation Plans and Maintenance Plans for achieving the National Ambient Air Quality Standards.

The major air quality impacts during construction are expected to be dust, odors, other particulate matter, and hydrocarbons. Construction impacts in the project area are expected to be temporary and intermittent only, and they will be diluted at increasing distances from the project. However, project-specific investigations will determine if air quality will be impacted by future projects.

Contract specifications will require those performing the construction work to comply with federal, state, and local air quality regulations to cover temporary construction conditions such as dust and smoke emissions. Since construction will be a temporary condition only, it is anticipated that no other measures will be necessary to control emissions.

Soils and Geology

No Build Alternative

No improvements will be made to the rail corridor or the existing intercity passenger rail service. Therefore, soils and geology along the corridor will not be impacted.

Corridor Service Expansion Alternative

The construction of new track in areas adjacent to or at the foot of unstable slopes could cause potential impacts. None of the proposed improvements are located in the general locations of unstable slopes so the potential of impacts to unstable slopes is small.

Liquefaction (ground failure due to earthquakes) is possible in portions of the corridor. The potential for sections of track to be dislocated is also possible during an earthquake. Faster and more frequent trains will increase the frequency of vibration, increasing the risk of liquefaction and track damage in any areas of liquefaction-prone soils. Erosion impacts during construction in Clark, Cowlitz, Lewis, Pierce, King, Snohomish, and Whatcom counties are primarily related to the increased potential for erosion resulting from exposure of excavated soils to water. If not controlled, such erosion could result in the deposition of silt and/or sediment in wetlands, streams, or any other adjacent surface water. It is also likely that soils could be tracked onto nearby paved roads by construction vehicles. Wind action over exposed soils could generate dust.

Where steep slopes are unavoidable in cut and fill sections, attempts will be made to minimize the disruption of soils and to apply current soil stabilization techniques. When necessary, retaining walls will also be utilized. As a last resort, steep slopes will be cut back to a reasonable angle so that future landslide risk is minimized. Proper subgrade preparation and embankment compaction will reduce the risk of liquefaction and track damage in any areas of liquefaction-prone soils. Potential erosion during project construction will be mitigated by the use of best management practices specified in the erosion and sedimentation control plans for the project, as required by state and local jurisdictions. Re-establishment of vegetation in non-paved cleared areas as soon as possible and application of appropriate ground cover will also minimize the potential for erosion hazards.

Land Use

No Build Alternative

No improvements will be made to the rail corridor or the existing intercity passenger rail service. Therefore, land use along the corridor will not be impacted.

Corridor Service Expansion Alternative

Some impacts may result from the addition of rail facilities in Clark, Cowlitz, and Whatcom counties. All efforts will be made to keep the project limits within the railroad's current right of way. However, it will not be possible to avoid work off the existing rail right of way. It is likely that between 10 and 15 acres of land will be converted from its present use to rail-related use in these three counties, which will cause some minor land use impacts. State, regional, and county plans throughout the corridor have incorporated the Amtrak passenger rail service (and its associated facilities) into their comprehensive plans. Many other jurisdictions have also recognized the rail service in their plans, especially in the cities of Vancouver, Kelso, Lacey, Tacoma, Tukwila, Seattle, Edmonds, Everett, Mt. Vernon, and Bellingham, which all have stations. Overall, the intercity passenger program is compatible with existing comprehensive plans and policies.

No long-term impacts to land use are anticipated to result from project improvements to allow for faster and more frequent intercity passenger trains; thus, no mitigation is proposed.

Farmlands

No Build Alternative

No improvements will be made to the rail corridor or the existing intercity passenger rail service. Therefore, farmlands along the corridor will not be impacted by increased intercity passenger train frequencies or speeds.

Corridor Service Expansion Alternative

Impacts to farmlands will be minor, because most of the new tracks will be constructed inside the existing railroad right of way. Between 3 and 5 acres of farmland used as pastures for small resident farms in suburban Kelso in Cowlitz County may be displaced by related roadway improvements. Some farmland could be converted to wetlands as mitigation for wetland impacts adjacent to the existing right of way in Cowlitz and Snohomish counties. The amount and location of the farmland converted to wetland mitigation will vary depending on consultation with the permitting agencies, but would likely not exceed a total of 15 acres in Cowlitz and Snohomish counties.

No long-term impacts to farmlands are anticipated to result from faster and more frequent intercity trains and its associated project improvements; thus, no mitigation is proposed.

Parks and Cultural Resources

No Build Alternative

Parks and cultural resources along the corridor will not be impacted because no improvements will be made to the rail corridor.

Corridor Service Expansion Alternative

Throughout the corridor, the rail line is located near a number of parks and cultural facilities. As such, the addition of rail improvements such as new sidings, bypasses, or additional main lines could potentially impact these resources. Such impacts could result in the disruption of a cultural resource or a change in access to a park or recreation facility. None of the improvements proposed in the Corridor Service Expansion Alternative appear to be near enough to existing parks or known cultural resources to result in impacts from the improvements. Project-specific investigations will determine the effects of each project on parks, historic structures and archaeological sites. Also, a Section 106 consultation for cultural resources will be initiated with affected Native American Tribes, the State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation, and local governments. WSDOT will work with the lead federal agency to ensure compliance with Section 106.

Future thorough project-specific investigations will determine if parks and cultural resources would be impacted by construction of the improvements or by additional train operations.

Social and Economic

Impacts analysis for this section involves a qualitative discussion of potential impacts to community cohesion and safety. It also discusses potential relocation and environmental justice issues.

No Build Alternative

Community cohesion and safety, relocation, and environmental justice along the corridor will not be affected because no improvements will be made to the rail corridor.

Corridor Service Expansion Alternative

Potential effects of faster and more frequent passenger trains on community cohesion could result from increased train traffic along the line and from construction of associated facilities. Construction of bypass tracks and additional main lines could potentially disrupt neighborhoods and businesses by changing access. Increased rail service is not expected to require the relocation of any homes or businesses. It is not anticipated that these trains will result in extremely high levels of noise or vibration that will make homes or businesses adjacent to the railroad tracks unusable. In addition, increased rail service will not cause any disproportionately high and adverse impacts on populations protected by the Environmental Justice Executive Order. The rail program will actually provide mobility benefits to minority populations. However, project-specific investigations will determine if social and economic factors will be impacted by future projects.

If additional right of way is needed, acquisition will begin once plans are approved and the project is funded. Monetary compensation will be provided to the current title holder for the necessary land required.

To address safety concerns, WSDOT is working with local communities up and down the corridor to improve, close and consolidate grade crossings and educate the public about the dangers of railroad trespassing. In addition, the volunteer group, Operation Lifesaver, provides extensive community education and outreach about the dangers of trespassing on railroad property.

Visual Quality

No Build Alternative

Visual quality will remain the same along the corridor because no improvements will be made to the rail corridor.

Corridor Service Expansion Alternative

Most railroad improvements will occur within the existing right of way, where track and supporting structures already exist. Additional railroad facilities will comprise an incremental change that will be unnoticeable in most locations. Overall there is not expected to be any change in visible quality from the project.

Following construction, the visual quality is anticipated to return to near pre-existing conditions for most improvement sites. Where new rail bridge structures will be added, specifically at the Coweeman River crossing in Kelso, the new bridge will be placed alongside the existing structure, thus minimizing the visual impact. At locations where there will be new roadway bridges over the tracks, the design of the new bridges will be coordinated with local government and the general public to minimize the visual impact of the new structures. At locations where new retaining walls will be added, the visible surface of the retaining walls could be designed to minimize the visual impact by modifying the surface color and texture to resemble natural rock surfaces or by adding a vegetation buffer to shield it from view. Mitigation also includes replacing removed vegetation with native vegetation and locating vegetative buffers beneficial to the visual quality along portions of the improvement sites where cuts or fills have occurred within sight of residential viewers.

Energy

No Build Alternative

Energy use will remain the same along the corridor because no improvements will be made.

Corridor Service Expansion Alternative

A primary goal of the rail program is to reduce the existing bottlenecks in the rail system. This will result in an overall decrease in travel time. Additional fuel efficiency will be realized with the use of the new models of locomotives being built for this route in the future, which are assumed to be at least 10 percent more fuel efficient than the existing locomotives.

Current total daily consumption of fuel for Amtrak *Cascades* rail passenger service is approximately 3,200 gallons. With the planned rail improvements for Amtrak *Cascades* service expansion and using new locomotives, fuel use is projected to increase to 4,212 gallons per day, for a net increase of approximately 1,000 gallons per day. Local supplies of diesel fuel will not be impacted by these improvements.

Noise

No Build Alternative

Noise will remain the same along the corridor because no improvements will be made.

Corridor Service Expansion Alternative

General noise and vibration analyses were conducted, and it was discovered that noise and vibration levels are already high throughout the program corridor due to existing freight operations. The proposed rail improvements will not noticeably add to the existing levels of noise or vibration in these areas, resulting in a finding of no noise or vibration impacts for all of the improvement areas studied. For this same reason, one can logically conclude that the increase in the number and speed of passenger trains will not result in impacts in any of the areas between improvements. However, project-specific

investigations will determine if noise and vibration levels will be impacted by future projects.

The need for mitigation is based on the magnitude of impact and consideration of factors specifically related to the proposed improvement and affected land uses. Every reasonable effort will be made to reduce predicted noise and vibration to levels deemed acceptable for impacted sensitive land uses. Any decision to include mitigation will be made after site-specific analysis.

What are the Next Steps in the Environmental Process?

As funding becomes available, a project-level analysis and NEPA environmental documentation will be completed for each of the corridor improvements that have been identified as necessary to meet the goals of an intercity passenger rail service of eight round trips between Seattle and Portland, increased schedule reliability between Portland and Vancouver, B.C., and reduced travel times between cities.

Chapter One Introduction

The Washington State Department of Transportation (WSDOT) has been developing intercity passenger rail service in the Pacific Northwest for over 16 years. Service development has been guided by a series of plans and actions based on detailed rail corridor modeling performed in conjunction with the BNSF Railway (BNSF).

The Washington segment of the PNWRC

WSDOT has developed intercity passenger rail service using an incremental approach so that service development occurs in a strategic and controlled manner that provides increasing levels of public utility.

The passenger rail service that operates in Washington today is known and branded as Amtrak *Cascades.* The service operates on the federally-designated Pacific Northwest Rail Corridor (PNWRC) that spans 466 miles from Eugene, Oregon, to Vancouver, B.C. WSDOT and its partners have invested over $1 billion for new and upgraded tracks, signal improvements, stations, and road/rail grade separations. This investment has led to greater rail line capacity, freight, intercity, and commuter rail operating efficiencies, improved access to and from Washington's ports, and increased public safety.

How did the intercity passenger rail service develop?

Incremental service improvements to intercity passenger rail service along the Portland-Seattle-Vancouver, B.C. segment of the PNWRC have occurred in stages. Since its inception in 1971, Amtrak has operated a single daily round trip between Seattle and Portland. In 1994, WSDOT began providing operating funds to Amtrak for a second daily round trip between Seattle and Portland. After completing a series of construction projects that created more main line capacity, WSDOT and Amtrak re-introduced intercity passenger rail service between Seattle and Vancouver, B.C. in 1995 and offered one daily round trip between these cities.

Public crossing upgrades, new crossovers, and the use of passive-tilt train sets led to a third daily round trip and a 25-minute one-way travel time reduction between Seattle and Portland in 1998. Siding extensions funded by WSDOT and Amtrak led to a new daily round trip between Seattle and Bellingham in 1999. After completing track work near Tacoma and Mount Vernon, the train operating between Seattle and Bellingham began

operating between Portland and Bellingham in 2006. Most recently, the construction of a new siding track in British Columbia, Canada enabled the Portland- Bellingham train to extend its route to include Vancouver B.C. in August 2009.

What is the history of the environmental documentation for the corridor?

Under Washington's State Environmental Policy Act (SEPA), any agency that proposes to take an official action is required to perform a series of environmental analyses[5] to ensure minimal impacts will result from that action. At the federal level, pursuant to the National Environmental Policy Act (NEPA), a similar environmental analysis must be performed if the proposed action is being implemented by a federal agency, requires a federal permit, or has federal funding.

Rail corridor improvements to the Washington Segment of the Pacific Northwest Rail Corridor must follow federal and state environmental regulations as dictated by SEPA and NEPA, because the improvements are being initiated by both a state (WSDOT) and a federal (FRA) agency.

In 1993, under the five-year high-speed rail initiative, the Federal Railroad Administration (FRA) was charged with the responsibility of overseeing the high-speed rail program. For the WSDOT program, FRA partnered with the Federal Highway Administration (FHWA), which had staff and resources in the Pacific Northwest, giving FHWA the designation as co-lead agency. In addition, it was agreed that development of the PNWRC should follow FHWA environmental procedures. The Washington and Oregon Division of the FHWA, FRA, and WSDOT signed an MOU in October 1995 to address the roles and responsibilities for NEPA actions in the high-speed rail program.

In January 1996, FRA and FHWA issued a formal Notice of Intent to prepare an Environmental Impact Statement (EIS) for the Portland-Seattle-Vancouver, B.C. segment of the PNWRC that would be prepared in cooperation with WSDOT.[6] The purpose of the EIS was to provide background for the decision whether or not to implement high-speed passenger rail service on the corridor. It was also intended to provide background for decisions related to possible future investment in passenger rail service related facilities in the corridor, including daily levels of service and capital improvements needed to meet those levels of service.

One of the components to be included in the EIS was a corridor service plan. This plan would show how WSDOT and its partners would follow an incremental approach over a 20-year timeframe that would ultimately result in 13 daily round trips between Seattle and Portland and four daily round trips between Seattle and Vancouver, B.C. As WSDOT was working with the FRA and FHWA in 1997 and 1998 on the 20-year incremental plan and the EIS, it was determined by the federal agencies that an EIS would not be necessary since the first set of proposed projects listed in the 20-year plan

[5] *Unless the action is exempt under SEPA.*
[6] *Federal Register, Volume 61, No. 13. January 19, 1996, pp. 1431-1432.*

had logical termini and independent utility as stand-alone projects that would improve existing service. Instead, a 20-year service plan that described incremental capital improvements to the Portland-Seattle-Vancouver, B.C. segment of the PNWRC and an Environmental Overview of the Washington segment of the PNWRC would be prepared in lieu of the NEPA EIS. [7] Further, it was determined that future environmental documentation would be project-specific and comply with SEPA and/or NEPA, depending on the existing and anticipated source of project funding. In August 2000, the Notice of Intent to prepare an EIS for the Portland-Seattle-Vancouver, B.C. segment of the PNWRC was rescinded.[8]

The first project to proceed with the new approach of project-specific environmental documentation was the Vancouver Rail Project in Southwest Washington. WSDOT, with FHWA as the federal co-lead and FRA as a cooperating agency, prepared a NEPA/SEPA EIS for the project. The project would eliminate conflicts between freight trains and passenger trains in the heavily-congested Vancouver Rail Yard. WSDOT obtained a Record of Decision for that project in 2003.

In 2001, WSDOT, FHWA, and FRA began to develop an EIS for the Kelso to Martin's Bluff Rail Project. This project would eliminate freight and passenger train conflicts near the Columbia River ports of Longview and Kalama. The environmental documentation for the Kelso to Martin's Bluff Rail Project only proceeded as far as a preliminary draft EIS due to state budget limitations and legislative direction.

WSDOT also completed environmental documentation for the Point Defiance Bypass Rail Project near Tacoma. FHWA and FRA were the federal co-leads for the project, and a FHWA NEPA Documented Categorical Exclusion was signed in 2008.

Other construction projects undertaken by WSDOT were relatively small in scale, used state funds only, and were issued Determinations of Non-Significance under SEPA. These projects were either crossovers or siding extensions, or a combination of both.

In early 2009, the federal government introduced the new High-Speed Intercity Passenger Rail (HSIPR) grant program. The $8 billion grant program was established to assist with financing for state development of improved intercity and high-speed passenger rail services. The 2009 HSIPR grant program has four funding tracks. Track 2 of this grant program requires that NEPA documentation be completed for proposed corridor projects in order to be eligible for federal funds. This documentation is to be in the form of a Program NEPA Environmental Assessment or EIS for the corridor improvements.

The requirement for a Program NEPA document in order to secure funding is a different approach than the way WSDOT has been completing its projects to date. In conjunction with the FRA, WSDOT updated the 1998 Environmental Overview and used it as the basis for the development of a programmatic NEPA Environmental Assessment for the corridor projects to fulfill the requirements of the Track 2 HSIPR grant program.

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[7] *Pacific Northwest Rail Corridor Intercity Passenger Rail Plan for Washington State, 1997-2020 and Pacific Northwest Rail Corridor Environmental Overview 1998.*

[8] *Federal Register, Volume 65, No. 164., August 23, 2000, p. 51401.*

As funding becomes available, project-level analysis and documentation will be completed for each of the corridor improvements that have been identified as necessary to meet the goals of an intercity passenger service of eight round trips between Seattle and Portland, increased schedule reliability between Portland and Vancouver, B.C., and reduced travel times between cities.

What projects are proposed for the continued growth of intercity passenger rail service?

WSDOT, in conjunction with BNSF, Amtrak, and other providers, have identified a number of railroad construction projects that, once completed, will allow WSDOT to increase the number of daily intercity passenger trains operating between Seattle and Portland, increase schedule reliability for trains operating between Portland and Vancouver, B.C., and reduce travel times between cities.

The proposed projects follow WSDOT's incremental service development philosophy. The projects have been grouped to provide distinct improvements in daily service levels, on-time performance, and scheduled running times between cities. To gain maximum benefit from the incremental infrastructure improvements to the corridor, the project groups must be constructed in sequence. This is the service development method WSDOT has successfully followed since 1994 and intends to follow in the future.

Service Block 1 Proposed Projects

Service Block 1 projects will add one daily round trip between Seattle and Portland (for a total of five), will help achieve greater schedule reliability, and will reduce the travel time between Seattle and Portland by six minutes.

- Tacoma – D to M Street Connection
  1.2 miles of new railroad track and a new railroad bridge will be constructed over Pacific Avenue in downtown Tacoma.

- Tacoma – Point Defiance Bypass
  3.5 miles of new track will be constructed, 10.5 miles of existing track will be reconstructed, and five at-grade crossings will be improved.

- Vancouver – Yard Bypass Track
  A new crew-change track and an additional connection between the east-west and north-south main lines will be provided.

- Vancouver – New Middle Lead
  A second connection between the east-west and north-south main lines will be provided.

- Vancouver – West Side Port Associated Trackage
  Nearly 36,000 feet of new track and a new roadway bridge will be constructed on port property.

- Cascades Corridor Reliability Upgrades – South
  Track quality improvements will be made between Nisqually and the Columbia River.

- Cascades Corridor Reliability Upgrades – North
  Track quality will be improved between Everett and the Canadian border.

- King Street Station – Seismic Retrofit
  The structural integrity of King Street Station will be strengthened to withstand earthquakes.

- Blaine – Swift Customs facility Siding
  A second siding track for freight trains awaiting U.S. Customs inspections near the Canadian border will be provided.

- Everett – Storage Track
  Two new receiving/departure tracks will be constructed through Everett's Delta Yard.

- Amtrak *Cascades* – New Train Set
  One new train set will be purchased, but only if the purchase of 4 new train sets listed in Service Block 2 as "Amtrak *Cascades* – New Train Sets" is not fully funded.

Service Block 2 Proposed Projects

Service Block 2 projects will add a sixth daily round trip between Seattle and Portland and will reduce the travel time between these cities by 4 minutes.

- Amtrak *Cascades* – New Train Sets
  Four new train sets will be purchased.

- Amtrak *Cascades* – High Speed Locomotives
  18 new, fuel-efficient, high-speed locomotives will be purchased.

- Kelso to Martins Bluff – New Siding
  A new siding and other improvements will be constructed near the Port of Kalama.

- Kelso to Martins Bluff – Toteff Siding Extension
  A siding track will be extended and a new grade separation carrying Toteff Road over the siding, main line, and yard tracks will be constructed.

- Kelso to Martins Bluff – Kelso to Longview Junction
  A new 4.5-mile main line will be construed adjacent to the existing main line and a new grade separation will be constructed at Hazel Avenue in Kelso.

- King Street Station Track Upgrades
  New tracks will be added at King Street Station to support more daily trains; and two roadway structures near the station will be rebuilt to accommodate the new tracks.

- Advanced Signal System – Positive Train Control
  A new train control system between locomotives, trackside signals, and road/rail crossings will be installed. This is a federally mandated project.

Service Block 3 Proposed Projects

Service Block 3 projects will enable WSDOT and Amtrak to add a seventh and eight daily round trip between Seattle and Portland, maintain a high level of schedule reliability, and reduce travel times between Seattle and Portland by an average of 8 minutes.

- Kelso to Martins Bluff – Kalama New Main Line
  This project adds 2.9 miles of new third main line track adjacent to the existing main line near the Port of Kalama.

- Bellingham Main Line Relocation
  4,000 feet of track near Bellingham's waterfront will be relocated and a new roadway bridge over the realigned tracks will be constructed.

- Everett Curve Realignment
  The main line will be realigned, the signal system improved, and the mechanical portions of the Snohomish River Bridge upgraded.

- King Street Station Renovation
  The passenger, baggage, and adjoining offices in Seattle's King Street Station will be restored to accommodate higher volumes of rail travelers.

- Tukwila Station
  A passenger waiting shelter will be added at Sound Transit's commuter station and an Amtrak *Cascades* passenger information system will be installed at nearby Sea-Tac International Airport.

- Vancouver Port Access
  New east-west tracks will be constructed beneath the BNSF north-south main line near the Port of Vancouver.

- Tacoma Trestle Replacement
  A single track functionally-obsolete timber trestle will be replaced with a modern multiple track structure and retained earth fill.

Chapter Two Purpose and Need

What is the purpose of the intercity passenger rail service program?

The purpose of the program is to improve intercity passenger rail service by reducing travel times and achieving greater schedule reliability in order to accommodate growing intercity travel demand along the Washington State segment of the Pacific Northwest Rail Corridor

Why is the intercity passenger rail service program needed?

In 1993, the Washington State Legislature determined that major intercity transportation corridors in the State were becoming increasingly congested. Population was projected to increase 40 percent and employment almost 50 percent by 2013. This resulted in intercity travel demand forecast to increase by seventy-five percent. There was a need to accommodate this intercity travel demand with a mode of transportation that would ensure the State's economic vitality and protect the quality of life in the state, while also improving safety, increasing energy efficiency, and reducing environmental impacts

To address these needs, the Washington State Legislature authorized the intercity rail passenger program in 1993 and directed WSDOT to provide a safe, efficient, environmentally responsible alternative to increasing highway capacity. The intercity passenger rail program is intended to complement and enhance air transportation systems, help accommodate future intercity travel demand, ensure state economic vitality, save energy, and protect the quality of life in the state.[9]

WSDOT has responded to this mandate by making improvements to the BNSF main line tracks so that freight, intercity passenger, and commuter trains can share the tracks safely and with increasing degrees of operational efficiencies for all carriers using the tracks. WSDOT has also purchased new train sets and worked with local jurisdictions to make improvements to train stations so that intercity travelers have safe and convenient places to board and disembark trains. These actions, taken over the past 16 years, have resulted in a service that carries over 600,000 intercity travelers between Portland, Seattle, and Vancouver, B.C. each year.

The need for intercity passenger rail service in the Pacific Northwest has grown in urgency during the past 16 years as rail travel has become a more desirable and convenient mode of transportation compared to air and highway travel. Air travel, with heightened airport security, has become more challenging on the corridor since September 11, 2001. Highway traffic congestion on Interstate 5, which parallels the entire PNWRC, has become a regular occurrence and is no longer restricted to peak times around major cities. People are searching for travel options for both business and leisure

[9] *Revised Code of Washington 47.79.010 (1993)*

travel that is affordable and reliable. It is crucial to the economy of the state of Washington and the Pacific Northwest region that development of an alternative form of effective and efficient travel continues to move forward without delay.

Additionally, intercity passenger rail service is recognized by state and federal policy-makers as a means to address 21st century public policy goals. These goals include reducing the nations' dependency on foreign sources of energy, reducing greenhouse gas emissions that contribute to climate change, increasing public safety, and strengthening transportation system redundancies in the wake of natural and man-made disasters.

The HSIPR grant program of 2009 is intended to help states like Washington that have already established a purpose and need for intercity passenger rail service, but lack sufficient funding resources to significantly implement a program. The funding will allow WSDOT to accelerate efforts to increase the level of public utility derived from expanded passenger rail.

Chapter Three Proposed Action and Alternative

What alternatives are evaluated in this Environmental Assessment?

The two alternatives that are evaluated in this environmental document are the No Build Alternative and the Corridor Service Expansion Alternative. The No Build Alternative examines what will happen with the intercity passenger rail service if there are no further improvements to the corridor. The Corridor Service Expansion Alternative looks at the increased passenger rail service provided by implementing the projects contained in Service Blocks 1, 2 and 3.

No Build Alternative

The Pacific Northwest Rail Corridor (PNWRC) was designated as a future high-speed rail corridor by the federal government in 1992. This 466-mile rail line from Eugene, OR to Vancouver, B.C. roughly parallels Interstate 5 and Provincial Highway 99 and connects the commercial business districts of the region's largest population centers. The portion of the PNWRC that lies within Washington State is 297 miles long, and is located on the BNSF north-south main line. No alternative rail corridor exists in the region.

If no further improvements are made to the existing corridor, the capacity of the rail line will remain the same, and intercity passenger rail service will not improve beyond the three round trips that currently operate between Seattle and Portland, the one round trip between Portland and Vancouver, B.C., and the one round trip between Seattle and Vancouver, B.C.

- Ridership growth on intercity passenger trains will be limited by the seating capacity of the existing levels of service;
- The average on-time performance of the trains will remain at 62% to 69%, and may be degraded over time by increasing freight traffic on the shared rail corridor;
- Travel times between cities will remain the same as they are today;
- Reduced use of fuel consumed by automobiles and commercial aircraft transporting intercity travelers will not be realized;
- The anticipated reductions in greenhouse gas emissions generated by intercity auto and air travel will not be realized through increased levels of daily intercity passenger rail service.
- Mobility in the PNWRC will be constrained, making the region a less attractive location for businesses, which may relocate to areas with improved intercity passenger rail systems.

Corridor Service Expansion Alternative

The Corridor Service Expansion Alternative includes projects that, when completed, will result in improvements to daily service levels, and improved on-time performance and schedule reliability.

These projects have been grouped into service blocks that will provide distinct improvements to daily service levels, on-time performance, and scheduled running times between cities. To gain maximum benefit from the incremental infrastructure improvements to the corridor, the service blocks must be constructed in sequence. This is the service development method WSDOT has successfully followed since 1994 and intends to follow in the future. The following projects are evaluated in this Environmental Assessment:

Service Block 1 Proposed Projects

Service Block 1 projects will add one daily round trip between Seattle and Portland (for a total of five round trips), will help achieve greater schedule reliability, and will reduce the travel time between Seattle and Portland by six minutes. Projects will also improve reliability for existing train service operating between Portland and Vancouver, B.C. and Seattle and Vancouver, B.C.

- Tacoma – D to M Street Connection
  1.2 miles of new railroad track and a new railroad bridge will be constructed over Pacific Avenue in downtown Tacoma.

- Tacoma – Point Defiance Bypass
  3.5 miles of new track will be constructed, 10.5 miles of existing track will be reconstructed, and five at-grade crossings will be improved.

- Vancouver – Yard Bypass Track
  A new crew-change track and an additional connection between the east-west and north-south main lines will be provided.

- Vancouver –New Middle Lead
  A second connection between the east-west and north-south main lines will be provided.

- Vancouver – West Side Port Associated Trackage
  Nearly 36,000 feet of new track and a new roadway bridge will be constructed on port property.

- Cascades Corridor Reliability Upgrades – South
  Track quality improvements will be made between Nisqually and the Columbia River.

- Cascades Corridor Reliability Upgrades – North
  Track quality will be improved between Everett and the Canadian border.

- King Street Station – Seismic Retrofit
  The structural integrity of King Street Station will be strengthened to withstand earthquakes.

- Blaine – Swift Customs Facility Siding
  A second siding track for freight trains awaiting U.S. Customs inspections near the Canadian border will be provided.

- Everett – Storage Track
  Two new receiving/departure tracks will be constructed through Everett's Delta Yard.

- Amtrak *Cascades* – New Train Set
  One new train set will be purchased, but only if the purchase of 4 new train sets listed in Service Block 2 as "Amtrak *Cascades* – New Train Sets" is not fully funded.

Service Block 2 Proposed Projects

Service Block 2 includes all the projects listed in Service Block 1 (with the exception of the purchase of one new Amtrak *Cascades* train set as noted in Service Block 1) plus the projects listed below. It will enable WSDOT and Amtrak to add a fifth and sixth daily round trip between Seattle and Portland and will reduce the travel time between these cities by 10 minutes. The projects also improve reliability for existing train service operating between Portland and Vancouver, B.C. and Seattle and Vancouver, B.C.

- Amtrak *Cascades* – New Train Sets
  Four new train sets will be purchased.

- Amtrak *Cascades* – High Speed Locomotives
  18 new, fuel-efficient, high-speed locomotives will be purchased.

- Advanced Signal System – Positive Train Control
  A new train control system between locomotives, trackside signals, and road/rail crossings will be installed. This is a federally mandated project.

- Kelso to Martins Bluff – New Siding
  A new siding and other improvements will be constructed near the Port of Kalama.

- Kelso to Martins Bluff – Toteff Siding Extension
  A siding track will be extended and a new grade separation carrying Toteff Road over the siding, main line, and yard tracks will be constructed.

- Kelso to Martins Bluff – Kelso to Longview Junction
  A new 4.5-mile main line will be construed adjacent to the existing main line and a new grade separation will be constructed at Hazel Avenue in Kelso.

- King Street Station Track Upgrades
  New tracks will be added at King Street Station to support more daily trains; and two roadway structures near the station will be rebuilt to accommodate the new tracks.

Service Block 3 Proposed Projects

Service Block 3 includes all the projects in Service Blocks 1 and 2 (with the exception of the purchase of one new Amtrak *Cascades* train set as noted in Service Block 1) plus the projects listed below. It will enable WSDOT and Amtrak to add a fifth, sixth, seventh and eighth daily round trip between Seattle and Portland, maintain a high level of schedule reliability, and reduce travel times between Seattle and Portland by up to 18 minutes. The service block 3 projects will also improve reliability for existing train service operating between Portland and Vancouver, B.C. and Seattle and Vancouver, B.C.

- Kelso to Martins Bluff – Kalama New Main Line
  This project adds 2.9 miles of new third main line track adjacent to the existing main line near the Port of Kalama.

- Bellingham Main Line Relocation
  4,000 feet of track near Bellingham's waterfront will be relocated and a new roadway bridge over the realigned tracks will be constructed.

- Everett Curve Realignment
  The main line will be realigned, the signal system improved, and the mechanical portions of the Snohomish River Bridge upgraded.

- King Street Station Renovation
  The passenger, baggage, and adjoining offices in Seattle's King Street Station will be restored to accommodate higher volumes of rail travelers.

- Tukwila Station
  A passenger waiting shelter will be added at Sound Transit's commuter station and an Amtrak *Cascades* passenger information system will be installed at nearby Sea-Tac International Airport.

- Vancouver Port Access
  New east-west tracks will be constructed beneath the BNSF north-south main line near the Port of Vancouver.

- Tacoma Trestle Replacement
  A single track functionally-obsolete timber trestle will be replaced with a modern multiple track structure and retained earth fill.

Chapter Four Existing Conditions

The feasibility of a plan 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 impact the surrounding natural environment.

The purpose of this chapter is to provide an overview of the existing environmental features along the corridor. Appendix A of this document has detailed Geographic Information System (GIS) mapping of these features. A list of the GIS database sources used for the mapping is also included in Appendix A. Other sources used during the preparation of this document are listed in Chapter Seven, References.

Affected resources were identified using a variety of sources, maps and reports. Due to the scale of the maps used and the width of the area examined (1,000 feet or 2,000 feet on either side of the centerline of the BNSF main line), some resources that may not be impacted in a project have been included in this document.

The buffer distance will typically extend beyond the actual project impact area. The general impacts from the projects to reach the eight-round trip service level are described in Chapter Five, Impacts and Mitigation. When site-specific analysis is completed for each project, the actual impacts of the project will be known and can be mitigated if necessary.

Waterways and Hydrological Systems

Research for this section was completed using various published data sources (see Chapter Seven, References).[10] Floodplains were identified from the county and city comprehensive plans and Federal Emergency Management Agency (FEMA) floodway maps (FEMA). Supporting data was gathered from a review of the Soil Survey maps for the respective counties. Geographic information database sources included: FEMA, WSDOT, and the Washington Department of Ecology.

Waterways, ground water resources and floodplain information were inventoried within 1,000 feet of the corridor. This section presents an overview of the resources within this specified geographic area.

Accompanying mapping for this environmental resource can be found in Appendix A (Group A).

[10] *Although no fieldwork was conducted in 2009 specifically in support of this Program Environmental Assessment, the corridor environmental setting has been previous documented as a result of corridor projects completed by WSDOT over the past sixteen years.*

Surface Water

Washington State contains numerous lakes, rivers, and coastal waterways. Preservation and maintenance of these waters is critical to the natural beauty of our communities and the survival of animal species and fisheries that depend upon these waterways for habitat, water, and food. A list of the hydrologic systems located within 1,000 feet of the rail corridor is shown in Table 1.

Table 1. Hydrologic systems located within 1,000 feet of the rail corridor.

County	River Crossings (Named Streams listed)	Miles of Marine Shoreline within 500 ft	Water Features	Associated 100 Year Flood Zones	Associated Sole Source Aquifers
Clark	(10 Crossings) Columbia River Burnt Bridge Creek Cold Canyon Creek Salmon Creek Whipple Creek Flume Creek Gee Creek Allen Creek Lewis River	0.0	(Approx. 59 unnamed features) Campbell Lake Cary Lake Columbia River Green Lake Lake River Lancaster Lake Lewis River Salmon Creek Vancouver Lake Allen Creek Burnt Bridge Creek Cold Canyon Flume Creek Gee Creek Whipple Creek	Columbia River Lewis River	Troutdale Aquifer System
Cowlitz	(27 Crossings) Lewis River Wallace Slough Burris Creek Burke Creek Canyon Creek Mill Creek Bybee Creek Schoolhouse Creek Kalama River Owl Creek Coweeman River Ostrander Creek Salmon Creek Toutle River Cowlitz River	0.0	(Approx. 153 unnamed features) Carrolls Channel Columbia River Coweeman River Cowlitz River Kalama River Lewis River Olequa Creek Owl Creek Toutle River Wallace Slough Agren Creek Burke Creek Burke Slough Burris Creek Bybee Creek Canyon Creek	Lewis River Columbia River Cowlitz River Toutle River Kalama River Owl Creek Olequa Creek Hill Creek Schoolhouse Creek Coweeman River Ostrander Creek Salmon Creek	None

County	River Crossings (Named Streams listed)	Miles of Marine Shoreline within 500 ft	Water Features	Associated 100 Year Flood Zones	Associated Sole Source Aquifers
			Coal Mine Creek Hill Creek Martin Slough Mill Creek Ostrander Creek Rock Creek Salmon Creek Schoolhouse Creek		
Lewis	(11 Crossings) Olequa Creek McMurphy Creek Ferrier Creek Newaukum River Dillenbaugh Creek Salzer Creek China Creek Hanaford Creek	0.0	(Approx. 159 unnamed features) Newaukum River Skookumchuck River China Creek Coal Creek Curtis Creek Dillenbaugh Creek Ferrier Creek Hanaford Creek King Creek McMurphy Creek Olequa Creek Salzer Creek Snow Creek Stearns Creek Stillwater Creek	Olequa Creek Stearns Creek Newaukum River Dillenbaugh Creek Salzer Creek Chehalis River China Creek Skookumchuck River Hanaford Creek McMurphy Creek Coal Creek	None
Thurston	(7 Crossings) Skookumchuck River Scatter Creek Beaver Creek Deschutes River Woodland Creek Nisqually River	0.0	(Approx. 67 unnamed features) Deschutes River Long Lake Lost Lake Mud Lake Nisqually River Pattison Lake Skookumchuck River Beaver Creek Medicine Creek Scatter Creek Spurgeon Creek Woodland Creek	Skookumchuck River Scatter Creek Beaver Creek Deschutes River Spurgeon Creek Woodland Creek Nisqually River Medicine Creek	None

County	River Crossings (Named Streams listed)	Miles of Marine Shoreline within 500 ft	Water Features	Associated 100 Year Flood Zones	Associated Sole Source Aquifers
Pierce	***Existing Corridor (6 Crossings)*** Red Salmon Creek Sequalitchew Creek Chambers Creek ***Point Defiance Bypass Corridor (14 Crossings)*** Nisqually River Murray Creek Clover Creek Swan Creek Squally Creek Clear Creek Clarks Creek Puyallup River Salmon Creek	25.4	(Approx. 91 unnamed features) American Lake Flett Creek Holding Basin Hood Street Reservoir Nisqually River Puget Sound Puyallup River Titlow Lagoon White River Chambers Creek Clarks Creek Clear Creek Clover Creek Flett Creek Murray Creek Red Salmon Creek Rody Creek Salmon Creek Sequalitchew Creek Squally Creek Swan Creek Woodland Creek	Nisqually River Sequalitchew Creek Squally Creek Salmon Creek Chambers Creek Murray Creek Clover Creek Flett Creek Swan Creek Clear Creek Puyallup River Clarks Creek White River	Central Pierce County Aquifer
King	(7 Crossings) White River Green River Springbrook Creek Black River Pipers Creek Boeing Creek	10.7	(Approx. 48 unnamed features) Duwamish River Green River Puget Sound Salmon Bay White River Black River Boeing Creek Pipers Creek Springbrook Creek	White River Green River Black River Pipers Creek Boeing Creek	None

County	River Crossings (Named Streams listed)	Miles of Marine Shoreline within 500 ft	Water Features	Associated 100 Year Flood Zones	Associated Sole Source Aquifers
Snohomish	(25 Crossings) Deer Creek Shellberger Creek Shell Creek Lunds Gulch Big Gulch Japanese Gulch Powder Mill Gulch Merrill and Ring Creek Pigeon Creek Snohomish River Union Slough Steamboat Slough Quilceda Creek West Fork Quilceda Creek Portage Creek Cook Slough Stillaguamish River Church Creek	21.3	(Approx. 91 unnamed features) Ebey Slough Cook Slough Picnic Point Lake Portage Creek Puget Sound Quilceda Creek Snohomish River South Slough Steamboat Slough Stillaguamish River Big Gulch Church Creek Deer Creek Fish Creek Japanese Gulch Lunds Gulch Merrill And Ring Creek Miller Creek Norma Creek Pigeon Creek Pigeon Creek Number 2 Powder Mill Gulch Shell Creek Shellenberger Creek Union Slough West Fork Quilceda Creek	Snohomish River Union Slough Steamboat Slough Quilceda Creek Stillaguamish River Portage Creek Cook Slough South Slough Church Creek Shelleberger Creek Shell Creek	None
Skagit	(9 Crossings) Skagit River Samish River Oyster Creek	8.1	(Approx. 44 unnamed features) Gages Slough Puget Sound Skagit River Steamboat Slough Tom Moore Slough Big Ditch / Maddox Slough Colony Creek Edison Slough	Skagit River Samish River Colony Creek Steamboat Slough Tom Moore Slough Gages Slough	None

County	River Crossings (Named Streams listed)	Miles of Marine Shoreline within 500 ft	Water Features	Associated 100 Year Flood Zones	Associated Sole Source Aquifers
			Gages Slough Joe Leary Slough Kulshan River Oyster Creek Samish River Whitehall Creek		
Whatcom	(17 Crossings) Padden Creek Whatcom Creek Squalicum Creek Silver Creek Nooksack River California Creek Dakota Creek	15.5	(Approx. 75 unnamed features) Brennan Pond Nooksack River Puget Sound Tennant Creek Whatcom Creek Cain Creek California Creek Dakota Creek Padden Creek Silver Creek Squalicum Creek	Squalicum Creek Silver Creek Nooksack River Dakota Creek Padden Creek Whatcom Creek	None

Numerous small drainages cross the rail corridor. Due to the large number of crossings, only larger documented streams are described here. Project-specific impact analyses completed in the future will address all potential impacts to stream and waterways. The rail corridor extends from the Port of Vancouver along the Columbia River northward, past the mouth of Burnt Bridge and Cold Canyon creeks at Vancouver Lake. To the north, the corridor extends along the lakeshore of Vancouver Lake, paralleling Lake River before crossing Salmon Creek. The corridor follows the shoreline of Green Lake to Ridgefield, crossing Whipple Creek at the north end of Green Lake. After crossing Whipple Creek, the corridor meets up with Lake River and crosses several small tributaries, including Flume Creek and Gee Creek north of Ridgefield. From Ridgefield the rail line extends due north to Woodland in Cowlitz County, running parallel to Lancaster Lake and crossing the confluence of Allen Creek and the Lewis River. Along the corridor in Clark County, the Columbia River and Lake River are listed on the 2008 303(d) list of impaired waterbodies (Table 2).

Table 2. 2008 Water quality listings within 1,000 feet of rail corridor*

County	2008 303(d) Listed Impaired Waterbodies[11]		Waterbodies with Total Maximum Daily Load Restrictions[12]
Clark	Columbia River Lake River		None
Cowlitz	Columbia River Cowlitz River Lewis River		Columbia River
Lewis	Dillenbaugh Creek		Coal Creek Salzer Creek Newaukum River
Thurston	Deschutes River Long Lake Pattison Lake Scatter Creek Spurgeon Creek		None
Pierce	***Existing Corridor*** Puyallup River Chambers Creek	***Point Defiance Bypass Corridor)*** Puyallup River American Lake Clarks Creek Clear Creek Clover Creek Salmon Creek Swan Creek White River Woodland Creek	Nisqually Reach/Drayton Passage Clarks Creek Rody Creek
King	Black River Duwamish River Green River Springbrook (Mill) Creek White River Puget Sound (Central) Salmon Bay		Green River Pipers Creek

[11] *The 303(d) list reports on category 5 waters ,which are the impaired waters of the state. Waters placed in Category 5 require the preparation of a plan to improve water quality by limiting pollutant loads. "Total Maximum Daily Loads" (TMDLs) are a key tool in the work to clean up polluted waters.*

[12] *The Total Maximum Daily Load (TMDL) or Water Quality Improvement Project process was established by Section 303(d) of the Clean Water Act (CWA). Federal law requires states to identify sources of pollution in waters that fail to meet state water quality standards, and to develop Water Quality Improvement Reports to address those pollutants. The Water Quality Improvement Project (TMDL) establishes limits on pollutants that can be discharged to the water body and still allow state standards to be met.*

County	2008 303(d) Listed Impaired Waterbodies[11]	Waterbodies with Total Maximum Daily Load Restrictions[12]
Snohomish	Ebey Slough Jorgenson Slough (Church Creek) Cook Slough Fish Creek Quilceda Creek Miller Creek Norma Creek Portage Creek Puget Sound (N Central) and Useless Bay Snohomish River Stillaguamish River (including old channels) West Fork Quilceda Creek	Miller Creek Fish Creek Portage Creek Quilceda Creek Stillaguamish River Jorgenson Slough (Church Creek) South Slough Old Stillaguamish Channel, West Passage Possession Sound (North)
Skagit	Big Ditch / Maddox Slough Colony Creek Joe Leary Slough Samish River Skagit River Steamboat Slough	Kulshan River Skagit River
Whatcom	Cain Creek Dakota Creek Tennant Creek Nooksack River Padden Creek Silver Creek Squalicum Creek Whatcom Creek Puget Sound / Drayton Harbor	Bellingham Bay Nooksack River Tennant Creek
* Includes waterbodies within 1,000 feet that have listed upstream segments.		

The rail corridor crosses the Lewis River into Cowlitz County en route to the city of Woodland. Just south of Woodland, the rail line crosses Wallace Slough and continues northward until its path intersects with Interstate 5 in the vicinity of Burris Creek. At this point both the highway and the rail corridor shift northwesterly to parallel the banks of the Columbia River. The route continues crossing numerous Columbia River tributaries including Burke, Canyon, Mill, Bybee and Schoolhouse creeks, past the city of Kalama and crossing the Kalama River, Owl Creek, and the confluence of the Coweeman River and the Cowlitz River. At Kelso the route turns northward, again paralleling Interstate 5 along the east side of the Cowlitz River where it crosses Ostrander Creek approximately two miles north of Kelso. The rail corridor continues north through the city of Castle Rock, crossing Salmon Creek. North of the Toutle River crossing, the route splits from the Interstate 5 alignment and crosses the Cowlitz River. It continues northward toward the Town of Vader in Lewis County. The Columbia, Cowlitz and Lewis rivers are listed on the 2008 303(d) list of impaired waterbodies (Table 2).

The rail line enters Lewis County near the town of Vader and parallels Olequa Creek northward for approximately three miles before crossing McMurphy Creek in the Town of Vader. The route continues paralleling Olequa Creek northward, crossing Ferrier Creek south of Winlock and crossing Olequa Creek north of Winlock. The rail corridor continues northward to Napavine, crossing the Newaukum River, Dillenbaugh Creek and Interstate 5 in Chehalis. Between the cities of Chehalis and Centralia, the corridor crosses Salzer and China creeks before paralleling the Skookumchuck River. North of Chehalis and Centralia the track runs along the east shore of the Skookumchuck River, crossing Hanaford Creek in the vicinity of Schaefer State Park. In Lewis County, only Dillenbaugh Creek is on the 2008 303(d) list of impaired waterbodies (Table 2).

The alignment enters Thurston County just north of Schaefer State Park in Lewis County. It travels northeasterly, paralleling the east bank of the Skookumchuck River until it crosses the river just south of Bucoda. From Bucoda the route turns northward, traversing Tenino and Scatter Creek. Approximately 2 miles north of Tenino, the rail line crosses Beaver Creek, and the confluence of the Deschutes River and Spurgeon Creek another four miles north. From this location the tracks enter the urbanized areas of Olympia and Lacey, where the rail line crosses Pattison Lake and Woodland Creek. The route continues east, crossing Medicine Creek just prior to leaving Thurston County. Five streams and lakes in Thurston County are listed on the 2008 303(d) list of impaired waterbodies including the Deschutes River, Long Lake, Pattison Lake, Scatter Creek and Spurgeon Creek (Table 2).

Just north of the Nisqually River crossing, the corridor splits at Interstate 5 with the current alignment to the west along the shoreline of Puget Sound (the BNSF main line along Point Defiance) and to the east parallel to Interstate 5 (the proposed Point Defiance Bypass). The western alignment skirts the eastern side of the Nisqually River delta before reaching the shore of Puget Sound near the city of DuPont. The line parallels Puget Sound from the Nisqually delta to Salmon Beach, north of the Tacoma Narrows Bridge. Through this stretch the tracks run along beaches and cross several small creeks including Red Salmon, Sequalitchew and Chambers creeks. Chambers Creek, home of the Garrison Springs Hatchery, drains to Puget Sound via Chambers Bay. The alignment tunnels through portions of Tacoma and around Point Defiance, emerging along Commencement Bay near the Thea Foss Waterway. Several streams and waterbodies are listed on the 2008 303(d) list of impaired waterbodies in Pierce County (Table 2).

The eastern alignment parallels Interstate 5 through the cities of DuPont, Lakewood and Tacoma, crossing Murray Creek, an inlet to American Lake, and Clover Creek.

The eastern and western alignments merge just south of the Puyallup River and cross Interstate 5. From there, the rail corridor turns southeast toward the city of Puyallup, crossing Swan, Squally, Clear, and Clarks creeks before crossing the Puyallup River in Sumner. The alignment traverses King County in a north-south manner, entering King County due south of Auburn. It crosses the White River prior to reaching the existing Auburn Yard, then crosses the Green River before entering the city of Kent. In the urban area of Kent, the rail line crosses Springbrook Creek and the Black River. The alignment turns northwesterly as it heads through the city of Tukwila and into the city of Seattle.

North of the King Street Station the alignment goes underground through metropolitan Seattle, before crossing Salmon Bay near the Howard Chittenden Locks. North of Ballard the alignment crosses the small creeks of Boeing Creek and Pipers Creek where they enter Puget Sound. The track parallels the Puget Sound shoreline northward into Snohomish County. The Black, White, Duwamish and Green rivers, Springbrook Creek and Puget Sound are listed on the 2008 303(d) list of impaired waterbodies in King County (Table 2).

The railroad right of way enters Snohomish County in the vicinity of Point Wells along the coast of Puget Sound. The tracks hug the coastline for most of the route north to Everett. In south Snohomish County, the rail line crosses Shellberger Creek, Shell Creek and Lunds Gulch in Edmonds. Continuing to hug the Puget Sound shoreline, the rail line crosses Big Gulch, Japanese Gulch, Powder Mill Gulch, Merrill and Ring Creek, and Pigeon Creek in Mukilteo and Everett before heading east away from the Puget Sound shoreline. From Everett the tracks cross the Snohomish River, Steamboat Slough, Union Slough and Ebey Slough heading into Marysville. The right of way crosses Quilceda Creek in north Marysville. The rail line then turns slightly westward, passing to the west of Twin Lakes Park, and crosses Portage Creek, Cook Slough and the Stillaguamish River. The route crosses the Stillaguamish River near Norman, and continues in a northwesterly direction towards Stanwood, crossing Church Slough. North of Stanwood the tracks head into Skagit County, paralleling Tom Moore Slough and crossing several tributaries to the Skagit River delta. Many of the bays and streams in Snohomish County are listed on the 2008 303(d) list of impaired waterbodies. In addition, Total Maximum Daily Load (TMDL) studies are occurring in nine waterbodies within 1,000 feet of the rail corridor in Snohomish County (Table 2).

The tracks continue northward through Mount Vernon and cross the Skagit River and Gages Slough between Mount Vernon and Burlington. North of Burlington the tracks cross the Samish River west of Interstate 5, and then parallels Edison Slough in two places. The route shifts to a northwesterly alignment and reaches the Puget Sound shoreline at Samish Bay and crosses the Colony Creek estuary. The tracks continue to parallel the coast northward to the Whatcom County line, crossing Oyster Creek. Three sloughs, two creeks and the Skagit and Samish rivers are listed on the 2008 303(d) list of impaired waterbodies in Skagit County. One of these, the Skagit River, is in the TMDL process (Table 2).

The tracks enter Whatcom County along the Puget Sound coast south of Larabee State Park. The tracks enter several tunnels in the vicinity of Pleasant Bay before paralleling Chuckanut Bay and crossing the Chuckanut Creek estuary. North of Chuckanut Bay, the route enters Fairhaven and Bellingham. It crosses Padden, Whatcom and Squalicum creeks just inland from Bellingham Bay. The rail line parallels the bay until the vicinity of the Bellingham International Airport. At this location it turns more northward, crossing Silver Creek and passing by Brennan Pond and Tennant Lake before entering Ferndale and crossing the Nooksack River. From Ferndale the alignment parallels Interstate 5, crossing tributaries to California Creek and Dakota Creek before heading into Blaine. At Blaine the route parallels Drayton Harbor, and heads northward to the Canadian border. In Whatcom County, Cain, Dakota, Tennant, Padden, Silver,

Squalicum, and Whatcom creeks, the Nooksack River and Drayton Harbor are listed on the 2008 303(d) list of impaired waterbodies (Table 2). Tennant Creek, Bellingham Bay and the Nooksack River are undergoing TMDL studies.

Ground Water

In addition to surface waters, ground water and aquifers are also critical elements of the environment. Ground water is an important natural resource. For many residents of western Washington, ground water is the sole source of water for drinking and washing, for farming and manufacturing, and for all daily water needs.

Although ground water exists everywhere at varying depths, some parts of the saturated ground contain more water than others. An aquifer is an underground formation of permeable rock or loose material that stores useful quantities of water and can be tapped by a well. Aquifers provide drinking water for communities throughout the corridor.

Ground water quality can be eroded by contaminants introduced by various domestic, industrial, and agricultural practices. Although it may not be directly used, ground water quality should still be protected, as it can carry contaminants and pollutants from the land into the lakes and rivers from which people get a large percentage of their freshwater supply.

The BNSF main line in Clark County lies above sedimentary rock deposits that yield ground water from the Lewis aquifer region. The aquifers lie in the Troutdale Formation, and in more recent alluvial deposits. The Troutdale Aquifer System was designated as a Sole Source Aquifer[13] in 2006.

The Washington Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA), as part of a ground water quality monitoring network for Washington State, have tested ground water in Clark County. The ground water in the vicinity is primarily soft to moderately hard calcium-magnesium bicarbonate-type water.

Ground water resources inventoried in Cowlitz County indicate the county is underlain by two aquifer regions, the Lewis and Cowlitz aquifers. Alluvial deposits are the most productive sources of ground water in the county. Although nitrate concentrations are generally low, iron concentrations exceed the maximum contaminant level recommended by the U.S. Environmental Protection Agency in many samples taken both close to the rail alignment and further east near Toutle Lake.

[13] *The U.S. Environmental Protection Agency (EPA) defines a Sole Source Aquifer as one which supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. A Sole Source Aquifer designation is one tool to protect drinking water supplies in areas where there are few or no alternative sources to the ground water resource and where, if contamination occurred, using an alternative source would be extremely expensive. The designation also helps to increase public awareness of the nature and value of local ground water resources by demonstrating the link between an aquifer and a community's drinking water supply.*

Ground water resources inventoried in Lewis County indicate the county is underlain by two aquifer regions, the Chehalis and Cowlitz aquifers. Wells sampled in the county tap numerous water-bearing formations, including tertiary rock formations, glaciofluvial deposits and alluvial deposits. Glaciofluvial deposits are the most productive sources of ground water in the county. In some wells, iron and magnesium concentrations generally exceeded the maximum contaminant level as recommended by the U.S. Environmental Protection Agency, both close to the rail alignment and further west near the upper Chehalis River.

Thurston County was affected by several periods of glaciation, which influenced the development of aquifers in the region. The glacial deposits here are thousands of feet thick. Major river valleys, including the Nisqually, contain unconsolidated, water-bearing sediments. Northern Thurston County has four major aquifers; the southern part of the county and the Tenino areas are underlain by a single shallow aquifer. Generally the water is soft, with lower iron and manganese than in other areas of the Puget Sound.

As with Thurston County, Pierce County was affected by several periods of glaciation, influencing the development of aquifers in the region. The glacial deposits are thousands of feet thick. The Puyallup River valley contains evidence of volcanic mudflows. The Central Pierce County Aquifer System was designated as a Sole Source Aquifer in 1994. Both coastal seawater intrusion and urban development affect water quality in the vicinity. Generally the water was found to be soft, with iron and manganese concentrations exceeding secondary drinking water regulations for quality.

Ground water quality for King County was also sampled as part of the agency study. Although the pH of water tested in King County was higher than the average, iron and manganese concentrations were lower than much of the state, and did not exceed the minimum drinking water standards. Similarly to other urban areas, water quality in King County is affected by pollution.

As with the rest of the Puget Sound counties, Snohomish County was affected by several periods of glaciation, influencing the development of aquifers in the region. The glacial deposits are thousands of feet thick. Generally the water was found to be soft, with iron and manganese concentrations exceeding secondary drinking water regulations for quality.

Skagit County was affected by several periods of glaciation, influencing the development of aquifers in the region. The glacial deposits are thousands of feet thick. The Skagit River valley also contains evidence of volcanic mudflows. No individual aquifers were distinguished in the Ecology and EPA study. Generally the water quality in wells was found to be compromised by nitrates and dissolved solids in addition to iron and manganese concentrations that exceed secondary drinking water regulations for quality. Nitrate concentrations most likely reflect the agricultural land use of the county, whereas dissolved solids are indicative of seawater intrusion.

Water quality in Whatcom County shows similarities to water quality in Skagit County. In both areas moderate concentrations of dissolved solids and moderate to high levels of

nitrates were found in wells tested by Ecology. The dissolved solids findings indicate some seawater intrusion occurring along the coast. Nitrates are most likely caused by agricultural land use.

Floodplains

Floodplains are lowland areas adjacent to lakes, wetlands and rivers that are covered by water during a flood. The ability of the floodplain to carry and store floodwaters needs to be preserved and respected in order to protect human life and property from flood damage. Undeveloped floodplains provide many natural and economic resource benefits; they often contain wetlands and other areas vital to a diverse and healthy ecosystem.

Floodplain vegetation provides important resting, feeding and nesting areas for many waterfowl species. Undisturbed floodplains have high natural biological diversity and productivity. River corridors are frequently used as flyways for migrating birds.

Floodplain vegetation and soils serve as water filters, intercepting surface water runoff before it reaches the lake, stream or river. This process aids in the removal of excess nutrients, pollutants and sediments from the water and helps reduce the need for costly cleanups and sediment removal.

Approximately 43 miles of the 297-mile rail line pass within a 100-year floodplain. The most frequently flooded rivers along the corridor include the Cowlitz, Chehalis, Skagit, Snohomish, Nooksack, and Stillaguamish rivers and their tributaries. Several of these rivers flood annually.

The rail corridor crosses the Columbia River floodplain as it enters Clark County (WA) from Oregon. Much of the corridor in Clark County generally follows the border of the Columbia River floodplain, other than in a small stretch in the city of Vancouver. In the greater Vancouver area, the corridor crosses the 100-year floodplains of Burnt Bridge, Salmon, Gee, and Whipple creeks. Upon leaving Clark County, the corridor crosses the Lewis River 100-year floodplain and leaves the Columbia River floodplain.

In Cowlitz County, the corridor does not enter a floodplain until north of Woodland, where Interstate 5 and the rail corridor act as the eastern floodplain boundary of the Columbia River. The rail corridor follows the Columbia River northward until the city of Kalama where the rail corridor crosses the Columbia River and Kalama River floodplains. Through the remainder of Cowlitz County, the rail corridor lies within the floodplains of the Columbia, Kalama, Coweeman, Toutle and Cowlitz rivers.

As the corridor enters into Lewis County, it follows the floodplain of Olequa Creek through the towns of Vader and Winlock. The corridor then travels north through Napavine to Chehalis where it enters and crosses floodplains associated with the Newaukum River, Chehalis River, Salzer Creek, Hanaford Creek and Dillenbaugh Creek. These streams are frequently flooded and overtop the rail corridor. North of Centralia, the corridor parallels the Skookumchuck River floodplain through the remainder of Lewis County.

The rail corridor crosses the Skookumchuck River floodplain upon entering into Thurston County. The corridor follows the Skookumchuck River northerly to the town of Bucoda. The corridor then precedes northeasterly, crossing Scatter Creek, the Deschutes River, Chambers Creek, Woodland Creek, and Pattison Lake. At the Pierce/Thurston county border, the rail corridor crosses the 100-year floodplain of the Nisqually River.

In Pierce County, the corridor crosses the floodplain of the Nisqually River and then splits into two alignments. The western alignment follows the Puget Sound shoreline and floodplain fringe through its entirety. The eastern corridor (the proposed Point Defiance Bypass) runs through the developed urban areas of Lakewood and Tacoma. This alignment crosses the floodplain of Clover Creek and parallels the 100-year floodplain of Flett Creek. The two alignments merge just prior to entering the Puyallup River floodplain. The corridor leaves Tacoma and proceeds up the Puyallup River basin crossing the floodplain of Clarks Creek in Puyallup. The corridor crosses the Puyallup River floodplain and enters into the White River floodplain in Sumner prior to crossing into King County.

In King County, the corridor crosses the White River floodplain in the city of Auburn. The corridor travels north, crossing floodplains of the Green River through Auburn, Kent and Tukwila. In Tukwila, the corridor crosses the Black River floodplain and parallels the Duwamish River floodplain into Seattle. In the northern portion of the county, along the waters of Puget Sound, the corridor crosses the Pipers and Boeing creek floodplains.

In Snohomish County, the rail corridor follows along the shoreline of Puget Sound northerly to the city of Everett. Between Everett and Marysville, the corridor crosses the combined floodplain of the Snohomish River, Steamboat Slough, Union Slough, Ebey Slough and Allen Creek. Further north, into Marysville, the corridor crosses the Quilceda Creek floodplain. From Marysville north to the county line and through Stanwood, the rail corridor resides in the Portage Creek, Cook Slough, South Slough, Stillaguamish River and Tom Moore Slough floodplains.

The corridor crosses the lowlands of the Skagit and Samish rivers and then along the shores of Samish Bay through the majority of Skagit County. From the Skagit/Snohomish county line, the rail corridor is located in the floodplains of these rivers until north of the Samish River crossing. From there, the corridor is within 1,000 feet of the Samish River or Samish Bay floodplain and estuary until the Whatcom County line.

In Whatcom County, the corridor parallels the shoreline of Samish Bay and Puget Sound to the city of Bellingham. In Bellingham, floodplains of Whatcom and Squalicum creeks are crossed before returning to the shorelines of Bellingham Bay. Through Ferndale, the rail corridor crosses floodplains of Silver Creek and the Nooksack River. The remainder of the rail corridor through Whatcom County crosses agricultural lands and the Dakota Creek floodplain just south of Blaine.

Hazardous Materials

Hazardous materials can impact the environment, construction projects, and long-term cleanup liability. Hazardous material is a broad term for media that may be toxic to humans or the environment. This term includes dangerous waste, problem waste/contamination, petroleum products and hazardous substances. Identifying hazardous materials along the corridor allows WSDOT to make informed decisions regarding selection of alternatives and mitigation measures to eliminate or reduce the impact to the environment, the construction project and cleanup liability.

Exposure to potential substantially contaminated hazardous materials is not anticipated during construction or operations. However, there is a possibility of finding a historical spill or dump site anywhere along the corridor. As the railroad right of way is primarily used for hauling freight, any commodity being hauled along the route during the past 100 years could have spilled at any location. Current legislation requires reporting and clean-ups of such incidents. BNSF has standard operating procedures for managing contaminants within their right of way.

To initially identify known or potentially significant hazardous material sites, data was obtained from the WSDOT Environmental Workbench ArcMap Geographic Information System (GIS) which obtains GIS data from the Washington Department of Ecology, and the U.S. Environmental Protection Agency. GIS databases were used to locate and map the following regulatory listed sites along the corridor.

- Superfund sites
- State Cleanup Site
- Leaking Underground Storage Tank (LUST) sites

Superfund sites (also known as National Priorities List sites) are sites that have been screened and assigned a priority for cleanup under the Superfund Cleanup Program that is administered by the U.S. Environmental Protection Agency (EPA).

State Clean-up Sites (also known as Confirmed & Suspected Contaminated Sites List, CSCSL) are known or potentially contaminated sites that may or may not already be listed on the federal Superfund/CERCLIS lists. These state clean-up sites are ranked and assigned a priority for cleanup to be paid by state funds and/or by potentially responsible parties.

Leaking Underground Storage Tank (LUST) sites are an inventory of reported leaking underground storage tank incidents in Washington State.

Any regulatory-listed site located within 2,000 feet of the railroad right of way were identified and mapped. Maps for identified sites are in Appendix A (Group A) of this Environmental Assessment.

Hundreds of known or potential hazardous materials sites were identified along the corridor between the Canadian and Oregon borders. An increased number of identified

sites are accumulated in areas with a long commercial and industrial history, with the majority of sites located in King County. A total of 7 Superfund sites, 401 State Cleanup Sites and 781 LUST sites have been identified within 2,000 feet of the 297-mile railroad corridor in Washington State. A quantified summary of these sites are organized by county in Table 8 in Chapter Five, Impacts and Mitigation.

Biological Resources/Ecology

The preservation of our wildlife, fisheries, vegetation, and wetlands has long been a priority of Washingtonians. The rail corridor lies adjacent to and crosses many water resources and habitat areas within the state. In the study area, there are fish-bearing streams that contain species listed under the federal Endangered Species Act (ESA) and resident fish that are a state or federal species of concern. ESA-listed fish species along the corridor include steelhead; Chinook, Coho, chum, and sockeye salmon; bull trout; eulachon; and green sturgeon. Resident fish within many of the streams along the corridor include lamprey, bass, sculpin, dace, and cutthroat trout. In addition, there are several species of plants and wildlife considered a priority by the state or federal agencies found along the corridor such as golden paintbrush, Kincaid's lupine, mardon skipper, Mazama pocket gopher, bald eagle, peregrine falcon and marbled murrelet. Marine mammals are protected under both the ESA and the Marine Mammal Protection Act (MMPA). Several species of marine mammals can be found in the Columbia River, off the Washington coast and in Puget Sound within the corridor study area. Migratory birds are federally protected and habitat for many species is present throughout the corridor.

Wildlife habitat is abundant along the Columbia River and in lake and stream crossings along the corridor. Threatened and endangered species, species of concern, and the counties in which they are likely to occur along the corridor are summarized in Table 3. The list is not exhaustive and does not include all species potentially present along the corridor. The list also does not distinguish Evolutionarily Significant Units or Distinct Population Segments as listed under the Endangered Species Act. Individual project documentation and environmental analysis will assess impacts to species on a site-specific scale.

Table 3. State (S) and federally (F) listed threatened (T), endangered (E), and candidate species (C), species of concern (SOC), and critical habitat likely present within 2,000 feet of the pacific northwest rail corridor.

Species'	Federal Status	State Status	Critical Habitat	Counties Potentially Present
Chinook salmon	FE, FT	SC	Yes	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Chum salmon	FT	SC	Yes	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom

Species'	Federal Status	State Status	Critical Habitat	Counties Potentially Present
Coho salmon	FT	None	Yes	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Sockeye salmon	FE	SC	No*	Clark, Cowlitz, King, Snohomish, Skagit, Whatcom
Steelhead	FE, FT	SC	Yes	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Coastal Cutthroat	FSOC	None	No	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Bull trout	FT	SC	Yes	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Green Sturgeon	FT	None	Yes	Clark, Cowlitz, Snohomish, Skagit, Whatcom
Eulachon	FP	SC	No	Clark, Cowlitz, Lewis, Pierce, King, Snohomish, Skagit, Whatcom
Killer whale	FE	SE	No*	King, Snohomish, Skagit, Whatcom
Steller sea lion	FT	ST	No	Clark, Cowlitz, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Oregon spotted frog	FC	SE	No	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Van Dyke's salamander	FSOC	SC	No	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Western toad	FSOC	SC	No	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Bald eagle	FSOC	SSOC	No	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Marbled murrelet	FT	ST	No*	Clark, Cowlitz, Lewis, Pierce, Snohomish, Skagit, Whatcom
Northern goshawk	FSOC	SC	No	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Oregon vesper sparrow	FSOC	SC	No	Clark, Cowlitz,
Peregrine falcon	FSOC	SSOC	No	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Brown pelican	FE	SE	No	Snohomish, Skagit, Whatcom

Species[1]	Federal Status	State Status	Critical Habitat	Counties Potentially Present
Slender-billed white-breasted nuthatch	FSOC	SC	No	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Northern Spotted owl	FT	SE	No*	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Oregon silverspot butterfly	FT	SE	No	Clark, Cowlitz, Lewis, Thurston, Pierce
Taylor's checkerspot	FC	SE	No	Clark, Cowlitz, Lewis, Thurston, Pierce,
Valley silverspot	FSOC	SC	No	Clark, Cowlitz, Lewis, Thurston, Pierce,
Margined sculpin	FSOC	SSOC	No	Clark, Cowlitz, Lewis,
Pacific herring	FSOC	SC	No	Pierce, King, Snohomish, Skagit, Whatcom
River lamprey	FSOC	SC	No	Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, Whatcom
Sea otter	FSOC	SE	No	Snohomish, Skagit, Whatcom
Western gray squirrel	FSOC	ST	No	Lewis, Thurston, Pierce

[1] List does not include all state-listed species.

* Critical habitat may be designated in the county for the species, but is not designated within 2,000 feet of the rail corridor.

The western Cascade Mountains and the Puget Sound Trough are dominated by conifer forest landscapes. The corridor represents a mesic temperate forest[14] consisting of Douglas fir, western hemlock and western red cedar. Early history indicates the area along the corridor was dominated by forested areas with the exception of small areas in the Willamette Valley, near Vancouver, and the prairies in the Puget Trough.

To preserve wildlife, fisheries, and habitats, a number of federal and state programs and regulations have been put into place:

- The Endangered Species Act (ESA) is a federal law initially passed by Congress in 1973 in an attempt to counteract the alarming rate of species extinction. ESA provides a means of conserving plants and animal species that are currently in danger of extinction (endangered species) and those that are likely to become endangered within the foreseeable future (threatened species). It also protects the habitat needed for their survival.

  The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) are responsible for ensuring that government and citizen actions do not further harm species that are listed as endangered or threatened. They are

[14] *A mesic temperate forest is a temperate forest with a moderate or well-balanced supply of moisture.*

also responsible for developing and implementing a plan for recovering the species to a stable population.

- The Marine Mammal Protection Act was federally enacted in 1972 to protect marine mammals from the taking (including harassment) and importation of individuals or parts.
- The federal Migratory Bird Treaty Act, administered by the USFWS, makes it unlawful to take birds, their parts, nests, or eggs.
- As a companion law to the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act is a federal law administered by the USFWS that makes it unlawful to take, import, export, sell, purchase, or barter any bald or golden eagle, their parts, products, nests or eggs. Taking includes killing or disturbing eagles.
- The Magnuson Stevens Act, as amended by the Sustainable Fisheries Act of 1996, requires federal agencies to consult with the National Marine Fisheries Service on activities that may adversely affect essential fish habitat. Essential Fish Habitat is defined as waters and substrate necessary for fish for spawning, breeding, feeding or growth to maturity. In the case of WSDOT projects, FHWA and NMFS have a memorandum of agreement that allows these consultations to be conducted at the same time as an ESA consultation.
- The Washington State Department of Fish and Wildlife (WDFW) oversees the protection and preservation of state wildlife species. The definitions for state-protected species are below:

  Endangered Species is defined in WAC 232-12-297, Section 2.4, to include "any wildlife species native to the state of Washington that is seriously threatened with extinction throughout all or a significant portion of its range within the state."

  Threatened Species is defined in WAC 232-12-297, Section 2.5, to include "any wildlife species native to the state of Washington that is likely to become an endangered species within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats."

  Sensitive Species is defined in WAC 232-12-297, Section 2.6, to include "any wildlife species native to the state of Washington that is vulnerable or declining and is likely to become endangered or threatened throughout a significant portion of its range within the state without cooperative management or removal of threats."

  Candidate Species is defined in WDFW Policy M-6001 to include “fish and wildlife species that the Department will review for possible listing as State Endangered, Threatened, or Sensitive. A species will be considered for designation as a State Candidate if sufficient evidence suggests that its status may meet the listing criteria defined for State Endangered, Threatened, or Sensitive.”

- The Legislature established the Washington Natural Heritage Program (WNHP) within the Washington State Department of Natural Resources in 1981. The WNHP collects data about existing native ecosystems and species to provide an objective, scientific basis from which to determine protection needs. The program also develops and recommends strategies for protection of the native ecosystems and species most threatened in Washington.

Wetlands

Much of our wildlife and vegetation depend upon the numerous wetlands in western Washington. Wetlands were once thought of as swampy, bug-filled "wastelands" that were useful only when they were filled and developed for industry, housing, or businesses. Today society is beginning to realize that wetlands are unique, natural areas, important to the ecosystem we all share, and should be conserved and protected.

Wetlands occur wherever land is inundated, covered, or influenced by the presence of water. Wetlands support the growth of water-loving/tolerant vegetation that is adapted to wet sites.

At times of flooding, wetlands at the mouths of streams and rivers receive flood water, which is rich in nutrients and sediments. In the stillness of the wetlands, these sediments settle out and water percolates into the groundwater. Thus, wetlands play an essential role in filtering nutrients and sediments out of water before it enters lakes and bays. By storing and releasing flood water, wetlands also moderate the damage that flooding could cause.

Wetlands are also located throughout stream and river systems, providing nutrient and sediment traps and flood control. Wetlands often have close connections with the ground water system. Some may serve as important ground water recharge areas. Others are receptors for significant amounts of ground water discharge. Thus, if the underlying ground water is contaminated, the consequences will be felt by the wildlife and all other resources dependent on that wetland. Numerous and diverse types of wetlands are located within the corridor, in particular where the railroad crosses the many waterways.

Wetlands were identified from county and city comprehensive plans and agency wetland mapping, including National Wetland Inventory (NWI) mapping. Additional information was gathered from the Soil Survey maps for each county, field observations, and rail corridor video. GIS mapping was developed using NWI mapping databases. Mapping of wetlands can be found in Appendix A (Group B) of this document.

The corridor in Clark County follows the Columbia River basin from the Oregon border to the Cowlitz County line, remaining in the lowlands throughout. Soils are typically somewhat excessively well-drained to very poorly drained soils of bottomlands and terraces. In Vancouver, soils consist of the Sauvie-Puyallup association, which are deep, nearly level, and somewhat poorly draining; and the Lauren-Sifton-Wind River association, which are somewhat excessively drained, nearly level, gravelly textured terraces. Scrub-shrub (dominated by red osier dogwood, Pacific willow, Pacific ninebark) and emergent (dominated by soft rush, water foxtail, sedges and bulrush)

wetlands are identified along Vancouver Lake, Lake River, and Salmon Creek. Similar wetlands exist where the corridor crosses or borders upon Lancaster Lake, Whipple Creek, Flume Creek, Gee Creek, Allen Creek and the Lewis River. North of Vancouver, soils in Clark County consist of Hillsboro-Gee-Odne associations which are deep, nearly level, medium textured terraces. Forested wetlands consisting of black cottonwood, Oregon ash and black hawthorn are present as well as scrub-shrub and emergent wetlands. Many wetlands are also dominated by Himalayan blackberry, reed canary grass and cattail. These are typically wet areas along the rail borrow.

In Cowlitz County, the corridor follows the Columbia and Cowlitz River basins and then along Olequa Creek to the Lewis County line in the north, passing through the cities of Woodland, Kalama, Kelso, Longview, and Castle Rock. Soils in this area are dominated by Caples-Clato-Newberg association consisting of nearly level, poorly drained to well-drained soils that formed in floodplain alluvium. Emergent wetlands are dominant between the Lewis and Kalama Rivers, lining the corridor in many places. Small patches of forested and scrub-shrub wetlands are noted along this stretch. The rail corridor just south of the Cowlitz River runs through areas of forested wetland consisting of Aregon ash, black cottonwood, red alder, Pacific crabapple and black hawthorn. The corridor encounters scrub-shrub and emergent wetlands as it borders or crosses Wallace Slough, Burris Creek, Burke Creek, Canyon Creek, Mill Creek, Bybee Creek, Schoolhouse Creek, and Ostrander Creek. Ponds and wet areas are also noted in the cities of Woodland and Castle Rock.

The corridor in Lewis County follows Olequa Creek northerly into the Chehalis River basin, passing through Vader, Winlock, Napavine, Chehalis, Centralia, and then up the Skookumchuck River into Thurston County. The majority of the corridor in Lewis County up to Napavine runs through very deep, well to somewhat excessively well-drained soils of the Winston-Olequa and Salkum-Prather-Lacamas varieties. As the corridor follows Olequa Creek, it encounters several small wet forested and scrub-shrub wetlands. North of Napavine, the corridor encounters wetter, poorly drained soils associated with the Newaukum, Chehalis and Skookumchuck rivers, and Salzer, Hanaford, McMurphy, and China creeks. These soils are of the Reed-Chehalis variety consisting of very deep, level soils formed on alluvium, floodplains and some terraces. Emergent, forested, and scrub-shrub wetlands are common through the area and contain vegetation dominated by willows, red alder, black cottonwood, Pacific ninebark, sedges, bulrush, foxtail, reedgrass, and rushes. In disturbed areas typical around the rail line, invasive species including Himalayan blackberry and reed canary grass are also common.

In Thurston County, the corridor follows the Skookumchuck River northerly to the town of Bucoda. Soils through the area consist of Chehalis-Newberg and the Spanaway-Nisqually associations. These soils are very deep and very to somewhat excessively well-drained. The Chehalis-Newberg soils are found on floodplains, while the Spanaway-Nisqually associations are found on glacial outwash terraces. Along the Skookumchuck River, wetlands range from forested to emergent to scrub-shrub. The corridor then proceeds northerly through Tenino, East Olympia, and Lacey, where the soils more frequently fall within the Alderwood-Everett associations consisting of moderately deep and very deep, moderately well drained and excessively drained nearly

level soils on glacial plains. NWI mapping identifies small patches of scrub-shrub and emergent wetlands encountered at various locations along the corridor. Wetlands are noted adjacent to the corridor along the Skookumchuck River, Scatter Creek, Deschutes River, Chambers Creek, Patterson Lake, Medicine Creek, and the Nisqually River.

In Pierce County, the corridor crosses the Nisqually River southwest of the city of DuPont and splits into two alignments. At the Nisqually River, the rail line bisects estuarine aquatic bed wetlands associated with the river and the Nisqually delta. The western alignment heads north toward Puget Sound and follows the marine shoreline where salt marsh and wetlands occur. The corridor then enters the city of Tacoma. As the corridor moves through Tacoma, it enters the Puyallup River valley. Wetlands along the western alignment are tidal emergent and tidal aquatic bed types.

The eastern alignment (the proposed Point Defiance Bypass) follows the Interstate 5 corridor, climbing out of the Nisqually River valley and passing through Lakewood, crossing urban wetlands associated with American Lake, Clover Creek, Swan Creek and Squally Creek. The alignment then moves through Tacoma where it drops into the Puyallup River Valley.

At the Puyallup River, the two alignments reconnect and are associated with several small wetlands around the Puyallup River. Both alignments occur in Spanaway and Alderwood-Everett soil associations. These associations are moderately well drained to excessively well drained, nearly level, and formed on glacial outwash. The corridor then turns north along the White River, entering King County near Auburn.

Specific wetlands areas are noted at Lake Sellers in the city of DuPont, Swan Creek and Clear Creek in Tacoma, Clarks Creek in the city of Puyallup, and near East 15th Street in the city of Puyallup. Generally wetlands through northern Pierce County are limited by the amount of development present. Emergent and scrub-shrub wetlands consisting of invasive species such as reed canary grass and Himalayan blackberry are evident throughout the Puyallup Valley between the rail line and adjacent land uses.

In King County, the corridor follows the Green River Valley in the south traveling through the center of the cities of Auburn, Kent, Tukwila, and Seattle. North of Seattle the corridor follows the shoreline of Puget Sound through the city of Shoreline to the Snohomish County line. The corridor encounters several small emergent and scrub-shrub wetlands along the corridor. The majority of these wetlands fall within developed areas and are largely dominated by invasive species such as Himalayan blackberry and reed canary grass, as well as natives such as broadleaf cattail. The corridor falls next to the meandering Duwamish River in several locations. In the north part of King County, the corridor closely follows the shoreline of Puget Sound where tidal aquatic-bed type wetlands are present. The upland side of the corridor includes several pockets of scrub-shrub and forested wetlands.

In Snohomish County, the corridor follows the shoreline through Edmonds, Mukilteo and Everett, then crosses the Snohomish River traveling through Marysville and Stanwood, and enters Skagit County near the shoreline of Skagit Bay. Prior to crossing the

Snohomish River, the rail line lies within Alderwood-Everett soil associations consisting of deep well-drained nearly level to steep soils on till plains, terraces and outwash plains. At the Snohomish River, soils transition to Puget-Sultan-Pilchuck and Norma-Lynnwood-Custer associations. The southern Puget-Sultan-Pilchuck associations consist of very deep poorly drained nearly level soils on floodplains. To the north, the Norma-Lynnwood-Custer associations are very deep, poorly drained and somewhat excessively drained, nearly level to steep soils, on outwash plains and terraces. The corridor crosses the Snohomish River, Ebey Slough, the Stillaguamish River, Church Creek, Shell Creek, Lunds Gulch, Big Gulch, Powder Mill Gulch, Merrill and Ring Creek, Pigeon Creek, Pilchuck Creek, and other smaller streams, creeks and sloughs. In areas within the sloughs and estuaries of the Stillaguamish and Snohomish Rivers, tidal emergent and aquatic bed wetlands are present. Scrub-shrub wetlands occur south of Everett's estuary, emergent wetlands occur between Everett and Marysville, and scrub-shrub wetlands occur north of Marysville. Along the Puget Sound coastline, tidal aquatic bed wetlands line the shoreline.

In Skagit County the corridor travels north through Conway, Mount Vernon and Burlington through the lowlands of the Skagit River and Samish River to Samish Bay and then along the shore of Samish Bay to the Whatcom County line. Through the majority of Skagit County, the rail corridor runs through Skagit-Sumas-Field association soils. The soils are very deep, poorly drained and moderately drained, level to nearly level soils on floodplains and deltas. The corridor crosses the Skagit River, Samish River, Tom Moore Slough, Fisher Creek, Gages Slough, Oyster Creek, Edison Slough, and Colony Creek. Scrub-shrub, emergent, tidally-influenced and patches of forested wetlands occur through the entirety of southern Skagit County. A mix of emergent and scrub-shrub wetlands occurs in the valley between the corridor and adjacent farming communities. At the northern end of the county, the soils transition to Tokul-Skipopa-Dystric Xerorchrepts association consisting of moderately deep to very deep, somewhat poorly drained to well drained, level to extremely steep soils on terraces, hills and escarpments.

In Whatcom County, the corridor follows along the shoreline of Puget Sound on Samish Bay and continues along the shoreline of Puget Sound up to Bellingham, crossing Chuckanut Bay. The corridor passes through Bellingham along the waterfront and proceeds northwesterly through Ferndale to the town of Blaine at the Canadian border. Soils are widely varied through Whatcom County ranging from very well drained to poorly drained, level to steep, and very deep to very shallow. In that vein, the wetlands through the county have also taken on a varied establishment. The corridor crosses or borders on Chuckanut Bay, Bellingham Bay, Chuckanut Creek, Padden Creek, Squalicum Creek, the Nooksack River, California Creek, Dakota Creek, and Drayton Harbor near Blaine. Along the Puget Sound shoreline, wetland areas typically consist of tidally-influenced emergent and aquatic bed types. More inland areas of the corridor consist of scrub-shrub, emergent and some forested wetlands, particularly around southern and northern Bellingham. Around Ferndale, wetlands consist of all types from forested and scrub-shrub to tidally-influenced aquatic beds. Typical wetland vegetation consists of combinations of Oregon ash, red alder, Pacific crabapple, pacific willow, sitka willow, hardhack, Pacific ninebark, sedges, rushes, broadleaf cattail, bulrush and non-native invasives such at reed canary grass and Himalayan blackberry.

Vegetation, Fisheries, and Wildlife (including Threatened and Endangered Species)

Wildlife and vegetation likely occurring along the rail corridor were identified using the Washington State Department of Fish and Wildlife (WDFW) Priority Habitats and Species data; county-wide and state-wide species lists from the U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration – National Marine Fisheries Service (NOAA Fisheries); WDFW species of concern lists; city and county comprehensive plans; presence data from various natural resource agencies and aerial photo review of habitats. Research for this section was completed using various published data sources and through conversations with WDFW staff. GIS mapping for threatened and endangered species was developed using federal and state fish, wildlife, and vegetation natural resource databases. Mapping can be found in Appendix A (Group B) of this document.

Due to the vast variety of habitats and species located along the Pacific Northwest Rail Corridor, the following existing habitat descriptions are not exhaustive of all species potentially present. The analysis of existing conditions is focused primarily on federal and state species of concern, protected species and priority habitats. The corridor contains a multitude of habitat types ranging from open meadows and prairies to heavily forested and oak woodlands. In many of the streams, lakes and wetlands along the corridor, resident species of fish such as speckled dace, three-spine stickleback, large and small mouthed bass, northern pikeminnow, brown bullhead, pumpkinseed, black and white crappie, suckers, sculpin, minnows, and carp will be common. Habitats along the corridor also support various wildlife, including but not limited to, black-tailed deer, raccoons, opossum, mice, coyotes, skunks, beaver, marmot, chipmunks, squirrels, amphibians, snakes, lizards, turtles and many species of migratory and resident birds. In the northern counties along the corridor, the rail line runs along the Puget Sound shoreline. Marine mammals including seals, sea lions, killer whales and sea otter are present. Detailed project-specific environmental assessments or discipline reports will be prepared for individual projects with impacts to natural and biological resources.

In Clark County, vegetation and wildlife will predominately be located near riparian areas and wetlands along the Columbia River, Vancouver Lake and other bordering lakes or stream crossings, as well as the Ridgefield National Wildlife Refuge. Much of the corridor is located in the Willamette Valley Province, which consists of forested dominant vegetation. Douglas fir is a main component of this province as are widespread grand fir and big leaf maple. Oregon white oak and Pacific madrone with varying understories are precursors to forests in the area. Small patches of oak woodlands are found along the rail corridor near Ridgefield. Also mixed throughout the county are patches of grasslands created from grazing, prescribed burns and other activities. Dominant species in the grasslands include perennial and annual grasses such as California oatgrass, red fescue, ripgut brome, and reed canary grass, as well as forbs such as western buttercup.

Within the Columbia River, marine mammals foraging for salmon and sturgeon, such as California and Steller sea lions, harbor seals, and otter could be expected and typically follow migrational patterns of fish into the river. Other resident wildlife species such as black-tailed deer, coyote and raccoons are common in suburban areas of Clark County. Migratory birds such as Canada goose, sandhill crane, great blue heron, mallard ducks, sparrows, finches, juncos, and other passerine and waterfowl species will be common near wetlands, streams, and vegetated areas in Clark County. Several peregrine falcon, osprey, and bald eagle nests are located along the rail corridor in Clark County, specifically near Vancouver Lake, Lake River and the Columbia River.

The BNSF rail corridor enters into Washington on bridges over the Columbia River, which is a migration route for spring and fall Chinook, Coho, chum and sockeye salmon, sea-run cutthroat trout, winter and summer steelhead, bull trout, green sturgeon, eulachon, and Pacific lamprey. The corridor continues northward along the Lake Vancouver shoreline and Lake River, which provide breeding and rearing environments for warm-water species such as bass and perch. The rail corridor continues northward along Lake River, crossing several streams including Burnt Bridge Creek, Salmon Creek, Whipple Creek, Flume Creek, and Gee Creek. These tributaries support small runs of steelhead, chum, Coho, and sea-run cutthroat trout and many resident species including stickleback, dace and minnows. Critical habitat for listed fish species in Clark County is summarized in Table 4.

Table 4. Waterbodies and streams containing designated critical habitat within 1,000 feet of the rail corridor identified by species and county.

County	Green Sturgeon	Chinook	Chum	Steelhead	Bull Trout
Clark	Columbia River Lewis River	Columbia River Lewis River	Columbia River Gee Creek Lake Creek Salmon Creek Lewis River	Columbia River Gee Creek Allen Creek Lewis River	Lewis River
Cowlitz	Lewis River Columbia River Cowlitz River	Lewis River Burke Slough Kalama River Owl Creek Coweeman River Cowlitz River Ostrander Creek Salmon Creek Toutle River Hill Creek Olequa Creek	Lewis River Burke Slough Kalama River Owl Creek Coweeman River Cowlitz River Salmon Creek Toutle River Hill Creek Olequa Creek	Lewis River Wallace Slough Burris Creek Burke Slough Mill Creek Bybee Creek Schoolhouse Creek Columbia River Kalama River Owl Creek Cowlitz River Coweeman River	Lewis River

County	Green Sturgeon	Chinook	Chum	Steelhead	Bull Trout
				Ostrander Creek Salmon Creek Toutle River Hill Creek Olequa Creek	
Lewis	None	Olequa Creek Stillwater Creek King Creek	Olequa Creek McMurphy Creek	Olequa Creek Stillwater Creek McMurrey Creek Snow Creek Ferrier Creek Curtis Creek King Creek	None
Thurston	None	None	None	None	None
Pierce	None	Puyallup River Swam Creek Clear Creek Clarks Creek White River	None	None	Puyallup River White River Puget Sound
King	None	Green River Black River White River Duwamish River	None	None	Duwamish River Green River Puget Sound
Snohomish	None	Skykomish River Quilceda Creek Cook Slough South Slough Steamboat Slough Stillaguamish River	None	None	Ebey Slough Snohomish River Stillaguamish River Steamboat Slough Union Slough Puget Sound
Skagit	None	Steamboat Slough Skagit River South Fork Skagit River	None	None	Samish River Skagit River South Fork Skagit River
Whatcom	None	Nooksack river	None	None	Nooksack River Puget Sound

In Cowlitz County, vegetation and wildlife are associated with the several wetlands and riparian areas along the many rivers, creeks and floodplains that are dominant throughout the corridor. The county falls within the *Tsuga heterophylla* or western hemlock vegetation zone. Douglas fir, western hemlock and western red cedar are the dominant overstory. Grand fir and western white pine appear sporadically while Pacific yew is a

subordinate species. Hardwood species such as big leaf maple and red alder are found along disturbed areas and riparian corridors as are black cottonwood, Oregon ash and red alder. Pacific madrone and Oregon white oak may be found on dryer slopes but are not common. Small pockets of oak woodlands occur along the rail corridor. Wildlife species are similar to the Clark County section. Waterfowl and passerines present are similar throughout the corridor. Osprey and bald eagle nests are present along the Lewis, Kalama, Coweeman, Cowlitz and Columbia rivers of Cowlitz County. Great blue heron and great egret have been observed north of Kalama near the Columbia and Kalama rivers.

Entering Cowlitz County the rail corridor crosses the Lewis River, which is a migration route for fall and spring Chinook, Coho, summer and winter steelhead, bull trout, sea-run cutthroat trout and a small chum population. Chinook, Coho, steelhead and chum spawn in the lower reaches of the Lewis River, while bull trout populations primarily utilize the headwaters. Eulachon are known to occasionally spawn in the Lewis River.

The alignment then parallels the Columbia River, crossing several tributaries including Burris Creek, Burke Creek, Canyon Creek, Mill Creek, Bybee Creek and Schoolhouse Creek. These tributaries support runs of sea-run cutthroat, steelhead and small chum salmon populations. Northward, the Kalama River provides a migration corridor for spring and fall Chinook, Coho, chum, sea-run cutthroat, winter and spring steelhead, and bull trout. Spawning of steelhead, cutthroat and Coho occurs in the lower reaches of the Kalama River. Between the Kalama and Coweeman rivers, the rail corridor follows the shoreline of the Columbia River. At this location there are documented osprey and bald eagle nests as well as several small tributaries that contain resident fish species. Owl Creek and the Coweeman River are migratory corridors for fall Chinook, Coho, sea-run cutthroat and winter steelhead. Resident fish species such as sculpin, three-spine stickleback, dace, northern pikeminnow, suckers and bass are present in many of the streams and rivers of Cowlitz County.

The Cowlitz River produces runs of spring and fall Chinook, chum, Coho, sea-run cutthroat, and spring steelhead. The Cowlitz River is also the largest producer of eulachon in the Columbia River basin. Eulachon are known to spawn throughout the river. In addition, the Cowlitz River supports a multitude of resident fish species including lamprey, bass, carp, sculpin, bullhead, perch, stickleback, suckers and mountain whitefish. Ostrander Creek and the Toutle River support runs of Chinook, Coho, winter steelhead, and cutthroat trout. Critical habitat for fish species is identified or proposed throughout Cowlitz County and is summarized in Table 4.

From Lewis County north, vegetation types fall within the Puget Sound subdivision of the *Tsuga heterophylla* zone. The dominant species are similar to what is described for Cowlitz County; however, other habitats areas are included within the subdivision. These include areas of prairie, oak woodland, pine forest and swamps and bogs. Prairie areas are found within Pierce, Lewis, and Thurston counties and consist of Idaho fescue, moss, and several species of sedges. Douglas fir and Oregon white oak groves often move into prairie areas. Pine forests found along the corridor include dominant species such as lodgepole pine, western white pine, ponderosa pine and Douglas fir. Swamps and bogs

are typically found in the more northern counties. Western red cedar and red alder are dominant in swamps. Sitka spruce, western hemlock, lodgepole pine, and western white pine may also be present in swamps. Bog areas contain sphagnum mosses, sedges, bluejoint reedgrass, small fruited bulrush, mannagrasses and rushes and are sometimes surrounded by shrubs including bog Labrador tea and bog laurel. In Lewis County, wetlands and floodplains occur along the corridor similar to what is found in Cowlitz County. Much of the vegetation between the corridor and adjacent farmland is scrub-shrub wetland. Bald eagle nests line the Cowlitz and Chehalis rivers in Lewis County. Wildlife occurring in Lewis County along the rail corridor is similar to that found in Cowlitz County, including back-tailed deer, raccoon, opossum, squirrels, migratory birds, amphibians, and garter snakes. Other small mammals and reptiles are typically present throughout the corridor. Throughout Lewis County and along the rail corridor, there are several small ponds and wetlands that provide habitat for migratory birds and waterfowl.

Upon entering Lewis County the rail corridor crosses Olequa Creek, a tributary to the Cowlitz River that is designated critical habitat for Chinook salmon and contains runs of Coho, chum and Chinook salmon and steelhead. Olequa Creek is crossed twice by the rail line; first, on the southern border of Vader and secondly, at the northern end of Winlock. Between the two Olequa Creek crossings, the rail corridor crosses McMurphy and Ferrier creeks, which both are presumed to support runs of chum salmon, Coho salmon and steelhead. The corridor crosses the Newaukum River and Dillenbaugh Creek before entering the city of Chehalis. The Newaukum River produces runs of spring and fall Chinook, Coho, coastal cutthroat and winter steelhead trout. Dillenbaugh Creek supports runs of Coho salmon and cutthroat trout. Before entering Centralia the railway crosses Salzer, China and Hanaford creeks, which are tributaries to the Chehalis and Skookumchuck rivers and provide migration routes and rearing areas for Coho salmon, steelhead and cutthroat trout. Resident fish such as sculpin and dace are found in all of the streams in Lewis County.

In Thurston County, lands are transitional from the more aquatic systems and swamp areas of Lewis County to more terrestrial systems near the fringe of the Nisqually National Wildlife Refuge. Vegetation areas transition from prairie species to wooded areas in the north county area that are dominated by Douglas fir, red alder and big leaf maple. Wildlife occurring in the corridor includes the bald eagle, peregrine falcon, osprey and black-tailed deer.

The Skookumchuck River, crossed slightly east of Bucoda, produces runs of spring and fall Chinook, chum, and Coho salmon; coastal and resident cutthroat trout; and steelhead. North of Bucoda, the rail line bisects an unnamed tributary to the Skookumchuck River that contains runs of Coho salmon, steelhead and cutthroat as well as several species of resident fish. In this area, the rail corridor travels through areas of oak woodlands and rare prairie plant communities consisting of Pacific pea and white top aster. Also found in this habitat are pocket gophers, Taylor checkerspot butterflies and mardon skippers.

In Tenino, the rail corridor crosses Scatter Creek, which supports cutthroat trout and Coho salmon. Near Beaver Creek, patches of rock prairie and oak woodlands line the corridor, while there are several patches of sensitive plants species including white-top

aster, golden paintbrush and fescue. Oregon vesper sparrow and other migratory birds have been observed in grasslands in this area. Beaver and Scatter Creeks contain resident fish species such as suckers, sculpin and dace.

In northern Thurston County, the rail line crosses the Deschutes River near its confluence with Spurgeon Creek. The lower Deschutes River, including Capitol Lake, is the major migration route to spawning areas for Chinook salmon, steelhead and Coho salmon. Riffle sculpin, western brook lamprey and coastal cutthroat trout are found in this system.

Near the Olympia/Lacey train station, Mazama pocket gophers have been documented and oak woodlands are present in conjunction with agricultural development. Also in the area, the rail line bisects Pattison Lake and passes in the vicinity of Long Lake, which contains habitat for migratory birds and waterfowl. Coho and chum salmon are also found in the Woodard-Smith Creek drainage into Henderson Inlet.

In Pierce County, Douglas fir, big leaf maple, and red alder dominate vegetation. Oregon oak groves exist in the Fort Lewis area where understory vegetation is dominated by prairie species and snowberry. As the corridor progresses through Tacoma toward Puyallup, vegetation transitions into areas that are farmed or in floodplains where numerous wetlands or drainages with wetland vegetation exist. Wildlife species of concern including bald eagle, peregrine falcon, osprey, and western gray squirrel are documented along the corridor. Marbled murrelet use the Nisqually River as a flight path to nesting grounds on Fort Lewis. Wetlands and drainages throughout Pierce County provide habitat for species of migratory birds and waterfowl, amphibians and invertebrates.

The Nisqually River, including McAllister Creek, produces large runs of Chinook, chum, pink and Coho salmon and steelhead. Bull trout and cutthroat trout are present as well. Suitable spawning habitat begins above river mile 3.0, in the vicinity of the BNSF tracks, and extends upstream in both the mainstem and side channels. The Nisqually River is also home to many species of resident fish including sculpin, dace, stickleback, mountain whitefish, northern pikeminnow, Pacific and brook lamprey and suckers. Critical habitat and foraging, migration and overwintering habitat for bull trout is documented at the Nisqually River crossing, while critical habitat for Chinook salmon is designated downstream.

North of the Nisqually River crossing, the rail corridor diverges to a western and a proposed eastern alignment (Point Defiance Bypass). The western alignment begins at the Nisqually River delta and Red Salmon Creek where there is salt marsh habitat and designated critical habitat for Chinook salmon and bull trout. Coho and chum salmon utilize the Red Salmon and Sequalitchew Creek drainages. These salmon use the area adjacent to the BNSF tracks primarily as a migration corridor. No spawning occurs in the very lower reaches of these creeks. As the rail line follows the shoreline of Puget Sound, shorebird concentrations and littleneck and butter clams, horse clams, geoducks, Dungeness crab, and in some locations, shrimp utilize the saltwater intertidal areas.

In addition to shoreline habitat, the western rail alignment travels through Douglas fir and western hemlock forested areas between DuPont and Steilacoom. As the rail corridor

reaches University Place, it crosses Chambers Creek, where Coho, chum, Chinook, steelhead and cutthroat trout are present. There are several bald eagle nests in this area as well. Critical habitat for Chinook salmon is designated in Chambers Creek. The majority of terrestrial habitat is limited to urban residential and commercial areas and small patches of urban oak woodland. Other wildlife species include vesper sparrow colonies, purple martins, raccoon, and possum.

The western alignment follows the Tacoma Narrows around Point Defiance and along Commencement Bay to meet up with the proposed eastern alignment near the Puyallup River. The Tacoma Narrows and Commencement Bay provide habitat for marine fish species including rockfish, herring, and flounder as well as for shorebirds and marine mammals. Killer whales, gray whales and harbor seals are seen in this area annually. Peregrine nests are documented in Commencement Bay waterways.

The proposed eastern alignment (Point Defiance Bypass) follows the Interstate 5 corridor through the highly developed areas of DuPont, Lakewood and Tacoma, and also through heavily wooded areas near Fort Lewis. Osprey nests, great blue heron rookeries, western bluebird observations and sporadic oak habitat areas are documented along the corridor. North of Dupont, the corridor runs adjacent to American Lake and crosses several of the lake's unnamed inlet streams. American Lake is home to migratory birds, waterfowl, bald eagle and osprey, deer, raccoon, amphibians, and other wildlife. The rail corridor crosses Murray Creek in this area as well, which is home to cutthroat trout and sculpin. In Lakewood, the corridor crosses Clover Creek, which supports runs of steelhead, Coho salmon, rainbow trout and cutthroat trout.

Just south of the Puyallup River, the two alignments merge and cross Swan, Squally, Clear and Clarks creeks, which contain Coho salmon, steelhead, chum salmon, Chinook salmon and pink salmon. Chinook critical habitat is designated in Clear and Clarks creeks. Bull trout core habitat is present in Clear and Clarks creeks. Great blue heron rookeries and bald eagle nests are found along the Puyallup River in this area. The tracks cross the Puyallup River east of Puyallup and the confluence with the White River; in this area Chinook, Coho, pink, chum salmon, steelhead, bull trout, and cutthroat trout are using the river as a migration route and for some spawning. Critical habitat is designated for bull trout and Chinook salmon in this stretch of the river. As the corridor runs through Sumner, the line crosses Salmon Creek, a tributary to the White River. Salmon Creek supports runs of chum, Coho and pink salmon.

The rail corridor crosses into King County just south of crossing the White River. In King County, vegetation varies dramatically from floodplain, bogs and wetlands in the south county area to forested riparian vegetation in the north county area. The south county area includes a variety of wetland scrub-shrub, emergent and forested areas. The north county area includes a mixture of forested areas with shrub understory in a primarily suburban residential and commercially developed area.

The White River provides a migration corridor for spring and fall Chinook, pink, Coho, chum, steelhead, bull trout, coastal cutthroat trout and sockeye. Most of the spawning in

the White River occurs several miles upstream of the rail crossing. Critical habitat for Chinook is designated and bull trout core habitat is identified through this section.

North of Auburn, the corridor crosses the Green River. Fall Chinook, Coho, and chum salmon spawn and rear in this section of the mainstem Green River. Steelhead use this area as a migration corridor. Green heron have been documented in the area as well as great blue heron and osprey. Critical habitat for Chinook and bull trout is designated in the Green River at the corridor crossing. Other resident fish species include sockeye, cutthroat trout and sculpin. North of the Green River, the corridor crosses Springbrook Creek which supports cutthroat trout populations.

Through Tukwila and Renton, the rail corridor parallels the Duwamish River and crosses the Black River. At the rail line, the Black River contains fall Chinook, Coho, steelhead and cutthroat trout. The Black River is dammed upstream of the railroad line; fish passage is provided for Coho. Heron, osprey and bald eagles are present in the area. In Seattle, the rail corridor parallels Interstate 5 and US 99, running through a heavily-developed corridor. There are peregrine nests on structures in this area. In Seattle, the rail corridor crosses US 99 and parallels the Puget Sound shoreline. The shoreline provides habitat for several species including Chinook salmon, bull trout, herring, smelt, and other forage fish species, peregrines, shorebirds, waterfowl, and purple martin. .

At Lake Union, the rail corridor crosses critical habitat for bull trout and Chinook salmon. There are nesting bald eagles and heron rookeries in the area. Lake Union is used by migrating steelhead, cutthroat, Coho, Chinook, and various resident fish species. Through northern Seattle, the corridor parallels Puget Sound again, where shorebirds and haul-out sites for seals and sea lions are present as well as piers containing nesting purple martins and near shore habitat designated critical for bull trout.

North of the Salmon Bay Ship Canal and northward into Snohomish County, shellfish resources are found in the intertidal and near shore beaches of Puget Sound. These resources include butter and littleneck clams, horse clams, geoducks and Dungeness crab. Northern King County includes crossings of Pipers and Boeing creeks which support Coho, Chinook, steelhead, and cutthroat.

In Snohomish County, steep hillsides on the upland side and shoreline on the west dominate the south county corridor. Big leaf maple, western red cedar, Douglas fir and western hemlock on the upland side dominate vegetation. Scrub-shrub vegetation exists at the toe of the upland slopes and along the riparian areas. Vegetation north of Everett, after crossing the Snohomish River, is dominated by estuarine emergent wetlands in the vicinity of Ebey Slough. Wildlife is prevalent throughout the corridor except in the downtown Everett area. Wildlife in the corridor includes songbirds, purple martin, great blue heron, bald eagle, peregrine, osprey, and black-tailed deer.

The short coastal streams between Point Wells and Everett generally do not support salmonid resources. However, cutthroat trout are present in Deer, Shellberger, Shell and Pigeon creeks and Lunds, Big, Japanese, Powder Mill and Merrill Ring Gulches. Coho salmon are also found in many of these streams. Steelhead are also observed in Lunds Gulch, north of Edmonds.

In Everett, the rail corridor turns inland and runs through developed urban areas between the Snohomish River and Interstate 5. The Snohomish River and the two side channels crossed by the railroad, Steamboat Slough and Ebey Slough provide migration routes for Chinook, Coho, pink, sockeye and chum salmon, steelhead, bull trout and cutthroat trout. Also, resident fish species are abundant including black and white crappie, sculpin, largemouth bass, Pacific and river lamprey, stickleback and mountain whitefish. The Ebey Slough runs include those entering Quilceda Creek on the Tulalip Reservation as well as those moving upstream to the Skykomish and Snoqualmie rivers. Freshwater and intertidal plant communities are found throughout this area.

Several unnamed drainage channels run along or cross the rail corridor in the area of Marysville. These drainages contain resident fish and Coho salmon. Portage Creek is a tributary to the Stillaguamish River in Snohomish County. Portage Creek, Cook Slough and the Stillaguamish River support cutthroat trout, Coho and chum salmon, bull trout, and steelhead in addition to resident fish species. At the southern border of Stanwood, the rail corridor crosses Church Creek which supports runs of cutthroat trout, bull trout, Coho and chum salmon, and steelhead. Critical habitat within Snohomish County and along the rail corridor is found nearly exclusively within the Stillaguamish, Skykomish, Snoqualmie, and Snohomish rivers and along the Puget Sound shoreline. Haul-out sites for seals are located in a few places along the coastline.

In Skagit County, the corridor vegetation is predominately wetlands and grasses in the Skagit River valley bordered by farmlands and pockets of black cottonwood and alder groves. Lining the Skagit River, there are numerous bald eagle nests. Also, the Skagit River area contains one of the state's largest wintering populations of bald eagles. North of the Skagit River, vegetation becomes more upland, transitioning from big leaf maple, cottonwood and red alder to a mixture of paper birch, poplars, Douglas fir and western red cedar vegetation. Wildlife varies with a variety of songbirds in the Skagit valley and bald eagles in the area of the various river and creek crossings. Also found in the corridor are peregrine falcon, osprey, Townsend's big eared bats, black-tailed deer, western toad and marbled murrelet. Between Colony Creek and Oyster Creek, forest vegetation is well developed and marbled murrelet are often seen traveling through this area to eastern nesting grounds. Around Larabee State Park, seal and sea lion haul-out sites are present along the coastline.

The railroad crosses the Skagit River at approximately river mile 16.5. The lower mainstem Skagit River within this section provides migration and rearing for all species of salmon as well as bull trout, cutthroat trout and steelhead. Rearing is extensive within the sloughs, channels and along the estuaries and islands downstream of the railroad crossing. Spawning generally occurs upstream. Most of the lower Skagit River is also considered high-quality sensitive tidal surge plain wetland and estuarine habitat.

The Samish River supports Chinook, Coho, sockeye/kokanee, pink and chum salmon, steelhead, bull trout and cutthroat trout. All five salmon species spawn within the reach of the river near the railroad crossing. Rearing takes place throughout the lower river. Bull trout critical habitat is designated up to the railroad crossing. Prior to entering Whatcom County, the rail corridor crosses a small pond, Oyster Creek and Colony Creek,

and parallel to Edison Slough, which contain Coho salmon, steelhead and cutthroat trout. The lower portions of Whitehall, Harrison and Oyster creeks provide low gradient flows with good spawning gravels for chum and Coho.

In Whatcom County, vegetation is predominately upland vegetation east of the corridor with Douglas fir, red alder and big leaf maple as the primary trees and a variety of understory vegetation. South of Bellingham are small patches of white oak and north pacific bald and buff habitat. The vegetation along Chuckanut Bay and Bellingham Bay includes a variety of shrubs in areas that have been riprapped to contain the rail line. North of Bellingham, vegetation is a mixture of upland deciduous trees and shrubs in the proximity of the rail line itself. Near Ferndale, there are large areas of Canadian St. John's wort. Pockets of wetland scrub-shrub vegetation exist in lowland areas. Estuarine and riparian habitats exist throughout much of the corridor. Birds found in the vicinity of the corridor include common loon, peregrine falcon, marbled murrelet, great blue heron, cavity-nesting ducks, snow goose, bald eagle, northern goshawk and osprey. Shorebirds and seabirds are present all along the coastline in Whatcom County. Black-tailed deer also inhabit the corridor area. Haul-out sites for seals and sea lions are present along the coast.

Chuckanut Creek and Chuckanut Bay, adjacent to Samish Bay, support Coho and chum salmon, steelhead and cutthroat trout. Puget Sound intertidal and near shore beaches support clam and oyster populations.

Continuing northward, Padden Creek in the Fairhaven area of Bellingham supports small runs of Coho, Chinook, and chum salmon, steelhead, and cutthroat trout. In central Bellingham, Whatcom Creek supports both natural and hatchery-reared runs of Coho, Chinook, pink, sockeye and chum. In addition, steelhead and cutthroat trout are documented rearing near the rail crossing over the creek. Further north, Squalicum Creek has runs of cutthroat trout, steelhead, Coho, Chinook and chum as well as resident fish species. North of Bellingham, several small streams cross under the rail line and contain runs of cutthroat trout and Coho salmon.

In Silverdale, the rail corridor crosses Silver Creek, which supports runs of Coho salmon, chum salmon, and resident cutthroat trout. The railroad crosses the Nooksack River at approximately river mile 6.0 near Ferndale. The Nooksack River is a major migration corridor for Chinook, Coho, pink, chum and sockeye salmon, steelhead, bull trout and cutthroat trout. The mainstem of the river is used for spawning and rearing by Chinook while the tributaries are used by the other species, mostly upstream of the railroad crossing. The river is also designated critical habitat for Chinook salmon and bull trout.

North of the Nooksack River, the rail corridor crosses several small streams before entering British Columbia. These streams, including California and Dakota creeks, support runs of Coho salmon and cutthroat trout as well as resident sculpin. Dakota Creek also supports runs of Chinook, chum and steelhead.

Air Quality

Polluted air has many negative impacts, including causing or worsening lung-related diseases, such as emphysema, chronic bronchitis and asthma, and causing breathing difficulty and even death. Easily inhaled small particles, called particulate matter, are perhaps the most significant health concern related to poor air quality.

Polluted air can contribute to water pollution, and can damage building materials, cloth and metals. It can also damage trees, agricultural crops and other living organisms, as well as contributing to decreased visibility.

Air quality in Washington is considered moderate to good. In 1995, thirteen areas in the state were identified as being in "non-attainment" (not meeting federal health-based standards) for one or more of four air pollutants: ground-level ozone, small particulate matter, carbon monoxide and sulfur dioxide. Those areas are now clean enough to meet federal standards.

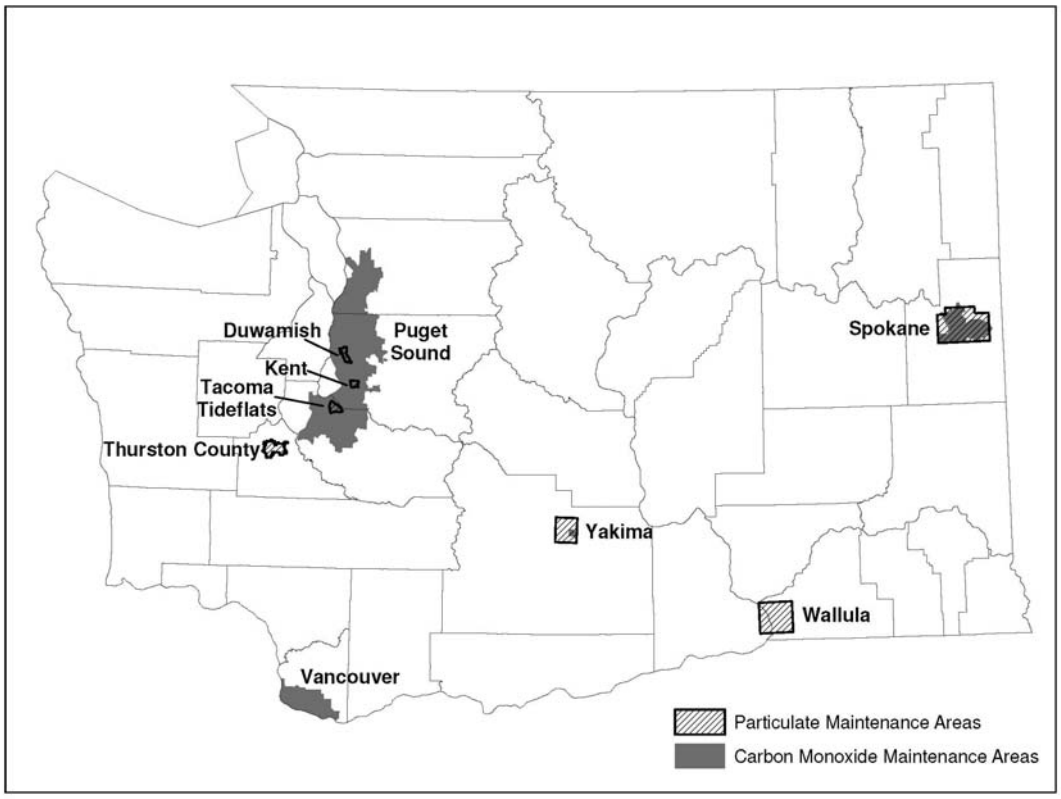
The air quality status of the nine counties traversed by the Pacific Northwest rail corridor is presented in Appendix A (Group C) of this document.

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 vehicle emissions are also a source of particulate matter and are precursors to ground level ozone.

In addition, high levels of particulate matter are caused by tiny particles of soot, dust, and unburned fuel from woodstoves, fireplaces, backyard burning, agricultural burning, and industry.

As shown in Exhibit 1, the project is located within the Puget Sound ozone and carbon monoxide maintenance areas, the Vancouver ozone and carbon monoxide maintenance areas, and the Tacoma Tide Flats, Kent, and Duwamish PM10 maintenance areas. The carbon monoxide maintenance area includes the entire Puget Sound Metropolitan Urban Area Boundary. It extends from north of Everett in Snohomish County to just south of DuPont in Pierce County. The maintenance area is bounded on the eastern side by the Cascade foothills. The Puget Sound ozone maintenance area includes the southwestern half of Snohomish County, most of King County, and all of Pierce County. The Vancouver ozone maintenance and carbon monoxide areas include the entire Vancouver Metropolitan Urban Area Boundary. The Tacoma Tideflats PM10 maintenance area includes the industrialized Port of Tacoma area northwest of Interstate 5. The Kent PM10 maintenance area includes the industrialized area around Kent. The Duwamish PM10 maintenance area includes the Port of Seattle area northwest of Interstate 5.

Exhibit 1. Statewide air quality maintenance areas



Federal Transportation Conformity Rules apply to only the railroad crossings where changes are made to the roadway. Railroad crossings are specifically exempted under both the State and Federal Transportation Conformity Rules. These rules recognize that safety impacts may be greater than potential air quality impacts. Consequently air quality conformity analysis of motor vehicles due to changes in railroad crossings is not required under the Transportation Conformity Rules.

Federal General Conformity Regulations, however, do apply when increasing the service of passenger trains. Emissions outside the maintenance areas are not expected to exceed the NAAQS and are not required to be analyzed.

Soils and Geology

The types of soils and geologic formations in a project area dictate how a project should be constructed, the potential for landslides in the area, and the area's susceptibility to earthquakes.

In addition, steep slopes throughout the corridor can be disrupted during construction of rail improvements. It is critical that these areas be identified as part of project planning.

Soils and geology were identified from a review of the Soil Survey maps for each respective county. Additional information was gathered by reviewing the city and county comprehensive plans. Slope stability information was developed through various sources including the state's Coastal Atlas, comprehensive plans, and various publications from the Washington State Department of Natural Resources.

Mapping of the general slope stability of the corridor can be found in Appendix A (Group D) in this document.

In Clark County, the corridor generally follows the Columbia River basin from the Oregon border to the Cowlitz County line, remaining in the lowlands throughout. Soils are predominately silt loam. The corridor crosses slopes exceeding 40% within the city of Vancouver just south of Vancouver Lake. The corridor occasionally borders slopes greater than 40% on the east side of the Columbia River basin. Landslides are a potential in Clark County. Slope stability of most concern is in the Vancouver/Ridgefield area.

In Cowlitz County, the corridor follows the Columbia River and continues along the Columbia and Cowlitz River basins and along Olequa Creek to the Lewis County line. The predominant soil type found throughout the county in this corridor is silt loam. The slopes range from level to nearly level, with slopes of 30 to 50% as the corridor nears the valley bluffs to the east. The corridor occasionally encounters rock bluffs as the railroad nears the eastern edge of the lowlands. The corridor tunnels through a rock bluff near the city of Kelso. Slope stability is of concern in the Kelso/Longview area.

The corridor in Lewis County follows Olequa Creek, encountering nearly level silt loam soils. The corridor proceeds north to Winlock, encountering slopes occasionally ranging up to 15% with silt loams. Silt clay and silty clay loam with slopes from 0 to 5% and 5 to 15% are also encountered. The corridor proceeds north through the Chehalis and Centralia area, passing through the Newaukum River, Dillenbaugh Creek and China Creek basins where the slopes are level to nearly level with soils of silt clay loam. The corridor then follows the Skookumchuck River where fine sandy loam is encountered with level to nearly level slopes. No potential landslide areas are noted in the corridor. Slope stability is of most concern in the Napavine and Centralia areas.

In Thurston County, the corridor follows the Skookumchuck River and along the river basin to the town of Bucoda. The soils along the river are primarily silty clay loam. The corridor then proceeds northerly toward Tumwater, Olympia, and Lacey. Leaving the river basin, soils transition to more gravely sandy loam or loamy fine sand. Slopes are level to nearly level, ranging up to 3%. The corridor crosses several streams or rivers where soils change to more typical river basin silts. The corridor proceeds northeasterly, crossing the Nisqually River near the city of DuPont. Prior to crossing the river the corridor enters a large cut section of mixed soil conditions ranging from loam sand to gravelly sand loam with slopes up 30%.

In Pierce County, the corridor crosses the Nisqually River near the city of DuPont and enters into gravelly soil conditions. The BNSF corridor proceeds northeasterly to Tacoma. The corridor enters the Puyallup River valley and proceeds through Puyallup

and Sumner to the city of Auburn. The slopes are level or nearly level. Soils in the valley range from silty clay loams to muck. Potential for liquefaction in a seismic event is noted in those areas as well as the areas within the Port of Tacoma rail access area. Slope stability is of major concern along the entire shoreline from DuPont into Tacoma. For the proposed Point Defiance Bypass route, the rail line is situated on a broad upland plateau consisting of sands and gravels, with the majority of the surface covered by Steilacoom Gravel. No potential landslide areas are noted for this upland route.

In King County, the corridor passes through Auburn near the White River, close to the east side of the valley. From that point into the industrial area of Seattle the corridor remains on silt loam type soils of level or nearly level topography. The underlying soils are of rich farming types typical of the floodplain areas of south Puget Sound. Within the city of Kent the corridor encounters a seismic hazard area, due to the soft muck soil conditions. Near the Duwamish River in Tukwila the corridor lies between steep bluffs and the river with landslide potentials. From downtown Seattle northerly the corridor follows the shores of Puget Sound to Snohomish County. In this area the tracks lie on a low bench with high bluffs on the east and the waters of Puget Sound on the west. Landslide potential exists along this area. Slope stability is of major concern all along the shoreline north of Shilshole Bay.

In Snohomish County, the corridor follows the shoreline of Puget Sound to the city of Everett, passing through Edmonds and Mukilteo. Along this shoreline the slopes range from 25 to 75% with potential for landslides next to the corridor. Some areas adjacent to the corridor are filled lands in the tidewaters of Puget Sound. The corridor proceeds northerly from Everett through the floodplains of the Snohomish River. Soils are level to nearly level silts and loams throughout. Slope stability is of most concern along the shoreline from the King/Snohomish border to Mukilteo.

In Skagit County, the corridor follows north through the floodplains of the Skagit River. The soils are primarily silts deposited from the frequent flooding with level to nearly level slopes except at the river crossings. Along Samish Bay to the Whatcom County line the corridor follows the shoreline with steep slopes ranging from 65 to 90 % with rock outcrops. Landslide potential exists along this portion of the corridor. Slope stability is of most concern in northern Skagit County, along the shoreline of Samish Bay.

In Whatcom County, the corridor follows along the shoreline of Samish Bay and to the city of Bellingham along the shores of Puget Sound. The soils are loam over sandstone or bedrock on severe slopes of 30 to 60 %. Landslide potential is evident along this portion of the corridor. Within Bellingham, the soils are classified as urban with slopes varying from 0 to 3% to 0 to 8%. The corridor proceeds from Bellingham to Blaine with soils of silt, clay, loam, and muck with level to nearly level terrain. Near Blaine the soils are silt and loam on marine terraces. High water tables exist throughout this portion of the corridor. Slope stability is of most concern in northern Bellingham and Blaine.

Land Use

Land use refers to the utilization of buildings and land (for example, commercial, residential, agricultural) in an area. It is important to look at land uses to determine the compatibility of a proposed project with the surrounding land uses, as well as to determine if the existing land uses could change as a result of the new transportation facility.

Throughout the corridor, there are many different land uses. In Clark, Cowlitz, and Lewis counties, the land uses are primarily rural in nature. In the larger cities, such as Tacoma or Seattle, the land uses are concentrated with a mix of industrial uses and commercial uses. In the northern portion of the corridor, in Skagit and Whatcom counties, the land uses are primarily agricultural. In a few of the smaller communities, some housing is located close to the railroad tracks.

Another aspect of land use in Western Washington is achieved through the development and enforcement of comprehensive plans. In 1990, the Washington State Legislature adopted the state's first comprehensive Growth Management Act (GMA), which is designed to help communities direct urban growth, reduce sprawl, and protect resources. As part of GMA, most communities are required to develop land use plans that will dictate the character and direction of growth within their cities. Many of the comprehensive plans designated the rail line as an Essential Public Facility under GMA, and all were supportive of intercity passenger rail service.

Due to the rail projects completed over the past sixteen years using the state's incremental approach to developing its intercity passenger rail system, the land uses adjacent to the corridor have been previously documented. Information gathered for this resource also included reviews of comprehensive plans and policies. The Bibliography at the end of this document provides a detailed listing of sources used for this research.

In Clark County, the rail corridor extends through the incorporated cities of Vancouver and Ridgefield and the unincorporated areas of Clark County.

Through its 2007 Comprehensive Plan, Clark County has provided guidelines for future development with the goal of managing and accommodating growth for the next 20 years while preserving its existing character. The transportation element within the plan anticipates a transition from private to transit vehicles, including high-capacity transit and light rail. The plan supports improved Amtrak intercity passenger rail transportation and high-speed rail along the Pacific Northwest Rail Corridor as an alternate form of transportation to the single occupant vehicle.

The City of Vancouver serves as the largest urban growth area in Clark County. The land uses that abut the corridor include industrial, residential, and open space. In 2004, the city of Vancouver adopted its updated Comprehensive Plan for 2003-2023. The updated comprehensive plan does not propose significant changes in land uses or allowed densities throughout Vancouver from the 1994 plan. The Amtrak station is owned by the City of Vancouver.

The City of Ridgefield's Comprehensive Plan 2005 Update (effective September 2008) outlines its future growth strategies, including its desire to maintain a strong and vibrant downtown and increasing commercial type of waterfront activities and access to the areas located on the east and west side of the tracks respectively. The rail line abuts commercial, mixed use, and low density residential land uses.

From Clark County, the rail corridor continues north through Cowlitz County, passing through the incorporated cities of Woodland, Kalama, Kelso, Longview, and Castle Rock, and the expansive unincorporated areas.

The Cowlitz County Comprehensive Plan, updated May 1981, serves to manage the County's growth in an orderly, positive, and constructive fashion. The plan encourages efficient transportation systems and alternate modes of transportation. The plan also strives to manage and protect available resources and maximize the potential of available lands for future growth. Industrial activity is favored along the rail line as well as the continuation of growth in areas with similar land uses within existing industrial and residential areas.

The City of Woodland's 2005 Comprehensive Plan Update designates the areas along the rail corridor as heavy and light industrial with small pockets of low and high density residential. A number of vacant lots exist along the rail corridor, providing the opportunity for the corridor to eventually meet the desired density of activity as stated in the plan.

All through Woodland and Kalama, the corridor is primarily agricultural with pockets of industrial and rural residential. Suburban and rural residential and industrial uses are found close to the city of Kalama.

The City of Kalama Comprehensive Plan 2005-2025, adopted December 7, 2005, serves to guide development while considering natural and economic elements. The plan addresses support for expanded railroad freight service, and specifically mentions the WSDOT rail passenger capacity expansion project (Kelso to Martins Bluff) in the plan.

The City of Kelso provides for passenger rail in its current and future plans. The city owns the passenger depot located in the downtown section of Kelso. The areas along the rail corridor are similar to other jurisdictions in Cowlitz County, ranging from industrial and commercial uses to open space and agricultural.

The 2006 Castle Rock Comprehensive Plan was created as a tool to provide for uniform development of the region. The corridor is currently bordered by vacant land (for future residential uses) and low and high-density residential units. The plan does, however, acknowledge the existence of Amtrak rail passenger service and the BNSF right of way, and provides a small buffer from future land uses along the rail corridor.

From Cowlitz County, the rail corridor extends north into Lewis County's unincorporated areas and its incorporated cities of Vader, Winlock, Napavine, Chehalis, and Centralia.

Lewis County developed its current Comprehensive Plan in 1999. The plan provides an overall direction for land use planning in Lewis County and has been amended several times. Lewis County's plan designates the unincorporated areas located south of Napavine as rural mixed use. The unincorporated areas north of Napavine are designated as urban and some suburban. The existing land uses in these areas reflect their designated uses. The plan recognizes the intercity rail passenger service and the proposed upgrades to high speed rail along the Pacific Northwest Rail Corridor

The City of Vader's Comprehensive Plan was amended in 2005 and designates the area around the rail corridor for community services (primarily for open space and park areas), residential, commercial and industrial. Existing land uses are primarily commercial, residential and open space. The plan and the city support enhancement of passenger rail and high speed rail planning efforts in the region.

The City of Winlock updated their Comprehensive Plan in 2005 to reflect the changes experienced within the city and to integrate the requirements of the Growth Management Act. Land uses are primarily commercial, residential and open space.

The City of Napavine's 2006 Comprehensive Plan Update and EIS Addendum proposed an expansion of the Urban Growth Area (UGA) to accommodate population growth and to promote economic development. The rail line passes through the city's core commercial area as well as residential and commercial/industrial land uses. The city's transportation policy supports enhancement of passenger rail and high speed rail planning efforts in the region.

The 1999 Chehalis Comprehensive Plan favors a multiple center or cluster concept for future development patterns. Under the desired approach, land uses would be grouped in pockets of residential neighborhoods, parks and open space, commercial and industrial activities. The existing land development along the rail corridor is primarily commercial and industrial.

Centralia is the largest city in Lewis County and updated their Comprehensive Plan in 2007. The goals and corresponding policies in the city's plan include the preservation and enhancement of residential neighborhoods and orderly development in the designated commercial areas, while reducing the long-range public costs of development. Existing land uses within the city are typical for a small urban area, and include industrial, commercial, and undeveloped areas. The comprehensive plan also encourages the use and expansion of both passenger and freight rail services.

The rail corridor extends in a northerly direction through the town of Bucoda, and the cities of Tenino and Lacey, and the unincorporated areas of Thurston County. The majority of the corridor extends through sparsely-developed unincorporated areas. The Thurston County Comprehensive Plan emphasizes the need to preserve this low density and other county resources. Land uses along the corridor are designated for a mix of commercial, agricultural, and residential uses. The 2004 plan also encourages continued and enhanced passenger rail transportation.

Current land uses in the city of Tenino are predominately low density residential. The city, in its 2006 Comprehensive Plan, has designated the land adjacent to the corridor for continued residential use in the southern and northern sections of the city. The central portion is designated for industrial use.

The City of Lacey and Thurston County land use plan for the Lacey Urban Growth Area is a joint planning document prepared as the Lacey Comprehensive Land Use Plan and is an element of the Thurston County Comprehensive Land Use Plan updated in 2003 under Growth Management Act requirements. The plan identifies the rail corridor for rail transportation and other public purposes. The rail corridor extends through the urban growth area boundary. Land uses bordering the rail corridor are primarily single family and low density residential.

The Pierce County Comprehensive Plan was created in accordance with the Growth Management Act and was originally adopted in 1994. It is amended every two years. The purpose of the plan is to provide policies and strategies for current and future land uses and development for the next 20 years throughout the county.

The unincorporated areas of Pierce County consist of a diverse range of land uses. The Fort Lewis Military Reservation, which is under the authority of the federal government, is primarily utilized as open space. The remaining areas throughout the county that abut the rail line include moderate density residential, rural separators, and agricultural resource lands.

The City of DuPont's 2001 Comprehensive Plan designates the portion of the rail corridor along Puget Sound as a sensitive areas buffer. Due to the steep topography, the area is only appropriate for open space use. The proposed Point Defiance Bypass rail alignment passes next to mixed use, commercial, and historic village sections of the City.

The City of Lakewood is also located on the new Point Defiance Bypass rail alignment. The rail line passes through a variety of land uses including open space, commercial, single and multi-family residential, industrial, and institutional. The City of Lakewood Comprehensive Plan was adopted in 2004, and has been amended annually.

The town of Steilacoom's 2008 Comprehensive Plan Update acknowledges that the rail line land uses are as a sensitive areas buffer. Due to the steep topography, the area is only appropriate for open space use. The plan acknowledges the future of increased passenger service in the corridor. Support for rail is reflected through the town's desire to work with BNSF on future track and grade crossing improvements.

The City of University Place last amended their Comprehensive Plan in 2004. The shoreline and steep slopes make it difficult to develop along the rail corridor. Current uses include some low density residential, civic/public open space, and a scattering of mixed uses. Future rail activity along the corridor is expected to be limited as outlined in the goals and policies of the Shoreline Management element of the plan.

The town of Ruston's 2003 Comprehensive Plan provides guidelines for the town's future growth in accordance with the Growth Management Act and the desires of the

current residents. The existing land uses include commercial and residential activity in the corridor.

Land uses along the corridor within the city of Tacoma are a mixture of commercial, industrial, port activities, and highway uses. The city of Tacoma's Comprehensive Plan was adopted in 2004 and is regularly updated. It recognizes these current uses and encourages higher density transit-oriented development in the area near the Tacoma train station.

The City of Puyallup's Comprehensive Plan was updated in 2006. It designates land uses along the rail corridor for mixed residential, auto-oriented commercial, light manufacturing, business and parks. The Sound Transit Commuter Rail station is located adjacent to the rail line, and the city is encouraging Transit-Oriented Development in the zone near the station.

The City of Sumner's 2005 Comprehensive Plan recognizes the rail corridor as a critical link in their intermodal transportation goals. Current uses in the corridor range from commercial to light industrial. The Sound Transit Commuter Rail station is located adjacent to the rail line, and the city is encouraging higher density and infill development near the station.

Over 35 miles of the project corridor traverses King County, the most populous county in the state of Washington. The corridor, as it extends through the western area of the county, is comprised of the incorporated cities of Auburn, Kent, Tukwila, Renton, Seattle, and Shoreline, and unincorporated areas under the jurisdiction of King County.

According to King County's 2008 Comprehensive Plan Update, the corridor passes through a number of incorporated and unincorporated areas that have been designated as King County's Urban Growth Areas and Manufacturing/ Industrial Centers. Some of these growth areas include the city of Tukwila, areas within the city of Seattle, Duwamish, Ballard/Interbay, Kent, and the Aurora/Richmond area.

In the southern region of King County, the comprehensive plan designates some of the unincorporated area for agricultural/natural resource lands, mining, and open space. The plan also supports the concept of maintaining these activities in support of focusing growth in adjacent urban growth areas.

The City of Auburn's 2005 Comprehensive Plan anticipates future industrial and commercial growth in the corridor due to the number of vacant and underutilized lots in the area. The comprehensive plan outlines the city's goal for the rail corridor within their downtown as the Rail Yard Special Planning Area. It is bounded by Ellingson Road on the south, State Route 18 on the north, and A Street SE on the west. Through its designation, the city of Auburn acknowledges the need to give consideration to BNSF and to provide access between the east and west side of the city when future land uses are proposed. The Shoreline Master Plan will also dictate future land uses in the corridor's crossing of the White River. The Sound Transit Commuter Rail station is located in

downtown Auburn adjacent to the rail line, and the city is encouraging higher density and infill development near the station.

The City of Kent's existing land-uses range from commercial and industrial to a general mixture of uses. Similar uses are laid out in the 2004 Comprehensive Plan for the city of Kent. The comprehensive plan, updated in 2006, also supports the development of a concentration of housing, commercial uses and cultural activities in Downtown, by the Sound Transit Commuter Rail station, with the intent of increasing and maintaining the vitality of the community. The city of Kent's Shoreline Master Plan has established guidelines for future development occurring on the banks of the Green River, which the rail corridor crosses.

The existing land uses along the rail corridor within the city of Tukwila represent a variety of uses, from industrial to public recreational lands. The 2005 Comprehensive Plan supports the continued development and support of the industrial area along the rail corridor for the next 20 years. The existing Tukwila train station is used by Amtrak and Sound Transit rail services. The city of Tukwila's vision for the Tukwila Urban Center includes transit-oriented development in a high density area with regional employment and areas of high quality housing within walking distance of the Amtrak/Sounder station.

The 2004-2024 Comprehensive Plan for the city of Seattle outlines policies furthering the creation of urban centers and villages, reflecting the desire to maintain and enhance the city's character while accommodating growth through the designations of growth areas. Existing uses are found, in general, to be in conformance with the goals and land use designations referenced in the comprehensive plan. Land uses along the corridor vary significantly in Seattle, with the southern portion predominately industrial port uses, and traveling north through park land and open space, with scattered residential uses. The city owns King Street Station, the state's busiest rail station. The city of Seattle's Shoreline Management Plan will also guide future land use activities in areas of the Duwamish River, Lake Union, Salmon Bay, and the coastline of Puget Sound.

The City of Shoreline adopted their Comprehensive Plan in June 2005. According to the plan, the land use designation for the area is open space/recreation (Richmond Beach) and residential uses along the corridor. Due to the proximity of the corridor to the water and steep hillsides, the city's Shoreline Master Plan and Critical Area Ordinance also guide future land use activities. It is a goal of Shoreline to provide for the safe and efficient movement of people and goods within the shoreline area while enhancing its unique, fragile, and scenic character.

From King County, the rail corridor enters Snohomish County and extends in a northerly direction for approximately 46 miles. The rail corridor passes through the town of Woodway, the cities of Edmonds, Mukilteo, Everett, Marysville, and Stanwood, and the unincorporated areas of Snohomish County.

According to Snohomish County's 2008 Update to their 2005-2025 Comprehensive Plan, the corridor passes through the composite Urban Growth Area (UGA) of Snohomish County, consisting of several smaller UGAs. The goals set forth include orderly

development, the provision of public facilities, increased densities of various uses, and to protect and enhance rural areas. These goals and others are to be incorporated into the cities' comprehensive plans as well.

Snohomish County's plan indicates that the rail corridor and its existing surrounding uses are in general conformance with designated future land uses. Open space, including wetlands and waterways, are discussed in the county's Shoreline Management Plan and the county's Critical Area Ordinance. A great number of the areas referred to as open space in the existing land use descriptions have been identified as protected areas as mandated by those two documents. The county plan supports continued and enhanced passenger rail transportation.

The City of Woodway was incorporated in 1958 as a means to protect and preserve the area and to retain its original concepts. Those concepts were to maintain the area as a low density residential area, prohibiting commercial activities and to maintain control over property taxes and the area's roadways. Existing uses reflect these early town goals. Areas along the rail corridor consist of open space and steep bluffs. The bluffs are protected under an ordinance regarding critical areas. The city's comprehensive plan was revised in 2008.

Existing land uses along the corridor in the City of Edmonds consist of water-oriented recreational uses, residential uses, and scattered industrial uses. According to the December 2008 City of Edmonds Comprehensive Plan, little change in land use is expected in the future. A master plan development, under the direction of the Port of Edmonds, is located in the vicinity of the marina extending east to State Route 104. The city, Sound Transit, and the Port of Edmonds are working together to relocate the existing ferry terminal and the existing Sound Transit/Amtrak station, as part of a multi-modal transportation facility. The preferred site for this facility is at Point Edwards.

According to the City of Mukilteo's 2008 Comprehensive Plan, existing land uses along the rail corridor are residential, open space and commercial. A new Sound Transit Commuter Rail station opened up in the commercial area near the ferry terminal in 2007. Many areas next to the tracks have steep bluffs and are classified as critical areas.

The current land uses along the rail corridor range from recreational to residential to industrial. Similar uses are proposed along the corridor as part of the city of Everett's Final 2025 Comprehensive Plan. Critical areas, as determined by the city of Everett's Critical Areas Ordinance and the city's Shoreline Master Plan, will not be developable due to the impacts such activities may have to those areas. Sounder and Amtrak serve the Everett station, which is owned by the city. The City of Everett is supportive of transit-oriented redevelopment in the area adjacent to the station.

The 2005 Comprehensive Plan for the City of Marysville and its Urban Growth Area (UGA) provides a detailed review of the sub-areas of the city and their designated land uses. Throughout the sub-areas, the existing land uses are similar, if not the same, to those designated for proposed land uses, and include residential, commercial and agricultural. The sub-area discussions integrate the goals of the land use element with discussion of the existing land uses and how they can be blended into the desired

outcome. The rail line extends through existing commercial, residential, industrial, and mixed land uses in the Marysville UGA.

A review of the City of Stanwood's Comprehensive Plan, amended in 2007, indicates future land development within the rail corridor. Existing land uses are less dense than the planned future uses. The immediate area adjacent to the corridor is currently bordered by industrial, commercial uses, and public facilities. An Amtrak station is under construction and will be opened in November 2009.

The rail corridor extends from the Snohomish County border north through the cities of Mount Vernon and Burlington and the unincorporated areas of Skagit County generally paralleling Interstate 5. The Skagit County Comprehensive Plan, last published in 2007, supports passenger rail service to and through Skagit County as an important element of a balanced transportation system. The rail line extends through substantial areas of rural and natural resource lands in the unincorporated county.

The 2005 Comprehensive Plan for the City of Mount Vernon integrates goals set forth by the state and county including concentration of densities in cities and their UGA. The existing land uses are in general conformance with those desired for future growth, including future growth in the downtown area. The rail line passes though commercial, industrial, and downtown retail core land uses. The Amtrak Station is located in the downtown area.

The City of Burlington's 2005 Comprehensive Plan identifies goals to reflect the values and heritage of the city and provide a quality of life of the community, as Burlington begins to approach its maximum size. The rail line extends through the original downtown, heavy commercial and industrial uses, and open space land as it passes through the city.

The rail corridor continues north from Skagit County through Whatcom County to the United States/Canada Border. As it traverses through Whatcom County, it passes through the cities of Bellingham, Ferndale and Blaine and the unincorporated areas of the county.

The Whatcom County 2009 Comprehensive Plan sets out the goals, policies, and vision for the county. The plan incorporates the goals of the Growth Management Act (GMA) and other goals favored by the residents of Whatcom County, including the desire to maintain the rural areas of the county. The plan designates the rail corridor as an essential public facility under GMA.

Throughout the county, in both the incorporated and unincorporated areas, existing land uses include a mixture of rural, agricultural and crossroad commercial. Short segments of the rail corridor are located within the UGA. Areas with the UGA designation serve as limits for future growth within the region. The remaining areas will be maintained as agricultural, open space (undeveloped land) and rural.

According to the 2006 City of Bellingham Comprehensive Plan, the land uses located along the rail corridor include industrial, public (park area), commercial and residential.

The City and the Port of Bellingham are currently redeveloping a former waterfront industrial site adjacent to the rail line.

The City of Ferndale's 2005 Update to the 1996 Comprehensive Plan is the official statement adopted by the City Council setting forth goals and policies to protect the health, welfare, safety, and quality of life of Ferndale residents, while accommodating at least 20 years of projected growth. It also includes not only the area within the existing incorporated city limits, but also the UGA. The rail line runs through industrial, commercial, and a small area of multiple dwelling land uses.

The City of Blaine Comprehensive Plan was updated in July 2008. The rail line passes through manufacturing, residential, commercial, and open space land uses before crossing over the international boundary into Canada.

Farmlands

In this ever-growing urbanized society, the federal government and the State of Washington have recognized the importance of preserving our depleting farmland. As such it is imperative that projects minimize the disruption to these agricultural resources as much as possible.

Farmland information was obtained through sources from the U.S. Department of Agriculture's Natural Resources Conservation Service.

The corridor in Clark County follows the Columbia River basin from the Oregon border to the Cowlitz County line, remaining in the lowlands throughout. The corridor encounters farmlands on both sides of the corridor between Vancouver and Ridgefield.

In Cowlitz County, the corridor follows the Columbia River and continues along the Columbia and Cowlitz River basins and along Olequa Creek to the Lewis County line in the north. The corridor follows the lowlands throughout. It borders or crosses over numerous farms except within the urban growth or forested areas.

In Lewis County, the corridor follows Olequa Creek, traveling north through Vader, Winlock, Napavine. The corridor then travels north through Chehalis, Centralia, and up the Skookumchuck River to the Thurston County line. Farmlands are encountered along the corridor between Winlock and Napavine. Near Chehalis the corridor crosses large farmland tracts. Smaller farms are also encountered along the Skookumchuck River.

In Thurston County, the corridor follows the Skookumchuck River to the town of Bucoda. The corridor then proceeds northeasterly through Thurston County passing through the town of Tenino and the city of Lacey. The corridor borders or bisects several small farms and some larger dairy farms along the Skookumchuck River. Between Tenino and Lacey, there are long-term agricultural zones noted adjacent to the corridor.

In Pierce County, the corridor crosses the Nisqually River near DuPont and travels northeasterly into Tacoma. The proposed Point Defiance Bypass route travels through

the urbanized areas adjacent to the cities of DuPont and Lakewood prior to reaching Tacoma. The corridor then follows the Puyallup River to Sumner turning north along the White River. Much of the corridor along the Puyallup and White rivers is farmland on both sides of the tracks except within the cities of Tacoma, Puyallup, and Sumner.

In King County, the corridor passes through the city of Auburn and travels north through the cities of Kent, Tukwila, Seattle, and Shoreline. Much of the land in the south county within this corridor was once considered prime farmlands but has been replaced with commercial, industrial, and residential uses. Several farms are present near the corridor. In the northern portion of the corridor, from the Seattle city center northerly to the Snohomish County line, there are no farmlands.

In Snohomish County, the corridor follows the shoreline of Puget Sound and travels north to Everett, encountering no farmlands. North of Everett the area has class II farmlands within the lowlands of the Snohomish and Stillaguamish rivers.

In Skagit County, the corridor travels north through the Skagit Valley, passing through large tracts of farmland on both sides except in the urban areas of Conway, Mount Vernon, and Burlington. From there the corridor proceeds northerly along the shorelines of Samish Bay and Puget Sound where shellfish are raised commercially.

In Whatcom County, the corridor follows Samish Bay and Puget Sound to Bellingham. No farmlands are in this region. From Bellingham northerly to Blaine, prime and unique farmlands, used mostly for dairy, are present with potential for greater use of farmlands where the soils are well drained.

Prime farmlands, which are lands that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops, are located in the corridor. Skagit and Whatcom counties have the largest percentage of prime farmlands within the corridor.

Parks and Cultural Resources

Cultural resources include state- and nationally-designated historic buildings, districts, and archeological sites. Western Washington is rich in cultural resources ranging from Native American burial sites and villages to the historic Fairhaven district in Bellingham. The majority of the historic sites along the corridor are eligible for the National Register of Historic Places.

The corridor is also rich in park and recreation facilities. They include small playgrounds, sandy beaches, and large state facilities. The rail right of way parallels numerous parks and recreation facilities.

Maps indicating the general areas of Parks and National Register Listed Properties are located in Appendix A (Group E) of this document.

Section 4(f) of the Department of Transportation Act of 1966, as amended, provides protection for significant publicly owned parks, recreation areas, wildlife refuges, and

historic sites. Transportation projects that adversely affect such resources may not be approved by the Secretary of Transportation unless a determination is made that there is no feasible and prudent alternative, and all possible planning has been done to minimize harm.

Section 6(f) of the Land and Water Conservation Fund Act (LWCFA), passed by Congress in 1965, concerns transportation projects that propose to convert outdoor recreation property that was acquired or developed with LWCFA grant assistance. Section 6(f) prohibits the conversion of property acquired or developed with these grants to a non-recreational purpose without the approval of the Department of Interior's National Park Service (NPS).

Section 106 of the National Historic Preservation Act of 1966, as amended, requires that federal agencies identify and assess the effects of federally-assisted undertakings on historic properties, consult with others to find acceptable ways to avoid or mitigate adverse effects, and afford the Advisory Council on Historic Preservation an opportunity to comment.

A number of Parks and Recreation Facilities, National Register Listed Historic Properties, and Archaeological Sites and Districts are located within 1,000 feet of the rail right of way, as shown in Table 5. The majority of these resources are located in urbanized areas. In addition, hundreds of potentially eligible historic properties are likely located within 1,000 feet of the rail corridor as well, and some of the rail facilities themselves are also potentially eligible properties.

Table 5. Parks and recreation facilities, natural register listed historic properties, and archaeological sites and districts within 1,000 feet of the rail corridor

Map Number	Parks and Recreation Facilities	National Register Listed Historic Properties	Archaeology Sites and Districts
1	Dugan Regional Park (Vancouver) Vancouver Lake County Park East Vancouver Lake County Park Franklin Park (Vancouver) Burnt Bridge Creek Greenway (Vancouver) Heathergate Ridge (Vancouver) Vancouver Lake County Park (Mettler) Shillapoo State Wildlife Area	None	197
2	Vancouver Lake County Park (Mettler) Davis Park (Ridgefield) Ridgefield National Wildlife Refuge	Judge Columbia Lancaster House; Ridgefield American Woman's League Chapter House; William Henry Shobert House	30
3	None	Hulda Klager Lilac Gardens;	0

Map Number	Parks and Recreation Facilities	National Register Listed Historic Properties	Archaeology Sites and Districts
4	None	US Post Office--Kelso Main;	7
5	None	None	0
6	None	Laughlin Round Barn; Ben Olsen House	2
7	Winolequa Memorial Park (Winlock)	John Adams House	2
8	Stan Hedwall Park (Chehalis)	Burlington Northern Depot; O.K. Palmer House; St. Helens Hotel	3
9	Schaeffer County Park (Lewis County) Memorial Park (Bucoda)	Townsend Family Farm (Centralia); Armistice Day Riot; Centralia Union Depot; Olympic Club Saloon; Oliver and Mary Shead House; The Sentinel; US Post Office--Centralia Main	5
10	Tenino City Park	Chambers Prairie School	0
11	Horizon Pointe Park (Lacey) Lakepointe Park (Lacey) McAllaster Grove (Lacey) Mopthers Natures Acres Park	None	3
12	Nisqually National Wildlife Refuge Fort Lewis Golf Course City of DuPont Park	Adjutant General's Residence; Philip Keach House; Nathaniel Orr Home & Orchard; Steilacoom Creek Bridge; Thornewood	40
13	Cormorant Park (Steilacoom) Saltair Point Beach (Steilacoom) Perkins Park (Steilacoom) Pioneer Park (Steilacoom) Sunnyside Beach Park (Steilacoom) Tacoma Country and Golf Club (private) South End Recreation Area SERA (Tacoma) South Park (Tacoma)	None	21

Map Number	Parks and Recreation Facilities	National Register Listed Historic Properties	Archaeology Sites and Districts
14	Day Island (University Place) Titlow Park (Tacoma) Living War Memorial Park (Tacoma) Ruston Playfield (Ruston) Ruston Way (Tacoma) Cummings Park (Tacoma) Marine Park (Tacoma) Puget Creek Beach (Pierce County) Dirkman Mill Park (Tacoma) Hamilton Park (Tacoma) Old Town Dock (Tacoma) Jack Hyde Park (Tacoma) Garfield Park (Tacoma) Puget Gulch (Tacoma) Puget Gardens (Tacoma) Old Town Park (Tacoma) Ursich Gulch (Tacoma) Theas Park (Tacoma) Firemans Park (Tacoma) Foss Waterway Park (Tacoma) South End Recreation Area SERA (Tacoma) South Park (Tacoma) Irving Park (Tacoma) Sawyer Park (Tacoma) McKinley Park (Tacoma)	Albers Brothers Mill; Bowes Bldg; Cabin No. 97; Dickman Lumber Company Head Saw; Henry Drum House; Engine House No. 4; Fire Station No. 2; Fireboat No. 1; Fireboat Station; Masonic Temple - Tacoma; National Bank of Tacoma; Nisqually Power Substation; Northern Pacific Office Bldg.; Old City Hall; Pacific Brewing & Malting Company; Pacific National Bank Bldg; Perkins Bldg; Sandberg--Schoenfeld Bldgs; Slavonian Hall; Sprague Bldg; St. Peter's Episcopal Church; Tacoma Bldg; Tacoma Light & Water Company Purifier Bldg; Tacoma Totem Pole; Union Passenger Station; US Post Office--Tacoma Downtown Station--Federal Bldg; Washington Bldg; Winnifred Street Bridge	10
15	Theas Park (Tacoma) Firemans Park (Tacoma) Foss Waterway Park (Tacoma) McKinley Pak (Tacoma Swan Creek Park Pioneer Park (Puyallup)	Christ Episcopal Church; J.H. Lotz House; Ezra Meeker Mansion; Peace Lutheran Church	11
16	Pioneer Park (Puyallup) Foothills Trail Meeker to McMillin (Pierce County) Linden Golf Course (private) Rueban Knoblauch Heritage Park (Sumner) Seibenthaler Park (Sumner) Sumner Meadows (Sumner) Roegner Park (Auburn) GSA Ballfield Park (Auburn) City Hall of Auburn Park	Dieringer School; Ryan House; Herbert Williams House; Sidney Williams House	1

Map Number	Parks and Recreation Facilities	National Register Listed Historic Properties	Archaeology Sites and Districts
17	Green River Trail (King County) Kaibara Park (Kent) Boren Park (Kent) Kent Memorial Park Interurban Trail (King County) Springbrook Greenbelt (Kent)	Alvord's Landing; Carnation Milk Factory	1
18	Interurban Trail (King County) Fort Dent Park (Tukwila) Black River Forest (Renton) Foster Golf Links (Tukwila) Georgetown Playfield (Seattle) Cleveland Playfield (Seattle) East Duwamish Greenbelt (Seattle)	Maple Donation Claim; Old Georgetown City Hall	8
19	Hing Hay Park (Seattle) Union Station Square (Seattle) SafeCo Field Qwest Field Occidential Square (Seattle) Pioneer Square (Seattle) City Hall Park (Seattle) Harborview Park (Seattle) Freeway Park (Seattle) Waterfront Park (Seattle) Westlake Park (Seattle) Victor Steinbrueck Park (Seattle) Belltown Cottage Park (Seattle) Myrtle Edwards Park (Seattle) Elliot Bay Park (Seattle) Kinnear Park (Seattle) SW Queen Anne Greenbelt (Seattle) Interbay Athletic Park (Seattle) Lawton Park (Seattle) Kiwanis Memorial Preserve Park (Seattle) Commodore Park (Seattle) Sunset Hill Park (Seattle) Golden Gardens Park (Seattle) North Beach Ravine (Seattle) Blue Ridge Places (Seattle) Carkeek Park (Seattle)	1411 Fourth Ave. Bldg; A.L. Palmer Bldg; Agen Warehouse; Alaska Trade Bldg; Arctic Bldg; Barnes Bldg; Battle of Seattle Site; Bell Apt.; Carson Boren Home Site; Butterworth Bldg; Cobb Bldg; Colonial Hotel; Arthur Denny Home Site; First Post Office Site; First Public School Site; Gilmore Block; J.S. Graham Store; Grand Pacific Hotel; Great White Fleet Disembarkation Site; Guiry & Schillestad Bldg; Hoge Bldg; Holyoke Bldg; Hull Bldg; King Street Station; Leamington Hotel & Apt.; Lyon Bldg; Moore Theatre & Hotel; New Washington Hotel; Northern Bank & Trust Bldg; Northern Life Tower; Old Public Safety Bldg; Olympic Hotel; Panama Hotel; Pioneer Bldg, Pergola, & Totem Pole; Rainier Club; Rector Hotel; Salmon Bay Great Northern Railroad Bridge; Skinner Bldg; Squire-Latimer Block; Skinner Bldg; Squire-Latimer Block; Ton of Gold & Sailing of Willapa Site; U.S. Court House; U.S. Immigrant Station	8

Map Number	Parks and Recreation Facilities	National Register Listed Historic Properties	Archaeology Sites and Districts
		& Assay Office; Union Station; United Shopping Tower; US Immigration Bldg; Washington Territorial University Site; YWCA Bldg - Seattle	
20	Innis Arden Reserve (Shoreline) Richmond Beach Saltwater Park (Shoreline) Deer Park Reserve (Woodway) Point Edwards Park (Woodway) Bracketts Landing Park (Edmonds) Hutt Park (Edmonds) Overlook Park (Edmonds) Southwest County Olympic View Park (Snohomish County) Meadowdale Park (Snohomish County	Brackett's Landing; Olympic View Hotel; Site of First School in district #15; Wells House	1
21	Picnic Point (Snohomish County) Middle Gulch Open Space (Mukilteo) North Gulch Open Space (Mukilteo) Mukilteo City Park Edgewater Park (Mukilteo) Harborview Park (Mukilteo) City of Everett Park Forest Park (Everett)	Fowler Pear Tree; Mukilteo Light Station; Point Elliot Treaty Site; Point Elliott Treaty Monument	23
22	City of Everett Park Forest Park (Everett) Henry M. Jackson Park (Everett) Langus Riverfront Park (Everett)	Carnegie Library - Everett; Commerce Bldg; Everett City Hall; Everett Fire Station No. 2; Everett Public Library; Everett Theatre; Knights of Columbus Community Center & War Memorial Bldg; Marion Bldg Hotel Marion, Tontine Saloon; Marysville Opera House; McCabe Building; Monte Cristo Hotel; Pioneer Block; Rucker House; U.S. Post Office and Customs House	37
23	Walters Manor (Snohomish County)	None	0

Map Number	Parks and Recreation Facilities	National Register Listed Historic Properties	Archaeology Sites and Districts
	Gissberg Twin Lakes (Snohomish County)		
24	Heritage Park (Stanwood) Skagit Wildlife Area (State of Washington)	None	22
25	None	Burlington Fire & Police Station; Otto & Inga Carolson House; Lincoln Theater & Commercial Block	3
26	None	None	0
27	Larabee State Park Teddy-Bear Cove (Whatcom County) Arroyo Park (Bellingham) City of Bellingham Park Marine Park (Bellingham) Boulevard Park (Bellingham) Forest and Cedar Park (Bellingham) Maritime Heritage Park (Bellingham) Elizabeth Park (Bellingham) Little Squalicum Creek Park (Bellingham)	Aftermath Clubhouse; George H. Bacon House; Barlow Bldg; Bellingham National Bank Bldg; Alfred L. Black House; Eldridge Homesite & Mansion; Flatiron Bldg; Great Northern Passenger Station; Immanuel School of Industries-Department of Public Welfare; Leopold Hotel; Morse Hardware Company Bldg; Pickett House; T.G. Richards & Company Store; Lottie Roth Block; Sanitary Meat Market; Sweet & Company Bldg; Washington Grocery Company Warehouse; Whatcom Museum of History & Art	44
28	Little Squalicum Creek Park (Bellingham) Tennant Lake Park (Whatcom County) Tennant Lake Wildlife Area (State of Washington) Hovander Park (Whatcom County) Vanderyacht Park (Whatcom County)	Fort Bellingham	14
29	Peace Arch Park (State of Washington)	Peace Arch	5

Park and Recreation Facilities

Research for this section was completed using published maps, city and county comprehensive plans, and field review. In addition, some interviews were conducted with local representatives. Maps of the generalized areas of parks and recreation

facilities are located in APPENDIX A (Group E) of this document, and a listing of these facilities are shown in Table 5 in this chapter.

Parks and recreation facilities will be further analyzed for potential impacts when project-level environmental documentation is prepared.

The rail corridor enters Washington State by crossing the Columbia River into the city of Vancouver. Within the city of Vancouver the rail corridor runs near three parks and several water recreation areas. Access to these areas is primarily from the east and does not require crossing over the rail corridor. The rail corridor crosses the Stewart Glen Burnt Bridge Creek Greenway. The Greenway and Burnt Bridge Creek lead to the eastern edge of Vancouver Lake, a multiple-use resource.

North of the city of Vancouver and toward Ridgefield the rail corridor runs along Lake River and near water bodies such as Green Lake, Salmon Creek, and Campbell Lake that are used for water-oriented recreation. In Ridgefield the rail corridor continues along Lake River but does not pass near any city of Ridgefield parks. Access to the Lake River shoreline and the marina from the city requires crossing the rail corridor. North of Ridgefield, the rail corridor is adjacent to the Ridgefield National Wildlife Refuge. The rail corridor continues north toward the city of Woodland, running near Lancaster Lake and crossing the Lewis River, both utilized for water-oriented recreation. The Cowlitz County jurisdictional boundary follows the midway mark of the Lewis River.

The rail corridor enters Cowlitz County by crossing the Lewis River and entering the city of Woodland. No recreational areas are located near the rail corridor in the city. Recreational access to the Columbia River, located west of the rail corridor is via two roads that cross the rail corridor. The corridor continues toward the city of Kalama and recreational access to the Columbia River is by selected exits from the I-5 corridor. In the city of Kalama the rail corridor runs through the western edge of the city and access to the Columbia River shoreline requires crossing the rail corridor. The rail line runs near the Port of Kalama, including Marine Park, and access to this area is by an overhead pedestrian walkway or by a vehicular overpass at Marine Drive. North Park is located on the west side of the railroad before leaving city limits.

North of Kalama the railroad crosses the Kalama River. A public boat launch, RV park and water-oriented recreation activities are located in this area. The rail corridor continues through Cowlitz County to the cities of Kelso and Longview. In Kelso, the rail passes by more water-oriented facilities and the Three Rivers Golf Course, a private recreational area. A community park just north of Cowlitz Way is proposed for the shoreline area. A bicycle trail is west of the rail corridor from the Three Rivers Golf Course and continues north, following the rail corridor into downtown Kelso. Recreational access to the Cowlitz River is generally provided by grade-separated roadways.

Lewis County jurisdiction begins just south of the city of Vader. The rail corridor runs on the western edge of the city, and no parks are adjacent to the railway. The tracks continue northward, running along Olequa Creek, past the city of Winlock, the city of

Napavine, and crossing Newaukum River and Dillenbaugh Creek. As tributaries to the Cowlitz River they offer local water-oriented recreational opportunities. The rail corridor bisects the city of Chehalis where it passes near baseball diamonds and soccer fields located on the east side of the rail alignment. North of Centralia the only recreational facility, Schaefer State Park, is located northwest of the rail corridor in unincorporated Lewis County. The park offers recreational opportunities along the Skookumchuck River.

The rail corridor enters Thurston County following Highway 507 toward the city of Bucoda. Access to fishing and other recreation on the Skookumchuck River in this vicinity requires crossing the rail corridor. The rail continues north along Highway 507 toward the city of Tenino. Parks in the city of Tenino are located away from the rail corridor. A trail begins along the rail corridor that runs from Tenino to Yelm. North of Tenino, Wolf Haven International is located on the east side of the rail line. Continuing to East Olympia, the rail corridor crosses the Deschutes River and its water-oriented recreation, but does not pass near any county parks. The Chehalis Western Trailhead crosses the rail corridor in the Lacey/East Olympia area. The railway heads northeasterly across Pattison Lake just south of Lacey. The rail corridor also passes Long Lake and continues toward the Nisqually River. All of these areas are used for water-oriented recreation; however, the BNSF right of way does not impede access to these areas.

The rail corridor enters Pierce County after crossing the Nisqually River and entering the Fort Lewis Military Reservation. It then follows the Puget Sound coast into the DuPont area. A trail system and viewpoints are located along the bluff area in the DuPont area along the old narrow gauge railroad tracks.

Northward along the Puget Sound shoreline the BNSF rail line passes through the city of Steilacoom. Ferry access to McNeil Island and local access to the marina requires crossing the rail corridor. Saltair Park is located west of the railroad and Pioneer Park is located to the east. The rail corridor bisects Sunnyside Beach Park. Several private and public shoreline access points cross the tracks within city limits.

The rail corridor continues along Puget Sound, crosses Chambers Creek and enters the city of University Place. Day Island, accessed by a bridge across the rail corridor, has two private recreational areas, a marina and the Day Island Yacht Club. The railroad enters the city of Tacoma following the Puget Sound/Tacoma Narrows shoreline. It bisects Titlow Beach Park and Living War Memorial Park, and heads east through a tunnel under Point Defiance Park. The alignment re-emerges in the Ruston Way area before heading southeast along the Commencement Bay shoreline. The rail runs near, but not adjacent to Marine Park, Fireman Park, Hamilton Park and Commencement Park. These shoreline parks are accessible by crossing the alignment at marked grade crossings to Ruston Way or by an overpass. Puget Park and Garfield Park are located on the bluff above the rail in this area.

The rail line on the proposed Point Defiance Bypass route runs past five recreational facilities. These are the Fort Lewis Golf Course, the city of DuPont's City Park and City Hall Park, the Tacoma Country and Golf Club, and the South End Recreation Area.

These facilities are accessible by crossing the rail alignment using Interstate 5 overpasses or from local streets.

Outside of Tacoma, the rail corridor parallels the Puyallup River toward the Puyallup-Sumner area in unincorporated Pierce County. The city of Puyallup has a bike path on the edge of Stewart Street along the tracks. A proposed park abuts the track on Pioneer and 2nd Street Northeast. Upon exiting the city of Puyallup the railway crosses the Puyallup River with its water-oriented recreation areas, and enters the city of Sumner. St. Seibenthaler Park is located adjacent to the east side of the tracks. Access to White River recreation is provided by several road crossings. The corridor heads north through unincorporated Pierce County and enters King County south of Auburn.

The railway corridor enters King County, paralleling the East Valley Highway through Pacific and Auburn. The rail line follows C Street through the city and is near GSA Park and Auburn Municipal Airport. The Interurban trail also follows the rail corridor at times. The rail corridor continues due north crossing the Green River. In the city of Kent, Railroad Park abuts the west side of the railway and Kiwanis Park is located on 1st Avenue. The rail corridor bisects Burlington Green Park and crosses near Borden Playfield. The rail corridor then heads northwest and into the city of Tukwila, passing near the Fort Dent Park. Located west of the railroad is the Green River and Foster Golf Links area.

The railroad continues along the I-5 corridor and into the city of Seattle. Land surrounding the rail corridor is primarily industrial in the southern portion of Seattle, and the rail line is straddled by the I-5 corridor to the east and Boeing Field to the west.

The alignment heads into King Street Station, adjacent to the stadiums for the Seahawks and the Mariners. North of the station, the alignment tunnels through downtown, emerging along Elliott Bay near Myrtle Edwards Park and Elliott Bay Park. Heading north into the Interbay area, the rail runs near the Interbay Golf Course and Interbay Athletic Field. The rail corridor then heads northwest towards Salmon Bay and runs near Kiwanis Memorial Park located west of the railway. The corridor crosses Salmon Bay via an overhead bridge into the Ballard area. The bridge crosses both the canal and Seaview Avenue Northwest just west of the Hiram M. Chittenden Locks. The locks are a public viewing and recreation area. The rail does not affect the park facilities on either side of Salmon Bay. The rail corridor then runs on the east side of Seaview Avenue Northwest. Located on Seaview Avenue Northwest along Shilshole Bay are the Shilshole Marina and a public boat launch. The rail corridor bisects Golden Gardens Park, but pedestrian and vehicular access to this recreational area is by roadway underpasses. Continuing along the waterfront and into Snohomish County the railway runs below the bluff at Carkeek Park and bisects Richmond Beach Park. Public access to the shoreline beaches at these parks is provided by pedestrian overpasses.

The rail corridor enters Snohomish County in the Shoreline area and continues to follow the waterfront. A private shoreline park abuts the railway in the Point Edwards area before Edmonds. Entering the Edmonds area the railroad runs on the east side of Admiral Way. Recreational areas located west of Admiral Way that require crossing the

rail line include Edmonds Marina, Marina Beach, Kingston Ferry, Olympic Beach, Brackets Landing Park, Edmonds Underwater Park, and Brackett's Landing Beach. These areas are accessible by marked grade crossings at street intersections. Continuing in Edmonds along the waterfront the railway runs near residential areas with scenic overlooks, including Overlook Park, a small park located east of the railroad on the bluff above the alignment.

In the Meadowdale area the railway abuts Meadowdale Beach Park. Public access to the beach at this park is by a pedestrian overpass. The rail corridor bisects Picnic Point Park in the Norma Beach area and continues north along the waterfront through the Mukilteo area. In northern Mukilteo, the rail line runs on the east side of Mukilteo State Park, the lighthouse, and the Mukilteo-to-Clinton Ferry dock. Access to these facilities is by crossing the rail corridor at-grade crossings. In the Everett area the railroad runs near Edgewater and Harborview Park to the east, and runs adjacent to Howarth Park, Forest Park, Maggies Park and Grand Avenue Park. In the Port of Everett the railway must be crossed to access Marina Village, the Port of Everett piers, Yacht Club, Marine Park, a public boat launch, North and South View Parks, and the Everett Marina. There are multiple ways to access these facilities including at-grade crossings and an underpass near Hewitt Avenue.

The rail corridor crosses the Snohomish River and related water-oriented recreation areas and enters into the Marysville vicinity. In the city of Marysville, the closest park to the railroad is Comeford Park located east of the corridor. North of Marysville, in unincorporated Snohomish County, the rail corridor heads northwest toward Lakewood and Stanwood. The railway continues heading west toward Stanwood, then north into Skagit County. The unincorporated area is primarily rural agricultural land, with no established parks located near the rail corridor.

The railroad corridor enters Skagit County near Skagit Bay, a habitat management area. Northward, in the Conway area the railroad runs near Conway Park and the Field & Stream Estuary. In the city of Mount Vernon, the rail runs near the Skagit River shoreline, with water-related recreation, and Lions Riverside Park. The railroad alignment continues northward, crossing the Samish River and approaching the waterfront at Samish Bay in north Skagit County. Padilla Bay National Estuarine Research Reserve lies on both sides of the rail line.

The railroad corridor enters Whatcom County, bisecting Larrabee State Park, with public access to the shoreline by a pedestrian underpass. The corridor is tunneled and re-emerges along the waterfront south of the Fairhaven area. In Fairhaven the corridor abuts Post Point Marine Park. In order to reach the Bellingham Cruise Terminal and the public boat launch, it is necessary to cross via marked at-grade crossings to. Approaching downtown Bellingham, the railroad corridor passes through the lower part of Boulevard Park and runs adjacent to the main portion of the park which includes a small art studio. A recreational trail runs on the east side of the rail from Boulevard Park into downtown Bellingham. The rail corridor continues through the industrial waterfront area of downtown Bellingham and crosses the Whatcom Creek waterway. The railroad runs adjacent to Roeder Avenue; access to the Marina, Port of Bellingham, Marina Park and

the public boat launch, all located west of the rails, is provided by at-grade or separated-grade road crossings. Exiting the city limits, the railway bisects Little Squalicum Park via an overhead trestle. The corridor then diverges from the waterfront and runs northeast toward Ferndale. In the city of Ferndale, the railroad abuts Tennant Lake County Park to the west, and runs near Hovander Homestead Park which contains a public boat launch. Exiting the city of Ferndale the rail line heads northwest, running on the west side of Portal Way through Custer toward Blaine and the Canadian border. In the city of Blaine, the rail corridor runs near the Loomis Trail Golf Course to its east and crosses Dakota Creek. Following the Drayton Harbor waterfront area, the corridor runs near the Marina, Marine Park, and a public boat launch, bisects Peace Arch Park and enters Canada.

Cultural Resources

Given the scope of this corridor environmental assessment, only recorded data were used to inventory existing conditions located within 1,000 feet of the rail right of way. Information was obtained from the Washington Department of Archaeology and Historic Preservation.

A number of listed National Register Properties are located within 1,000 feet of the rail right of way, as shown in Table 5. The majority of these resources are located in urbanized areas. In addition, hundreds of potentially eligible historic properties are likely located within 1,000 feet of the rail corridor as well, and some of the rail facilities themselves are also potentially eligible properties. Numerous Archaeology Sites and Districts are also located within 1,000 feet of the rail right of way, as shown in Table 5.

A detailed cultural resources survey will be completed when project-specific environmental documentation is completed. Also, Section 106 consultation with the State Historic Preservation Officer will be initiated during the project-specific investigation. In addition, government-to-government consultation with Native American tribes will be completed.

Social and Economic

The communities existing today along the rail line historically developed along river valleys. These early settlements were later linked by roadways and rail lines. Most of the cities were incorporated in the late 19th and early 20th centuries, and were farming-based communities for much of their history. Rail lines, including the Northern Pacific, were central to community development. The railroads carried produce, freight, and passengers north and south to depots in the town centers.

With the construction of Interstate 5, Interstate 405, and State Route 167 in the 1950s and 1960s, urbanized development began to spread. Most of the BNSF corridor today is dominated by commercial and industrial land uses. Occasional and sporadic residential neighborhoods lie close to the rail lines.

This social and economic resources section includes reviews of access to social and educational facilities (religious institutions, schools, community centers), emergency vehicle access, community cohesiveness, disruption to the community through displacements and relocation, and general impacts to disadvantaged groups (minorities and low-income individuals and families).

When building a new project or implementing a new program, these social and economic elements play a vital role in the placement of the new facility or program. For example, it would not be useful to plan and implement a bus system if it did not go from a residential neighborhood to a commercial area. It is important to make sure future facilities can truly serve the community.

In the case of intercity passenger rail, many of the communities cannot be served directly because a station does not exist in their community. However, it is still critical to look at the social and economic resources throughout the corridor to make sure that the rail system will not impact the social structure of the existing communities.

Safety is another important aspect of the social and economic conditions of a community. Many residents feel that an increased number of faster trains will make their communities less safe. Residents feel uncomfortable driving or walking over railroad tracks. However, since the tracks separate neighborhoods from shorelines, many people illegally walk over the tracks to get to the beach to fish, walk, or picnic.

Community Cohesion and Safety

Given the scope and purpose of this corridor Environmental Assessment, it would be impractical to inventory every social and emergency facility and grade crossing. For the purposes of this environmental review, a listing of local cities and towns along the corridor is provided, as well as an approximate number of legal, public grade crossings within the corridor.

The rail corridor travels through nine counties and numerous cities and towns. The southern portion of the corridor, from Portland to Tacoma, includes four Washington counties and numerous jurisdictions. In Clark County, the communities of Vancouver, Ridgefield and Woodland are bisected. In Cowlitz County, the communities of Kelso, Kalama and Castle Rock are traversed. In Lewis County, the communities of Vader, Winlock, Napavine, Chehalis, and Centralia are crossed. North of Lewis County, Thurston County communities include Bucoda, Tenino and East Olympia/Lacey. Pierce County communities along the corridor include DuPont, Steilacoom, University Place, Lakewood, Ruston, and Tacoma.

Within this southern segment of Washington state, 96 public, at-grade crossings are located within these communities along the rail corridor. In addition, 12 pedestrian bridges/crossings provide access over the rail line.

The lower mid-section of the corridor, between Tacoma and Seattle, travels through Pierce and King counties. The communities of Tacoma, Puyallup, Sumner, Auburn, Kent, Tukwila, and Seattle are crossed by the rail right of way. Within this segment, 58

public, at-grade crossings are located within the corridor. There are no designated pedestrian-only crossings in this area.

North of Seattle, between Seattle and Everett, the communities of Shoreline, Woodway, Edmonds, Mukilteo, and Everett are traversed. These communities are located in King and Snohomish counties. Within this area, seven public, at-grade crossings provide vehicular, pedestrian, and bicycle access across the railroad right of way.

The northern segment of the corridor, from North Everett to Blaine, travels across Snohomish, Skagit and Whatcom counties. The rail line crosses the communities of Everett, Marysville, Stanwood, Mount Vernon, Burlington, Bellingham, Ferndale, and Blaine. This segment of the corridor contains 98 public, at-grade crossings and five pedestrian-only designated crossings.

Public crossings serve as access points for local residents; they serve as links for those communities that are separated by the rail line, thus linking local residents to their shops, parks, religious institutions, families and friends. They are also used by emergency vehicles (fire, police and ambulances) and social service organizations (such as school buses, paratransit and senior services).

Relocation

If a new transportation facility has the potential to impact a home or business to the point where that property is no longer usable, it may be necessary to relocate families and businesses.

Urban Growth Areas (UGA) are areas designated by a county, with input from towns and cities, where urban development is to occur. The UGA is one of the major tools for deciding where urban development should be encouraged and where the limits to that development should end. UGAs are areas where growth and higher densities are expected and supported by urban services. It is likely that impacts to homes and businesses would likely occur in these areas. Through review of county and city comprehensive plans, designated UGAs were identified. In particular, areas that overlap or cross the rail right of way were mapped and are illustrated in Appendix A (Group F) of this document.

The program-level rail plans anticipate expansion of the rail lines within the existing rail right of way. This document identifies areas of potential growth that could possibly be disrupted should the rail line need to expand past the existing rail right of way.

Communities with Growth Management Act designated urban growth areas that intersect the rail corridor include: Vancouver, Ridgefield, Woodland, Vader, Winlock, Napavine, Chehalis, Centralia, Tenino, Lacey, DuPont, Tacoma, Puyallup, Auburn, Kent, Sumner, Seattle, Edmonds, Mukilteo, Everett, Marysville, Stanwood, Mount Vernon, Burlington, Bellingham, Ferndale, and Blaine.

In the uncommon case where business or residential displacements occur, WSDOT will comply with the Uniform Relocation Assistance and Real Property Acquisition Act, state

law, and with its own adopted policies and procedures to protect the interest of current landowners. Appropriate compensation and assistance in relocation will be provided consistent with applicable laws and procedures available to all displaced businesses and residents.

Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was promulgated on February 11, 1994. The Executive Order (EO) requires each federal agency, to the greatest extent practicable and permitted by law, to achieve environmental justice as part of its mission. Agencies are to identify, and address as appropriate, disproportionately high and adverse human health or environmental effects, including interrelated social and economic effects of their programs, policies, and activities on minority and low-income populations. In June 1997, the U.S. Department of Transportation (DOT) implemented Order 5610.2 to establish procedures for DOT agencies, including FHWA and FRA, to comply with the Executive Order. In December 1998, *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* established polices and procedures for FHWA to use in complying with EO 12898.

The methodology used for this section entailed mapping (via GIS) census tracts along the corridor. There were 192 census tracts identified that were parallel or traversed by the rail line. Database inquiries were performed for population, minority population, and low-income (below poverty level) households. Data were compiled by census tract. Note that Hispanic or Latino can be of any race. Appendix B provides a summary, by census tract, of populations along the corridor.

The demographics vary greatly among the 192 census tracts. The percentage of minority population in the census tracts along the corridor ranges from almost three percent to as high as 95 percent, with a median of 19 percent. High, low, and median minority population percentages for the census tract are broken out by county in Table 6. The overall percentage of minority populations in each county is also shown for comparison purposes.

Table 6. Percent of minority populations by county

	Minority populations, percent			
	Potentially affected census tracts			Whole
County	Lowest	Highest	Median	county
Whatcom	7.7	26.5	15.8	16.8
Skagit	13.0	67.0	35.4	24.7
Snohomish	4.7	34.6	16.8	19.1
King	8.9	95.1	26.6	29.8
Pierce	6.1	72.9	23.6	27.1
Thurston	9.2	37.1	19.2	18.9
Lewis	2.7	28.9	13.9	12.4
Cowlitz	6.1	48.0	9.2	12.8
Clark	6.4	24.5	13.4	15.9

Similarly, the concentrations of low-income populations also vary greatly among the 192 census tracts located along the corridor. In some census tracts, the percentage of low income populations is as low as one to two percent. Other census tracts are composed of as much as 52 percent low-income populations. The median of all the census tracts located along the corridor is about 10 percent. High, low, and median census tract percentages for low-income populations are broken out by county in Table 7. The percentage of low-income populations in each county as a whole is also shown for comparison purposes.

Table 7. Percent of low income populations by county

	Low-income populations, percent			
	Potentially affected census tracts			Whole
County	Lowest	Highest	Median	county
Whatcom	7.7	52.0	12.4	0.2
Skagit	6.0	23.8	11.8	11.9
Snohomish	1.2	37.3	5.6	8.0
King	1.4	49.6	10.3	9.9
Pierce	2.1	47.0	9.1	11.1
Thurston	2.9	15.6	6.1	9.5
Lewis	6.1	26.8	15.1	14.2
Cowlitz	2.6	28.1	10.9	15.4
Clark	2.6	47.6	8.7	9.5

Visual Quality

This corridor Environmental Assessment is analyzing potential improvements to passenger rail service that will allow a service level of eight round trips between Seattle and Portland. These improvements include standard track improvements along the existing BNSF right of way that are not expected to impede visual quality. Other planned improvements include replacing existing grade crossings and bridge or overpass facilities with new facilities.

The evaluation of visual quality should consider views from and toward the rail right of way, outside of the rail right of way, and extending to the visible landscape.

The typical landscape, as viewed from the rail right of way by the passenger along the southern segments of the corridor, is rural valley farmlands or areas along the Columbia River. Limited industrial areas can also be seen. In the northern portion of the corridor, landscapes are comprised of urban settings such as Tacoma and Seattle. Moving further north, one can view rural valley farmlands and distant views of the mountains or Puget Sound. Other views include brief glimpses of small rivers, streams, or lakes.

Although the corridor primarily runs through agricultural areas, it often runs adjacent or near highway corridors. Through municipalities, the rail line primarily runs through industrial property and along rail support structures. The view is a side view, as passengers cannot see ahead, nor can they see the tracks the train is riding on.

Views of the existing track structure are often limited to the view of the existing embankment. Most of the existing BNSF right of way and tracks are approximately fifteen feet above grade through much of the corridor.

Energy

Energy and its conservation in general are important factors to consider when implementing a transportation program.

A passenger train consumes about 55,000 BTUs of energy per vehicle mile. This energy is in the form of diesel fuel, a hydrocarbon-based petroleum product. A typical automobile consumes about 5,517 BTUs of energy (in gasoline form) per vehicle mile and personal trucks consume about 6,788 BTUs of energy (in gasoline form) per vehicle mile. Thus, because of its high passenger capacity, the passenger train carrying 10 or more passengers, is more energy-efficient than an automobile or personal trucks with a single occupant. In 2008, Amtrak *Cascades* trains operating between Seattle and Vancouver, BC and Seattle and Portland, OR averaged 177 passengers.

Estimations of fuel consumption were based on the existing operations and equipment configurations modeled on train performance calculator software. A train operating from Seattle to Vancouver, B.C. uses approximately 335 gallons per round-trip. Factoring in approximately 2 hours of idling time at 60 gallons per hour (30 minutes before and after each one-way trip to allow for switching, loading, unloading of passengers and supplies), this amounts to 455 gallons. Current Amtrak travel time between Seattle and Vancouver, B.C. is 3 hours and 55 minutes and the distance is 155 miles. There are two round trip trains per a day, for a total estimated fuel consumption of 910 gallons per day.

Similarly, estimations of diesel fuel consumption were made for the train operating from Seattle to Portland, OR. The train performance calculator software estimated that the train uses approximately 451 gallons per round trip. Factoring in approximately 2 hours of idling time at 60 gallons per hour (using the same assumptions as above), this amounts to 571 gallons. Current Amtrak travel time between Seattle and Portland, OR is 3 hours and 30 minutes. There are four round trips per day, for a total fuel consumption of 2,284 gallons per day.

Total daily Amtrak *Cascades* fuel consumption for the Seattle-Vancouver, B.C. and Seattle-Portland services is approximately 3,194 gallons per day. Annually, almost 1.2 million gallons of diesel fuel are consumed by Amtrak *Cascades* service. These figures do not reflect any additional fuel consumption due to unusual delays.

Noise and Vibration

An increase in noise can affect the quality of life. Potential changes in noise must be considered, and mitigation proposed for any adverse effects.

Railroad noise varies with operating factors and conditions. Operating factors include the numbers of trains, type of train, length of train, and operating speed. Conditions include

the curvature of the track, track maintenance, and the terrain in which the track is set. In addition, grade crossings require certain whistles and warning bells. The significance of the noise depends not only on conditions, but also on the particular land uses and activities that occur along the corridor and their sensitivity to noise.

Two descriptors are used to discuss rail noise, $L_{eq}(h)$ and L_{dn}. $L_{eq}(h)$ is the average noise energy present over any one hour time period. The L_{dn} descriptor is an energy average of 24 hourly L_{eq}s with a ten decibel penalty added to the night-time hours of 10 p.m. to 7 a.m. While $L_{eq}(h)$ provides a good description of a noise environment by taking into account moment to moment fluctuations in sound levels, L_{dn} is useful when considering the annoyance factor of noise occurring during hours of sleep. Both are measured using A-weighted decibels (dB(A)) to represent the range of normal human hearing.

Vibration consists of rapidly fluctuating motions with an average motion of zero. The vibration associated with train operations is the result of the steel wheels rolling on steel rails, creating vibrational energy which is then transmitted through the rail structure and ground to nearby buildings. When sufficient vibrational energy reaches a building it may result in the perceptible motion of objects and a rumbling noise that is generated by the motion of the structural surfaces in the rooms. Two descriptors are used when discussing the effects of vibrations produced by trains, VdB and dBA. VdB is a logarithmic measure of vibrational velocity in millionths of an inch per second. The ground-borne noise generated by the motion of the building is measured in dBA.

While vibration from rail operations has been known to cause human annoyance or to interfere with the use of sensitive equipment, it is extremely rare for vibration from train operations to cause any sort of building damage.

A noise and vibration analysis for a rail corridor would typically be performed in accordance with the guidance provided by the Federal Railroad Administration (FRA) and the Federal Transit Administration (FTA).

FRA and FTA noise impact criteria were developed by researchers who analyzed the percentage of people expected to be highly annoyed by the addition of any given amount of noise to their current noise environment. The criterion for the noise that will bring about the onset of impact from improvements in intercity passenger rail service varies according to the existing noise level. As existing noise levels increase, the amount of noise that a rail improvement can generate without causing an impact will go up; however, the amount of increase that is allowed in the cumulative noise level (the sum of the existing noise and the improvement noise) without causing an impact will go down.

As part of the analysis completed for what was to be the programmatic Pacific Northwest Rail Corridor Environmental Impact Statement in 1998, a Noise and Vibration Discipline Report was prepared. The noise analysis was conducted in accordance with the guidance provided by the FTA manual "Transit Noise and Vibration Impact Assessment," April,

1995[15]. (Please note that the FRA manual, "Guidance Manual for High-Speed Ground Transportation Noise and Vibration Impact Assessment," was not issued until October 2005.)

The procedures for analyzing both noise and vibration followed a similar format. A screening process used distances that were designed to identify rail improvements which had little possibility of resulting in any adverse impact. If no sensitive receiver sites were found within the screening distance, then no further analysis on that rail improvement area was conducted. The screening distance for noise from a rail main line is 750 feet for an unobstructed condition or 375 feet if there are intervening buildings. For the vibration analysis, the screening distance is 600 feet for buildings where low ambient vibration is essential for interior operations, 200 feet for residences or buildings where people normally sleep, or 120 feet for institutional buildings. Aerial photographs were examined and field reviews were conducted to determine if any sensitive receiver sites were located within these screening distances. General assessments were conducted on proposed rail improvements found to have sensitive receivers within the screening distances.

The existing noise levels were modeled by considering freight traffic only. It was assumed that freight trains run 24 hours a day and that the average freight train consists of 100 cars and four diesel locomotives. Maximum train speeds and average daily freight traffic volumes were obtained from the WSDOT Rail Office operations manager.

The noise levels were modeled by considering future passenger train traffic of 13 round trips per day between Seattle and Portland. In accordance with future schedules, all passenger trains were assumed to run between 6:00 a.m. and 11:00 p.m. Maximum passenger train speed on the rail improvement was used in the model.

The FTA vibration impact criteria used in this analysis were developed by studying the vibration levels necessary to cause annoyance in people or interfere with the use of vibration-sensitive equipment. They are based on the maximum levels for a single event and take into account the type of land use as well as the frequency of events. Higher vibration levels are allowed without causing an impact for infrequent events and less sensitive land uses.

This discipline report found that existing noise levels in the corridor ranged from 57 L_{dn} to 72 $L_{eq.}$ This range reflects the varying land uses along the corridor, from quiet, rural farmlands to urban, industrialized areas. Vibration levels throughout the corridor ranged from 97 VdB to 102 VdB.

[15] *The Second Edition of the Federal Transit Administration (FTA) manual, "Transit Noise and Vibration Impact Assessment Guidance Manual" was published in May 2006. The FTA Regional Administrator, Richard Krochalis, in the July 20, 2006, Region 10 Information Bulletin No. 06-19, stated that, "For the great majority of projects, the results obtained from the application of the methods described in this manual will not depart significantly from results obtained from the old manual."*

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Chapter Five Impacts and Mitigation

The purpose of this chapter is to evaluate potential environmental impacts associated with constructing and operating the Corridor Service Expansion Alternative and to present potential program-level mitigation strategies to avoid or reduce those impacts. The analysis presented in this chapter addresses the general effects of a program of actions that would provide the PNWRC with a service level of eight round trips, improved on-time performance, reduction in travel time, increased ridership, and improved safety. This chapter describes the general differences in potential environmental consequences between the No Build Alternative and the Corridor Service Expansion Alternative. Project-specific analysis will be completed as each individual project moves forward; impacts will be mitigated as appropriate.

Potential impacts from the Corridor Service Expansion Alternative" are classified into three groups: Permanent, Operational and Construction. Permanent impacts involve physical changes to the landscape – those remaining long after construction ends. Operational impacts involve those incurred by changes in passenger railroad operations – not only the logistics of train travel, but also the daily activities on, and maintenance of, railroad facilities. Construction impacts are those temporary impacts that are resolved or mitigated by the end of construction activity.

Many sources were used to prepare this document. References are provided in Chapter Seven, References.

Waterways and Hydrological Systems

This section discusses potential impacts, mitigation, and indirect and cumulative impacts to surface water, ground water, and floodplains. Waterway features and crossings located within 1,000 feet of the rail line are also discussed in a general nature and are only inclusive of larger streams. Table 1 in Chapter Four, Existing Conditions presents a listing of water resources that may be potentially impacted. The mapping in Appendix A (Group A) of this document also provides the general locations of these resources.

No Build Alternative

Potential Impacts

Surface water, ground water and floodplains will not be affected because there will be no rail improvements constructed and no additional intercity passenger trains will operate on the railroad main line. BNSF railroad maintenance will continue to support the current rail traffic.

Mitigation

There are no impacts from this alternative. No mitigation is required.

Corridor Service Expansion Alternative

Potential Permanent Impacts

The rail corridor crosses a number of rivers and streams, and their associated floodplains and habitats. In addition, a number of other water features are located within close proximity to the corridor. In order to expand the passenger rail service, new rail crossings would be constructed over the Coweeman River, Schoolhouse Creek, and some unnamed streams. In addition, rail improvements would be constructed directly adjacent to the Columbia River, Vancouver Lake, Burnt Bridge Creek, Cowlitz River, Kalama River, Owl Creek, China Creek, and Snohomish River. Although most types of potential project improvements will occur within the existing rail right of way, some improvements will require between 15 and 20 acres of fill placement in floodplains (including wetlands and non-wetlands) in Clark, Cowlitz, and Snohomish counties and less than 5 acres of increased impervious areas outside the existing developed rail line in Clark, Cowlitz, Lewis, Pierce, King, Snohomish, and Whatcom counties.

Potential Operational Impacts

The Corridor Service Expansion Alternative would change the operations of the rail corridor. However, increased speeds and frequency of service would not impact surface water, ground water, or floodplains along the corridor.

Potential Construction Impacts

During construction, contractors are responsible for ensuring that construction waste materials do not endanger ground or surface waters. Applicable construction permits will be obtained where required, including National Pollution Discharge Elimination System (NPDES) permits. Construction Best Management Practices (BMPs) will be utilized. Examples of Best Management Practices include silt fencing, dust control, settling ponds, and permanent seeding after construction is complete.

Mitigation

Physical improvements will be designed to meet standard engineering practices to avoid and minimize impacts to floodplains and hydrological connection of waterways. These designs include, but are not limited to, bridge structures, culverts, swales, water retention facilities and retaining walls. The bridge structures for the new rail crossings of the Coweeman River and Schoolhouse Creek will be designed to avoid or minimize the number of piers in the water. Engineering design and facility construction will be consistent with all regulatory requirements for protection of water resources. Further, restrictions and confinements of waterways are regulated by state and federal agencies; mitigation conditions will be determined during the project permitting process. Project-specific analysis will consider improvements to existing hydrological connections and maintain or improve them over existing conditions. As the fill areas are in the large floodplains of the Columbia River, Kalama River, Cowlitz River, and Snohomish River, the added fill areas are not anticipated to make a noticeable impact to the capacity of the floodplain.

Temporary water quality impacts during construction over and adjacent to waterways would be avoided or minimized through compliance with the Washington Department of Ecology's Stormwater Management Manual for Western Washington, and city and county grading/drainage ordinances and BMPs, as appropriate. For construction sites disturbing more than one acre, an NPDES permit would be required. In addition, a 401 Water Quality Certification would be required for projects that include filling wetlands to verify that water quality standards would not be violated. (The 401 Water Quality Certification will be issued in conjunction with the U.S. Corps of Engineers Section 404 permit for wetland fill.)

Indirect and Cumulative Impacts

Cumulative impacts from the rail corridor to floodplain and hydrologic features could result from additional development around stations and at industrial ports. The growth may lead to higher development in floodplains, more stream crossings and increased impervious areas. These impacts will be minimized through existing and future growth regulations and critical areas ordinances that require set-backs from critical areas and encourage appropriately-sized designs.

Even with increased rail traffic on sections of the corridor, little new construction would be required, and no significant water quality impacts are anticipated.

Impacts Summary - Waterways and Hydrological Systems

The impacts of the Corridor Service Expansion Alternative can be avoided, minimized or mitigated.

Hazardous Materials

Construction of potential project improvements may cause ground disturbances to some existing hazardous waste sites, and thereby potentially impact the environment. Hazardous waste sites located within 2,000 feet of the rail corridor were inventoried, with the majority of the sites located in King County. A quantified summary of these sites is presented in Table 8. The mapping provided in Appendix A (Group A) of this document also provides general locations of these sites.

Table 8. Known hazardous sites located within 2,000 feet of the rail corridor

County	Superfund Sites	State Cleanup Sites	LUST* Sites
Clark	0	23	6
Cowlitz	0	14	38
Lewis	2	13	47
Thurston	0	5	4
Pierce	2	87	156
King	1	163	328
Snohomish	1	47	106
Skagit	0	11	39
Whatcom	1	0	57
TOTALS:	7	401	781

* LUST: Leaking Underground Storage Tank

No Build Alternative

Potential Impacts

There will be no impacts to existing hazardous waste sites because no rail improvement projects will be constructed.

Mitigation

There are no impacts from this alternative. No mitigation is required.

Corridor Service Expansion Alternative

Potential Permanent Impacts

The potential impact of the new rail facilities in the Corridor Service Expansion Alternative related to hazardous material is limited to the spread of pre-existing contamination.

Environmental impacts may result if pre-existing contaminated soil or ground water is not properly managed and allowed to spread to clean soil, surface water, and/or ground water. Contaminated water may also result from clean water coming into contact with contaminated stockpiled soil. The risk of encountering contaminated soil and ground water is higher in areas that have a long and varied history of industrial and commercial land use, and in areas near properties with underground storage tanks. Contamination not managed properly in accordance with existing regulations could potentially affect human health and ecological receptors.

Potential Operational Impacts

The intercity passenger rail service will not transport hazardous materials. However, the rail lines, whether owned by BNSF or Sound Transit, will continue to function as freight railroad lines, and hazardous materials may be transported along the corridor. Any previous spills and releases as well as potential future spills and releases present potential impacts to the safety of passengers and others along the right of way and at stations. However, the potential for releases and the potential safety risk along the right of way is low. In the unlikely event of a spill, protocols are in place to control and minimize contamination under the emergency response control plans of the freight rail operators.

Potential Construction Impacts

With respect to hazardous materials, construction impacts are typically positive to the environment when excavation removes contamination.

Potential negative environmental impacts are limited to spills during construction. Construction involves various activities, equipment, and materials that can result in a release of hazardous materials into the environment. During construction, the contractor will be required to follow the applicable Washington Industrial Safety and Health Administration (WISHA) regulations regarding the use of hazardous materials or the discovery of hazardous waste. Also, the rail line operators will require the contractor's Health and Safety Plan to define the appropriate engineering control methods and personal

protection equipment for the health and safety of their workers. The contractor will be required to have a safety officer on-site at all times. In addition, the contractor's employees are required to attend a railroad-sponsored safety orientation.

Project-specific investigations will be completed and, if necessary, appropriate cleanup actions taken to ensure maximum safety for the public and construction workers. The contractor will be required to have written project-specific Spill Prevention, Control and Countermeasures Plans to prevent and minimize spills.

Mitigation

Hazardous materials investigations will be performed to identify contaminated sites and the potential type and extent of contamination as individual improvements are designed. Mitigation will be required to properly manage pre-existing contaminated soil or ground water so that it does not spread, and so that clean water does not come into contact with contaminated stockpiled soil. The plans put in place to properly manage the potential contact with hazardous materials will result in minimized impacts for the improvements due to hazardous materials.

Freight rail operations are subject to extensive federal, state, and local environmental regulations; thus, the railroad owner's operating procedures include practices to protect the environment from the risks inherent in railroad operations. Therefore, the required protocols will control and minimize contamination under the emergency response control plans of the freight rail operators.

In addition, BNSF Railway owns commercial or industrial properties with former activities that may have resulted in contamination, which are subject to environmental cleanup and enforcement actions. BNSF is actively involved in the investigation and cleanup of environmental contamination. Contamination identified within BNSF right of way will be managed in accordance with BNSF's standard operating procedures, resulting in minimized risk from hazardous materials.

During construction, Spill Prevention, Control and Countermeasures (SPCC) Plans will also be required. Preventing a spill is the primary goal; however, the contractor is expected to be prepared to minimize the impacts of a spill through immediate and appropriate response actions. Requiring an SPCC for all projects will result in minimized risk of contamination due to a hazardous materials spill during construction.

Indirect and Cumulative Impacts

No negative indirect or cumulative impacts will occur with the construction or operation of the planned facilities. Post-construction operation is generally expected to improve potential environmental impacts. If contaminated media are uncovered as a result of project construction, there will be an improvement in environmental quality when the contamination is removed.

The improved rail facilities resulting from the implementation of additional intercity rail projects will increase rail safety for all forms of rail traffic, including freight movement

of hazardous materials. This leads to an overall beneficial cumulative effect of the projects.

Impacts Summary - Hazardous Materials

The impacts of the Corridor Service Expansion Alternative can be avoided, minimized or mitigated.

Biological Resources/Ecology

Wetlands and aquatic resources were inventoried within 1,000 feet of the rail corridor. However, as a result of noise sensitivity of terrestrial wildlife species, wildlife impacts were assessed at 2,000 feet from the corridor. Table 9, Table 10, and Table 11 present summaries of the wetland, aquatic and terrestrial resources that could potentially be impacted by construction of project improvements along the rail corridor. Mapping in Appendix A (Groups A and B) of this document also provides general locations of these resources.

Table 9. Wetlands potentially within 1,000 ft of the rail corridor

County	Acres of Wetland
Clark	1,000
Cowlitz	2,350
Lewis	700
Thurston	500
Pierce	450
King	150
Snohomish	2,450
Skagit	1,000
Whatcom	1,250

Note: Rounded to nearest 50 acres.

Table 10. Vegetation and wildlife sites located within 2,000 feet of the rail corridor

County	Washington and Puget Sound Rare and Native Plant Sites	Wildlife Heritage Data Sites	Seabird Colony Sites	Seal / Sea Lion Haul-Out Sites
Clark	5	16	-	-
Cowlitz	6	17	-	-
Lewis	1	2	-	-
Thurston	30	12	-	-
Pierce	23	24	2	-
King	-	20	2	1
Snohomish	11	30	1	1
Skagit	6	16	-	-
Whatcom	4	12	3	4

Table 11. Miles of fish designated critical habitat located within 1,000 feet of the rail corridor

	Green Sturgeon	Chinook		Chum	Steelhead	Bull Trout
		Freshwater	Nearshore			
Clark	0.5	0.4	-	6.6	2.3	0.4
Cowlitz	8.5	21.0	-	22.6	31.3	0.4
Lewis	-	12.5	-	4.0	14.0	-
Thurston	-	-	-	-	-	-
Pierce	-	4.9	25.4	-	-	26.2
King	-	5.3	12.0	-	-	19.4
Snohomish	-	6.3	22.4	-	-	23.3
Skagit	-	4.6	5.7	-	-	7.6
Whatcom	-	0.4	16.7	-	-	17.6

No Build Alternative

Potential Impacts

Wetlands and aquatic resources will not be affected because there will be no rail improvements constructed and no additional intercity passenger trains will operate on the railroad main line. Railroad maintenance of the existing rail facilities will continue to support the current rail traffic.

Mitigation

There are no impacts from this alternative. No mitigation is required.

Corridor Service Expansion Alternative

Potential Permanent Impacts

As stated above, the rail corridor crosses a number of rivers and streams as well as sensitive wetland and plant communities, and a number of other water features and species occurrences are located within close proximity to the corridor. In the case of fill or cut areas, especially near streams or wetlands, moderate impacts to fisheries, vegetation and wildlife could be expected. In these areas, critical, suitable or available habitat for species could be lost or modified in ways that limits usability by species. Most types of potential project improvements will occur within the existing rail right of way. However, some of these habitats could be impacted by improvements in Cowlitz and Snohomish counties.

It is anticipated that the improvement projects could create between 8 and 12 acres of wetland fill in Cowlitz County and between 1 and 2 acres of wetland fill in Snohomish County.

It is anticipated that the improvement projects could affect between 18 and 25 acres of vegetation and wildlife sites in Clark, Cowlitz, Lewis, Pierce, King, Snohomish, and Whatcom counties.

It is anticipated that the improvement projects could affect less than 1 river mile of fish designated critical habitat within Schoolhouse Creek and the Coweeman River in Cowlitz County.

Potential Operational Impacts

Impacts from operational activities have the potential to permanently change the frequency of impacts compared to existing conditions. Faster and more frequent trains would not physically intrude on the habitats, wetlands and streams along the corridor. However, changes to the frequency of wildlife interactions or wildlife exposure to train traffic and elevated noise represent potential operational impacts from corridor improvements. Much of the rail corridor runs through existing developed areas or parallel to Interstate 5, limiting impacts from elevated noise during operations to a level that would not noticeably modify habitats and affect terrestrial wildlife. Wildlife occurring along much of the corridor would be accustomed to the elevated noise levels.

Train/wildlife interactions could increase as a result of faster and more frequent trains. Residential wildlife species may not readily adjust to the changes, and the result could be more frequent collisions. As this occurs infrequently today at the present levels of rail traffic, the impact of these interactions are anticipated to be minor.

Minimal impacts to vegetation would result from the operation of more frequent and faster trains. With the increased train traffic and speeds, an incremental increase in the potential for a train derailment and subsequent spill, primarily of diesel fuel, is possible. In the unlikely event of a spill, the impact on biological resources would depend upon the location, timing, quantity spilled, and the toxicity of the spilled material. However, as discussed in the hazardous materials section of this document, all regulatory and safety requirements would be met concerning hazardous materials.

Potential Construction Impacts

Construction at sites and at staging areas may cause disturbance, displacement, or injury to species as a result of changes to habitats, grading, vegetation impacts, hydrologic changes, water quality changes, elevated noise during construction, or visual disturbance. Construction beyond the right of way could disrupt natural processes and habitat elements within the impacted area on a temporary basis.

The level and types of impacts would vary depending on construction activities, best management practices employed, and the species occurring in the area. For example, construction of new bridges, culverts, or fill of wetlands in Cowlitz and Snohomish counties could result in changes to water quality and habitat availability for aquatic species such as salmon, steelhead, or bull trout. These types of projects could also require handling or relocation of fish. Also, birds found in project areas in Clark, Cowlitz, Lewis, Pierce, King, Snohomish, and Whatcom counties could be impacted by

activities conducted during nesting periods or by habitat or tree removal. Marine mammals, if present in the Columbia River in Clark County, and terrestrial species in Clark, Cowlitz, Lewis, Pierce, King, Snohomish, and Whatcom counties may be affected by elevated noise during construction, especially during loud elements such as pile driving. There are a few marine mammal haul-out sites located near the shorelines in the northern counties along the rail corridor. Animals using the sites may be disturbed by construction activities.

Impacts to biological resources can be avoided or minimized, in some cases, through altering the location of the facility or staging areas. For example, new tracks or sidings could be placed in locations where wetlands or sensitive habitat is not present, such as building a new section on the opposite side of the tracks from wetlands, streams or avoiding tree removal.

Other impacts that may result from construction activities near streams, wetlands, and other habitat include erosion of exposed soils during site grading and construction; increased sedimentation and deposition into wetlands and creeks; and accidental spills of contaminants.

Mitigation

Mitigation measures would follow a hierarchy of avoidance, minimization, and compensation for impacts.

Sensitive areas will be avoided as much as possible. Impacts to biological resources can be avoided or minimized, in some cases, by placing new tracks or sidings in locations where wetlands or sensitive habitat is not present (for example, building a new section on the opposite side of the tracks from wetlands, streams or avoiding tree removal). Other steps to minimize impacts would include building new tracks close to the existing tracks, thereby minimizing wetland and vegetation impacts.

Engineering designs would be developed to minimize impacts to aquatic resources. Designs would include minimizing project footprints, using retaining walls instead of fill placement, and lengthening culverts or bridges to span waterways. In addition, the use of best management practices to prevent sedimentation will minimize construction impacts.

As such, appropriate mitigation goals for the corridor could include maintaining the pre-construction hydrologic regime of the area; creating replacement wildlife habitat and rehabilitating existing nearby habitat; and improving water quality.

Restoration of degraded wetlands, enhancement of existing wetlands, or creation of new wetland habitat is often used to replace impacted wetlands. Projects will be assessed individually and regulatory compensatory mitigation will be completed.

Enhancement of existing wetlands within the immediate project area may involve eradicating invasive plant species and planting native vegetation. Wetland restoration typically involves re-establishing wetland hydrology to a former wetland area that has been effectively drained, or excavating fill out of a former wetland and replanting the

area with native wetland plants. Similar rehabilitation methods will be used to mitigate or minimize impacts to aquatic or riparian habitats. As a standard requirement, projects will vegetate disturbed areas to limit erosion and improve regrowth of impacted vegetation. Incorporating revegetation elements into the design and construction plans will minimize vegetation and wildlife impacts.

The construction activities of each individual project will be evaluated and necessary mitigation or impact-minimizing techniques will be identified during discussions or consultations with federal and state wildlife experts. The actual construction of projects will avoid some impacts by doing work during work windows when endangered or threatened fish species are least likely to be present. If necessary, such fish could be isolated and moved from the work area. Construction-related impacts to species can be minimized by relocating the activity (similar to wetland impact avoidance) and reducing the impact area. Construction will be done in accordance with federal and state regulations, and will include federally-approved conservation measures.

Where new bridge work is proposed, in-water work would be avoided to the maximum extent practicable during construction. Best management practices would be implemented during construction to minimize erosion and runoff.

In addition, the use of best management practices to prevent sedimentation and fish relocation will minimize construction impacts. Finally, the actual construction of projects will be done when fish species will be least impacted. This construction will be done in accordance with Washington State Department of Fish and Wildlife regulations.

Indirect and Cumulative Impacts

Indirect and cumulative impacts to habitats along the rail line should be minimal from operations or construction. Improvements were designed to improve safety and speed along the route. The increased frequency and speed of passenger trains between urban areas may improve the connectivity between areas and accelerate current and planned growth and development patterns around stations. This would be governed by local planning agencies through zoning decisions. This may provide benefits to biological resources through reduced development in rural areas while increasing density in urban and existing developed areas, leaving habitat areas untouched. However, the improvement of rail lines may also increase industrial development at ports, adding increased impervious areas, potential for contaminants, and activity.

Impacts Summary - Biological Resources/Ecology

Impacts from the Corridor Service Expansion Alternative can be avoided, minimized or mitigated.

Air Quality

Air quality impacts from rail projects, including operational changes, are governed by the U.S. Environmental Protection Agency's General Conformity Rules 40 CFR 51 and 93.

The rule requires that a conformity determination must be made for projects that emit more than the de minimis level for each criteria pollutant.

The U.S. Environmental Protection Agency (EPA) has established emission standards for oxides of nitrogen (NOx), hydrocarbons (HC), carbon monoxide (CO), particulate matter (PM) and smoke for newly manufactured and re-manufactured diesel-powered locomotives and locomotive engines. In 2008 the EPA adopted new standards that drastically reduced emissions of PM and NOx from new locomotive engines. In addition, the EPA also mandated the application of idle emission controls on new locomotives.[16]

No Build Alternative

Potential Impacts

No improvements will be made to the rail corridor or the existing intercity passenger rail service. Therefore, the air quality along the corridor will not be impacted.

Mitigation

There are no impacts from this alternative. No mitigation is required.

Corridor Service Expansion Alternative

Potential Permanent Impacts

No air quality impacts from additional rail facilities are anticipated. Any impacts would be from the construction or operations of the facilities

Potential Operational Impacts

The de minimis air quality analysis that was performed for future rail operations indicated that the de minimis level for each criteria pollutant was not exceeded. As such, this analysis confirms that the rail program's increased operations conform to the purpose and intent of the State Implementation Plans and Maintenance Plans for achieving the National Ambient Air Quality Standards.

Under the proposed Corridor Service Expansion, new locomotives will be purchased. These locomotives will replace the existing locomotives which comply with EPA's Tier 0 locomotive emission standards. These new locomotives will comply with EPA's new emission and idle-emission control standards. Combined with new ultra-low sulfur diesel fuel available in 2012[17], EPA is estimating that emissions from engines meeting the new standards will reduce PM by 90 percent and NOx by 80 percent from engines meeting Tier 0 standards. EPA also estimates that the new standards will yield sizable reductions in emissions of HC, CO, and other air toxics.

[16] *Federal Register, Volume 73, No. 126. June 30, 2008.*
[17] *Federal Register, Volume 69, No. 124. June 29, 2004.*

Potential Construction Impacts

The major air quality impacts during construction are expected to be dust, odors, other particulate matter, and hydrocarbons. These are caused by heavy machinery, traffic, and removal and/or placement of materials. Local weather conditions, fuel aromatic content and engine efficiency will affect odor intensity and particulate effects. Construction impacts in the project area are expected to be temporary and intermittent only, and they will be diluted at increasing distances from the project.

Mitigation

Contract specifications will be written stating that those performing the construction work shall comply with federal, state, and local air quality regulations. These regulations cover temporary construction conditions such as dust and smoke emissions. Some of the control measures that could be used to reduce the particulate pollution caused by construction are street sweeping at rail crossings and watering, which would reduce the potential impacts to below a level of significance. Since construction will be a temporary condition only, it is anticipated that no other measures will be necessary to control emissions.

No other impacts on air quality are anticipated; therefore, no other mitigation is proposed.

Indirect and Cumulative Impacts

No indirect and cumulative impacts are expected as a result of increased passenger rail traffic along the corridor. However, it is likely that the increased operations of passenger rail along the corridor will have a positive effect on air quality because of the expected reduction in automobile and personal truck mileage.

Impacts Summary - Air Quality

Impacts of the Corridor Service Expansion Alternative can be avoided, minimized or mitigated.

Soils and Geology

Areas of significant unstable slopes were inventoried and mapped (see Appendix A, Group D of this document), and are discussed in general terms in this section. A review of the existing environment indicates that unstable slopes and landslide hazard areas are located in areas throughout the corridor, predominately along shorelines. These areas range in size from ¼ mile long to 15 miles long. Table 12 summarizes the locations of these unstable slopes.

Table 12. General locations of unstable slopes in the corridor

County	General Location
Clark	North of Vancouver
Cowlitz	North of Kelso
Lewis	-
Thurston	-
Pierce	DuPont, Steilacoom, University Place, Tacoma
King	Shilshole (North Seattle) to Snohomish County
Snohomish	South of Edmonds, North Edmonds to Mukilteo
Skagit	Samish Bay
Whatcom	South of Bellingham, Blaine

No Build Alternative

Potential Impacts

No improvements will be made to the rail corridor or the existing intercity passenger rail service. Therefore, soils and geology along the corridor will not be impacted.

Mitigation

There are no impacts from this alternative. No mitigation is required.

Corridor Service Expansion Alternative

Potential Permanent Impacts

The construction of new track in areas adjacent to or at the foot of unstable slopes could cause potential impacts. None of the proposed improvements are located in the general locations of unstable slopes listed in Table 12 so the potential of impacts to unstable slopes is small. Liquefaction (ground failure due to earthquakes) is possible in portions of the corridor. The potential for sections of track to be dislocated is also possible during an earthquake.

Potential Operational Impacts

Moderate impacts to soils and geology are expected. Faster and more frequent trains will increase the frequency of vibration, increasing the risk of liquefaction and track damage in any areas of liquefaction-prone soils.

Potential Construction Impacts

Erosion impacts during construction in Clark, Cowlitz, Lewis, Pierce, King, Snohomish, and Whatcom counties are primarily related to the increased potential for erosion resulting from exposure of excavated soils to water. If not controlled, such erosion could result in the deposition of silt and/or sediment in wetlands, streams, or any other adjacent surface water. It is also likely that soils could be tracked onto nearby paved roads by construction vehicles. Wind action over exposed soils could generate dust.

Mitigation

Where steep slopes are unavoidable in cut and fill sections, attempts will be made to minimize the disruption of soils and to apply current soil stabilization techniques. When necessary, retaining walls will also be utilized. As a last resort, steep slopes will be cut back to a reasonable angle so that future landslide risk is minimized.

Proper subgrade preparation and embankment compaction will reduce the risk of liquefaction and track damage in any areas of liquefaction-prone soils.

Potential erosion during project construction will be mitigated by the use of best management practices specified in the erosion and sedimentation control plans for the project, as required by state and local jurisdictions. Typical measures include erosion fences, sediment ponds, and covering of stockpiled soils when practicable. Re-establishment of vegetation in non-paved cleared areas as soon as possible and application of appropriate ground cover will also minimize the potential for erosion hazards.

Indirect and Cumulative Impacts

No indirect or cumulative impacts to soils and geology are anticipated as a result of faster and more frequent passenger trains. However, it is recognized that the tracks are in a geologically-fragile area, and BNSF is currently working with communities along the corridor to stabilize slopes.

Impacts Summary – Soils and Geology

Impacts of the Corridor Service Expansion Alternative can be avoided, minimized or mitigated.

Land Use

A qualitative discussion of potential land use impacts is presented in this section.

The railroad is embedded into the communities it serves and has served for over 100 years. The railroad right of way varies in width, but generally averages 100 feet. Because of its unique use of land, and the long narrow configuration of the property, adjacent land uses have evolved based upon general local land use rather than the location of the tracks. Local planning agencies have zoned areas accordingly, often after the actual development has occurred.

This history results in a variety of land uses adjacent to the rail corridor. Much of the corridor is located in rural areas; however, as local land use evolves into denser concentrations of people and businesses, the local zoning reflects this increased use of the surrounding land. Regardless, the railroad right of way has remained a constant on the landscape. However, additional track crossings have been placed as development has occurred, and joint use of the right of way by various utilities has occurred in some locations.

No Build Alternative

Potential Impacts

No improvements will be made to the rail corridor or the existing intercity passenger rail service. Therefore, land use along the corridor will not be impacted. Land uses abutting the corridor may change, but that will be due to an action taken by a town, city, or county.

Mitigation

There are no impacts from this alternative. No mitigation is required.

Corridor Service Expansion Alternative

Potential Permanent Impacts

Some impacts may result from the addition of rail facilities in Clark, Cowlitz, and Whatcom counties. All efforts will be made to keep the project limits within the railroad's current right of way. However, it will not be possible to avoid work off the existing rail right of way. It is likely that between 10 and 15 acres of land will be converted from its present use to rail-related use in these three counties, which will cause some minor land use impacts.

Potential Operational Impacts

State, regional, and county plans throughout the corridor have incorporated the Amtrak passenger rail service (and its associated facilities) into their comprehensive plans. Many other jurisdictions have also recognized the rail service in their plans, especially in the cities of Vancouver, Kelso, Lacey, Tacoma, Tukwila, Seattle, Edmonds, Everett, Mt. Vernon, and Bellingham, which all have stations. Overall, the intercity passenger program is compatible with existing comprehensive plans and policies.

Potential Construction Impacts

It is anticipated that project improvements and staging areas for those improvements in Clark, Cowlitz, Lewis, Pierce, King, Snohomish, and Whatcom counties will occur within the existing railroad right of way. Most track construction will not impact surrounding land uses any more than routine track maintenance. This is because some of the activities associated with the unique methods of railroad construction can be done by using specially-designed track-mounted vehicles that construct the track structure while on the tracks themselves. Most additional construction work that is not unique to rail construction would be performed using standard construction vehicles and tools.

Mitigation

The relatively minor conversion of between 15 and 20 acres of land from its current use adjacent to the existing rail corridor to a rail-related use is a minor impact. No long-term impacts to land use are anticipated to result from operations or construction of project improvements to allow for faster and more frequent intercity passenger trains; thus, no mitigation is proposed.

Indirect and Cumulative Impacts

Increased passenger rail service may have the effect of inducing growth in commercial and retail uses serving customers at the stations. This would be governed by local planning agencies through zoning decisions. It is unlikely, however, that industrial and agricultural areas would change as a result of faster and more frequent intercity passenger trains.

Impacts Summary – Land Use

Impacts of the Corridor Service Expansion Alternative can be avoided, minimized or mitigated.

Farmlands

A qualitative discussion of potential impacts to farmlands is presented in this section.

No Build Alternative

Potential Impacts

No improvements will be made to the rail corridor or the existing intercity passenger rail service. Therefore, farmlands along the corridor will not be impacted. Farmlands abutting the corridor may change but that will be due to an action taken by a town, city, or county.

Mitigation

There are no impacts from this alternative. No mitigation is required.

Corridor Service Expansion Alternative

Potential Permanent Impacts

Impacts to farmlands would be minor, because most of the new tracks will be constructed inside the existing railroad right of way.

Between 3 and 5 acres of farmland used as pastures for small resident farms in suburban Kelso in Cowlitz County may be displaced by related roadway improvements. Some farmland could be converted to wetlands as mitigation for wetland impacts adjacent to the existing right of way in Cowlitz and Snohomish counties. The amount and location of the farmland converted to wetland mitigation will vary depending on consultation with the permitting agencies, but would likely not exceed 15 acres in Cowlitz and Snohomish counties. As such, faster and more frequent passenger trains may slightly impact some farmlands.

Potential Operational Impacts

The nature of intercity passenger rail is that operating terminals are in, or very near, cities and towns on the corridor. As such, impacts to farmlands from faster and more frequent operation of intercity passenger trains would not impact farmlands beyond potential noise

impacts on farm animals. As with residential wildlife discussed in the Biological Resources/Ecology section of this chapter, farm animals along the corridor would become accustomed to the minor increase in noise levels given that the route already hosts frequent freight trains and intercity passenger rail service.

Potential Construction Impacts

It is anticipated that most construction will occur within the existing railroad right of way. Most track construction performed on the right of way will not impact farmlands any more than routine track maintenance. This is because some of the activities associated with the unique methods of railroad construction can be done by using specially-designed track-mounted vehicles which construct the track structure while on the tracks. Most additional construction work that is not unique to rail construction would be performed using standard construction vehicles and tools.

Mitigation

No long-term impacts to farmlands are anticipated to result from faster and more frequent intercity trains and its associated project improvements; thus, no mitigation is proposed.

Indirect and Cumulative Impacts

Increased rail service and upgraded stations may have the effect of inducing planned growth in commercial and retail uses serving customers at the stations. This would be governed by local planning agencies through zoning decisions. It is unlikely that industrial and agricultural areas would change.

Impacts Summary – Farmlands

Impacts of the Corridor Service Expansion Alternative can be avoided, minimized or mitigated.

Parks and Cultural Resources

An inventory of parks and recreational facilities, listed National Historic Register properties, and other cultural resources located within 1,000 feet of the rail corridor was compiled. This information is presented in Table 5 in Chapter Four, Existing Conditions. Maps indicating the general locations of these facilities are located in Appendix A (Group E) of this document.

The Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act create a process by which federally-assisted undertakings are reviewed for their effect on properties listed in, or eligible for, listing in the National Register of Historic Properties. Such rules govern the appropriate changes that are permissible near the property as well as determining if adverse effects to the property will result.

Mitigation for park land is also covered by federal regulations. Pursuant to Section 4(f) of the Department of Transportation Act of 1966, park land cannot be taken unless it is

proven that no other feasible and prudent alternative exists. As such, very strict guidelines are imposed on the disruption to park land. Project-specific Section 106 and Section 4(f) analyses will be completed, as appropriate, as each project moves forward.

No Build Alternative

Potential Impacts

Parks and recreational facilities, listed National Historic Register properties, and other cultural resources along the corridor will not be impacted because no improvements will be made to the rail corridor to support increased intercity passenger rail service.

Mitigation

There are no impacts from this alternative. No mitigation is required.

Corridor Service Expansion Alternative

Potential Permanent Impacts

Throughout the corridor, the rail line is located near a number of parks and cultural facilities. As such, the addition of rail improvements such as new sidings, bypasses, or additional main lines could potentially impact these resources. Such impacts could result in the disruption of a cultural resource or a change in access to a park or recreation facility.

None of the improvements proposed in the Corridor Service Expansion Alternative appear to be near enough to existing parks or known cultural resources to result in impacts from the improvements. Project-specific investigations will determine the effects of each project on parks, historic structures and archaeological sites. Also, a Section 106 consultation for cultural resources will be initiated with affected Native American Tribes, the State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation, and local governments. WSDOT will work with the lead federal agency to ensure compliance with Section 106.

Potential Operational Impacts

The impacts of increased train traffic and train speed on cultural resources will be minimal. However, faster and more frequent trains could increase the frequency of noise and vibration for users of parks. Faster and more frequent trains, by their nature, would not likely impact cultural resources such as archaeological sites.

Potential Construction Impacts

One of the issues related to construction activity and recreational activities is potential delay of access at existing crossings during construction. Public safety at crossings is an ongoing concern of the rail line owners and operators. Efforts have been made, and will continue, to further increase public safety. Another issue is noise that is generated from construction activities may impact users of parks. As with potential operational impacts noted earlier in this section, none of the improvements proposed in the Corridor Service Expansion Alternative appear to be near enough to existing park lands to result in impacts

from noise and vibration for park users. Finally, it is possible that cultural resources, such as archaeological sites, could be inadvertently discovered at the construction site and thus be potentially impacted.

Mitigation

Future thorough project-specific investigations will determine if parks and cultural resources would be impacted by construction of the improvements or by additional train operations.

Any potential impacts to parks will be addressed by either avoiding or minimizing the impacts through the design of the project improvement, such as adding track on the opposite side of the existing tracks from the identified resource. If the impacts cannot be avoided or minimized, any impacts will be mitigated as necessary after consulting with the appropriate federal, state, and local agencies, as well as public stakeholders.

For cultural resources, Section 106 of the National Historic Preservation Act requires WSDOT to consult with the affected Native American tribes, the Department of Archaeology and Historic Preservation, the Advisory Committee on Historic Preservation, the federal lead agency, and local governments on all federally-funded projects.

WSDOT consults with affected Native American tribes on every project to identify potential cultural resources that could be impacted by the project. This early cultural resource identification enables the project designer to design the improvement so that impacts can be avoided, if at all possible, or minimized. If an impact to a cultural resource cannot be avoided, then the Section 106 process will be followed, which may result in a Programmatic Agreement being prepared and signed by all parties.

If a WSDOT rail improvement project involves ground disturbance, an unanticipated discovery plan will be prepared that describes what will be done if archaeological materials or human remains are discovered during construction.

If cultural resources are likely to be encountered during construction but their location is not precisely known, it is common for WSDOT to employ one or more tribal representatives to monitor construction activities. This information is included in the construction contract to direct the actions of the construction contractor if the cultural resource in encountered. It is also WSDOT's policy to include construction contract requirements that direct actions of the construction contractor in the event of the unanticipated discovery of previously unidentified cultural resources. This policy is extended to projects with railroads via individual project agreements between WSDOT and the railroad directing the construction.

Impacts Summary – Parks and Cultural Resources

Impacts of the Corridor Service Expansion Alternative can be avoided, minimized or mitigated.

Social and Economic

Impacts analysis for this section involves a qualitative discussion of potential impacts to community cohesion and safety. It also discusses potential relocation and environmental justice issues. As discussed in Chapter Four, Existing Conditions, some areas along the corridor have been designated as Urban Growth Areas. It is these areas that may be potentially impacted by construction projects.

Project-specific analysis that will identify specific social and economic impacts will be completed as each individual project moves forward.

No Build Alternative

Potential Impacts

Community cohesion and safety, relocation, and environmental justice along the corridor will not be affected because no improvements will be made to the rail corridor to support increased intercity passenger rail service.

Mitigation

There are no impacts from this alternative. No mitigation is required.

Corridor Service Expansion Alternative

Community Cohesion and Safety

Potential Permanent Impacts

The addition of sidings, bypass tracks, and additional main lines could potentially disrupt neighborhoods and businesses by permanently changing access to residences and facilities.

Potential Operational Impacts

Potential effects of faster and more frequent passenger trains on community cohesion and safety could result from increased train traffic along the line and from construction of associated facilities. Faster speeds will actually result in shorter wait times at railroad crossings. However, additional trains and increased speed will impact public access and safety at corridor crossings. Public safety is already an important issue with all railway operations, and will continue to be addressed by the railroads. Of particular concern are waterfront, beach, and recreational facility access points at railroad crossings, and the recreation trails that parallel the rail corridor owned by the BNSF Railway. The rail lines are posted with “No Trespassing” signs, and BNSF levies fines for violation of these notices. In addition, BNSF meets all federal and state regulations regarding signals, bells, and whistles at-grade crossings. Public safety impacts could be mitigated with increased public education of the hazards of crossing the rail corridor.

The majority of safety issues will result from the increase in the number of trains in the corridor and the incremental increased speed of existing trains in the corridor. The areas of greatest safety concern are typically where the highest concentrations of people live

and work near the tracks (increasing the potential for collisions and other accidents). In these areas, railroad accidents are most likely to occur at-grade crossings with roadways. Accidents at railroad grade crossings are often due to ignorance of the risks or errors in judgment by road users, both of which can result in disregard of the warning devices intended for personal safety. Common examples include walking along railroad tracks and driving around lowered crossing gates.

Typical safety measures that are used to enhance pedestrian and vehicular safety at-grade crossings range from community education to warning devices to active controls. Railroad locomotives are also equipped with whistles that are used to alert motorists when a train is approaching. However, by the time engineers see motorists or individuals on the tracks, it is often too late to stop. Additional safety measures that are used along the railroad right of way include the installation of security fencing and posting of no trespassing signs.

Walking along a railroad track or crossing a track at an area that is not a designated crossing is illegal because the railroad right of way is private property owned by the railroad. Since it is not intended for people to walk in these areas, safety warnings are not present. It is only at designated crossings (pedestrian bridges, trails and roadways) that warning signs are in place.

Potential Construction Impacts

Impacts to the community and access to social services/recreational facilities include possible temporary delays during construction. WSDOT will work with the local community to minimize impacts to citizens.

Relocation

Potential Permanent Impacts

The addition of sidings, bypass tracks, and additional main lines is not expected to require the relocation of any homes or businesses beyond those described in the Potential Construction Impacts section that follows.

Potential Operational Impacts

Increased rail service is not expected to require the relocation of any homes or businesses. It is also not anticipated that these trains will result in levels of noise or vibration that will make homes or businesses adjacent to the railroad tracks unusable.

Potential Construction Impacts

In order to construct one of the improvements, as many as three homes and two businesses in Kelso, Cowlitz County, will be required to relocate. This is not a major impact.

Environmental Justice

The wide range of variability in the demographics of census tracts along the corridor suggests that neither low-income or minority populations would predominately bear the effects of the program. Appendix B provides a summary, by census tract, of populations along the corridor.

Increased rail service would not result in substantial noise level increases or violations of ambient air quality standards, or other environmental health hazards. It is possible that if homes or businesses are displaced, one or more could be owned by a member of a protected population, but the overall numbers of displacements will be small, and relocation assistance would be provided in accordance with federal and state law. The rail program will actually provide mobility benefits to minority populations.

Corridor service expansion would not likely involve any disproportionately high and adverse impacts on populations protected by the Environmental Justice Executive Order. When project-specific analysis is prepared, the impact on these populations will be carefully examined to verify this determination.

Mitigation – Social and Economic

As projects move forward, close coordination with the local community will be imperative to ensure that other planned uses are not underway for designated growth areas.

During the design process for each project, the exact location of the right of way will be determined. The acquisition of any additional right of way would begin once plans are approved and the individual project is funded.

The amount of land required will be dependent upon several factors, including the stability of the soils and topography, engineering recommendations on design and placement, and environmental requirements. Once these factors have been determined, monetary compensation would be provided to the current title holder for the necessary land required.

The project's acquisition and relocation procedures are based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and state law in Chapter 8.26 of the Revised Code of Washington. Any persons displaced from homes, businesses or farms are guaranteed uniform and equitable treatment.

Properties to be acquired will be independently appraised for fair market value. Eligible individuals, families, businesses or organizations will receive advisory services and may receive moving costs, housing replacement, rental assistance, or business relocation benefits to minimize hardship and provide the assistance necessary to accomplish this consistently.

To address safety concerns, WSDOT is working with local communities along the corridor to improve, close and consolidate grade crossings and educate the public on the

dangers of railroad trespassing. In addition, the volunteer group, Operation Lifesaver, provides extensive community education and outreach about the dangers of trespassing on railroad property. Currently, Operation Lifesaver is working with grade schools and teachers to educate children along the entire corridor.

Indirect and Cumulative Impacts – Social and Economic

WSDOT's goal is to create minimal disruption to the communities along the corridor.

Cumulative impacts of increased train traffic and speed include continued and increased concern for public safety at-grade crossings. Also of continued concern is public trespassing to use, or cross, the right of way for recreational purposes. As more trains traveling at higher speeds use the corridor, the public will be forced to use planned and approved access to the recreational facilities instead of trespassing. Although this may cause some congestion at access points, it will result in increased public safety.

Most individuals are concerned with both the safety of crossing the tracks (either on foot, bicycle or in an automobile) and safety from train derailments and spills.

WSDOT recognizes the need to provide a safe environment around railroad tracks and facilities. As WSDOT moves forward with the rail program, site-specific analysis will be done for individual projects.

Impacts Summary – Social and Economic

Impacts of the Corridor Service Expansion Alternative can be avoided, minimized, or mitigated for community cohesion, safety, and relocation.

For Environmental Justice, corridor service expansion would not likely involve any disproportionately high and adverse impacts on populations protected by the Environmental Justice Executive Order.

Visual Quality

This section discusses the qualitative impacts on the visual quality of the environment. In-depth project-specific visual analysis will be performed as individual projects move forward.

No Build Alternative

Potential Impacts

Visual quality will remain the same along the corridor because no improvements will be made to the rail corridor.

Mitigation

There are no impacts from this alternative. No mitigation is required.

Corridor Service Expansion Alternative

Potential Permanent Impacts

Most railroad improvements will occur within the existing right of way where track and supporting structures already exist. Additional railroad facilities will be an incremental change that will be unnoticeable in most locations.

A typical cross section for potential projects include single or multiple sets of tracks, the supporting rock ballast and vegetated right of way. The actual tracks stand eight inches above ground and the right of way typically extends 50 feet or more from each side of the track centerline. Rail signals and/or cross traffic warning signals are located at specific locations. The actual rail configurations are often unnoticeable by the viewing public, whether passenger or bystander.

Grade crossings, bridge and road crossings and retaining walls are the most apparent feature, both when in use (with flashing signals and/or gates) and when not in use. Project improvements may result in grade-separated or improved at-grade crossings which include the related crossing guards, crossing signs and "signal houses" (small square structures which control switches and crossing guards). Most of these will be similar to facilities already in place.

New rail bridges would be added in Kalama, Kelso, and Tacoma. Most rail bridges will be added alongside existing bridges because the existing bridges are too narrow to allow additional track. Many of the existing bridges are timber trestles on multiple creosote timber pilings, or steel truss bridges on concrete columns. Roadway bridges will be added in Kalama, Kelso, Tacoma, and Bellingham. All new bridges will be constructed on concrete columns or steel pilings.

New concrete retaining walls above or below the railroad or associated highway improvements would be added in Vancouver, Kalama, Kelso, Tacoma, and Bellingham.

Potential Operational Impacts

Operating increasing numbers of faster trains will have the same impacts as existing trains going through the corridor. Grade crossings are the most apparent operating feature when in use with flashing signals and/or gates. Depending on personal perspective, individuals may find viewing the passenger trains that will briefly enter and leave their line of sight aesthetically pleasing. The improvements will allow trains to move through residential views faster, especially at siding locations. The improved sidings will allow trains to move past each other concurrently, rather than forcing one to stop and wait while the other passes. Whether communities or individuals view the trains positively or negatively, the actual change in view will be momentary.

Potential Construction Impacts

Construction of physical improvements may cause some temporary degradation of visual quality. Most likely the actual construction will occur quickly, and be similar to existing maintenance along the right of way. Some types and locations of the improvements will

require the use of large construction equipment; this equipment will be most noticeable during the time when footings and pilings for bridges and retaining walls are being placed. Best management practices during construction will include the use of silt fencing or construction barriers. Typically, construction barriers are brightly colored to improve worker safety.

Mitigation

Following construction, the visual quality is anticipated to return to near pre-existing conditions for most improvement sites. Where new rail bridge structures could be added, specifically at the Coweeman River crossing in Kelso, the new bridge will be placed alongside the existing structure, thus minimizing the visual impact. At locations where there will be new roadway bridges over the tracks, the design of the new bridges will be coordinated with local government and the general public to minimize the visual impact of the new structures. At locations where new retaining walls will be added, the visible surface of the retaining walls could be designed to minimize the visual impact by modifying the surface color and texture to resemble natural rock surfaces or by adding a vegetation buffer to shield it from view. Mitigation also includes replacing removed vegetation with native vegetation and locating vegetative buffers beneficial to the visual quality along portions of the improvement sites where cuts or fills have occurred within sight of residential viewers.

Indirect and Cumulative Impacts

This program will improve the rail line, resulting in increased train service and train speeds. Therefore, any changes in visual quality caused by the passenger train traffic will decrease in duration, but increase in frequency. As the existing rail line is well-established throughout the corridor, the additional upgrades will probably be visually unnoticeable and unremarkable to the general public. Thus, no indirect or cumulative impacts to visual quality are expected.

Impacts Summary – Visual Quality

All impacts from the Corridor Service Expansion Alternative can be avoided, minimized or mitigated.

Energy

This section presents a general discussion of energy and its relationship to implementation of the rail program.

No Build Alternative

Potential Impacts

Energy use will remain the same along the corridor because no improvements will be made.

Mitigation

There are no impacts from this alternative. No mitigation is required.

Corridor Service Expansion Alternative

Potential Permanent Impacts

With the addition of the rail and highway improvements, a number of highway-rail at-grade crossings in Kalama, Kelso, and Bellingham will be eliminated by grade separations. This will reduce the fuel used by roadway vehicles waiting for existing rail traffic to pass. This positive impact is considered permanent as it will occur separately from the operations of additional passenger trains in the corridor.

Potential Operational Impacts

A primary goal of the rail program is to reduce the existing bottlenecks in the rail system. This will result in an overall decrease in travel time. A portion of the decrease in travel time will be accomplished by decreasing the waiting periods trains currently experience on the limited numbers of sidings. Additionally, the project involves reconfiguration of some track curvature, and upgrading turnouts, signals and crossovers, all of which will increase speed and fuel efficiency.

By increasing the number of usable sidings, and creating other capacity and efficiency improvements, trains will be able to pass each other while moving. Currently some trains must wait for opposing traffic to pass at a few locations . By decreasing the time the trains sit idling on a siding, the projects should greatly improve energy efficiency through reduced fuel consumption. Although the distances vary, current Amtrak travel time between Seattle and Vancouver, B.C. is 3 hours and 55 minutes and current travel time between Seattle and Portland, OR is 3 hours and 30 minutes. The difference in travel times and speed, and therefore fuel consumption, may reflect a variety of causes for the slower movement between Seattle and Vancouver, B.C., including terrain, track layout and track conditions.

At completion of these improvements, travel times are estimated to decrease 18 minutes each way between Seattle and Portland. Between Seattle and Vancouver, B.C., there will be an increase in schedule reliability (on-time performance).

Additional fuel efficiency will be realized with the use of the new models of locomotives being built for this route in the future. The F59PHI locomotives currently being used were state of the art when they were introduced 13 years ago. However, existing freight locomotives being introduced today are 10 to 12 percent more energy efficient than locomotives built in the mid-1990s. Therefore, it is assumed that new passenger locomotives purchased in the next several years will be at least 10 percent more fuel efficient than the existing F59PHIs.

Current total daily consumption of fuel for Amtrak *Cascades* rail passenger service is approximately 3,200 gallons. With the planned rail improvements for Amtrak *Cascades* service expansion and with using new locomotives, fuel use is projected to increase to

4,212 gallons per day, for a net increase of approximately 1,000 gallons per day. Local supplies of diesel fuel will not be impacted by these improvements. Table 13 includes the current and projected fuel usage amounts.

Greater overall fuel efficiency will occur with the building of the rail improvements and the increase in passenger rail service. When comparing the amount of fuel used if train passengers drove their own vehicles to the amount of fuel projected to be used by the new trains, less fuel will be consumed with the building of the rail improvements and the increase in passenger rail service. In addition, the corridor projects will not generate substantial development along the rail line; therefore, there will be no increased energy demands from growth-related service.

Table 13. Current and projected fuel usage

	SEA-PDX		SEA-VAC	
	2009	2018	2009	2018
Trips	8	16	4	4
Fuel Use (gal)	2,288	3,392	908	820
Fuel Use per trip (gal)	286	212	227	205
Trip Distance (miles)	186	180	155	155
Total Distance (miles)	1,488	2,880	620	620
Fuel Economy (mpg)	0.7	0.8	0.7	0.8
Total GHG Emissions (MT CO_2e)	24	35	9	9
GHG emissions per mile (kg CO_2e/mi)	16	12	15	14

Note: Emission factors taken from The Climate Registry's General Reporting Protocol, Version 1.1, May, 2008.

Includes idling fuel use.

MT is metric tons = 1000 kg. Metric tons is the standard measure for GHGs.

CO_2e is carbon dioxide equivalents, which take into account not only the CO_2 emitted but other greenhouse gases (GHGs), in this case nitrous oxide (N_20) and methane (CH_4).

During rail operations, electricity will continue to be used to operate switches, crossing signals, wayside signals and safety devices, and communication devices. Diesel fuel will be required to operate the diesel locomotive engines.

Potential Construction Impacts

A temporary increase in energy consumption will occur at project areas during construction. This energy use will include diesel fuel to operate heavy machinery, electrical or gas-powered hand tools, and battery or generator electrical lighting and safety signals.

Specialized heavy machinery that is track-mounted will be fueled at the BNSF railyards. These procedures are standard with any track maintenance or improvement. Contractor vehicles and hand-held tools will be replenished with local supplies.

Mitigation

Since no impacts are anticipated, mitigation is not expected to be required.

Indirect and Cumulative Impacts

The Corridor Service Expansion alternative would increase Seattle-Portland round trips to eight per day. Ridership forecasts for 2018 project that 1,538,883 passengers, traveling almost 243 million passenger miles, will be carried by the Corridor Service Expansion alternative. At this level of service, train loads would average 222 passengers. Amtrak's system-wide average of BTUs per passenger mile in 2007 was 2,516. The amount of energy expended per mile per single-occupancy-car is typically 5,517 BTUs. The resulting energy savings is 3,001 BTUs per passenger mile over a single-occupancy vehicle.

Impacts Summary – Energy

Impacts of the Corridor Service Expansion Alternative can be avoided, minimized or mitigated.

Noise

This section presents a general discussion of noise and its relationship to improvements for the rail program. General noise and vibration analyses were conducted for the improvement areas in the Pacific Northwest Rail Corridor in accordance with federal guidelines, as shown in Table 14.

Table 14. Vibration and ground-borne noise impact criteria

	Ground-Borne Vibration Impact Levels (VdB re 1 micro inch/sec)		Ground-Borne Noise Impact Levels (dB re 20 Micro Pascals)	
Land Use Category	**Frequent[1] Events**	**Infrequent[2] Events**	**Frequent[1] Events**	**Infrequent[2] Events**
Category 1: Buildings where low ambient vibration is essential for interior operations	65 VdB[3]	65 VdB[3]	-4	-4
Category 2 Residences and buildings where people normally sleep	72 VdB	80 VdB	35 dBA	43 dBA
Category 3 Institutional land uses with primarily daytime use.	75 VdB	83 VdB	40 dBA	48 dBA

1. "Frequent Events is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.

2. "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.
3. The criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
4. Vibration sensitive equipment is not sensitive to ground-borne noise.

No Build Alternative

Potential Impacts

Noise and vibration will remain the same along the corridor because no improvements will be made.

Mitigation

There are no impacts from this alternative. No mitigation is required.

Corridor Service Expansion Alternative

Potential Permanent Impacts

Existing freight noise and vibration levels, and the noise and vibration which will be added by the proposed improvements, were predicted at the nearest sensitive receiver to the track for each improvement studied. It was discovered that noise and vibration levels are already high throughout the program corridor due to existing freight operations. As this noise level will not noticeably change with the operation of additional passenger trains, there are no permanent impacts from noise and vibration in the corridor.

Potential Operational Impacts

As stated earlier, existing freight noise and vibration levels, and the noise and vibration which will be added by the proposed improvements, were predicted and it was discovered that noise and vibration levels are already high throughout the program corridor due to existing freight operations. The proposed rail improvements will not noticeably add to the existing levels of noise or vibration in these areas, resulting in a finding of either no impacts or minimal noise or vibration impacts for all of the improvement areas studied.

Additional studies for proposed bypass projects in Vancouver and Tacoma also found that noise levels would not be increased along the current routes for the same reason. In the case of these bypass projects, rail traffic would be rerouted closer to some homes and further from other homes, thus causing some impacts. Thus, for a third proposed project in Bellingham, one can anticipate that there may be some impacts from that project as well.

Potential Construction Impacts

During construction, people working and living near improvements in Clark, Cowlitz, Lewis, Pierce, King, Snohomish, and Whatcom counties may be exposed to noise and vibration originating from the contractor's construction equipment and operations. Railroad construction is not typical construction. Some large vehicles are used, but some

of the work is done by track-mounted specialty vehicles. These vehicles place and shape ballast, and lay the track and supporting structures. The primary source of noise and vibration during construction will be the large machinery and track-mounted specialty vehicles. However, noise and vibrations of this type would tend to be intermittent and of a temporary nature.

Noise levels of typical construction equipment are measured at 50 feet (15.2 meters) from the source. Construction equipment noise levels decrease at six decibels per doubling of the distance provided there is a clear line of sight to the equipment. For example, a bulldozer creating 80 dBA at 50 feet (15.2 meters) will have an observed value of 74 dBA at 100 feet (30.5 meters) and 68 dBA at 200 feet (61.0 meters).

Contractors are required to comply with all state and local regulations governing equipment source levels and noise resulting from the construction site activities during the life of the improvement; however, daytime construction activities are generally exempt from these limits. Despite this legal exemption, construction noise can annoy people living in the area, and some simple and inexpensive techniques can be used to minimize the negative effects. Stationary noise sources should be placed as far from sensitive receivers as possible. Portable noise barriers can be used to further shield sensitive receivers and demonstrate the contractor's commitment to the public to limit construction noise annoyance during construction. Construction noise can be further reduced through the use of properly sized and maintained mufflers, engine intake silencers, ambient sensitive backup alarms, engine enclosures, turning off idling equipment, confining operations to daylight hours, driving forward instead of backward whenever feasible, and lifting instead of dragging materials.

Mitigation

The need for mitigation is based on the magnitude of impact and consideration of factors specifically related to the proposed improvement and affected land uses. Every reasonable effort would be made to reduce predicted noise and vibration to levels deemed acceptable for impacted sensitive land uses. Any decision to include mitigation would be made after site-specific analysis.

Since no noise or vibration impacts were found at this level of analysis for most of the improvement areas studied, no mitigation is expected to be required for them. For the bypass project studied in Vancouver, the noise and vibration impacts were minimized by the selection of a route slightly farther from residences than another build option. In the case of the bypass project in Tacoma no vibration impacts were predicted and the noise impacts were minimized through the use of wayside horns at at-grade crossings rather than using the typical locomotive-mounted horns. Similar consideration at the Bellingham project location will likely minimize any potential impacts at that location as well.

Even though the analyses have shown that these improvements will not cause any noise or vibration impacts under federal criteria, annoyance caused by noise from rail operations along this corridor does exist and can be expected to continue. Measures that could be considered when attempting to reduce the human annoyance caused by noise

from rail operations include the use of supplementary safety measures to replace train whistles at problem crossings such as wayside horns, and a maintenance program dedicated to preventing the degradation of rails and wheels.

Indirect and Cumulative Impacts

Much of the route is along Interstate 5 which is the major north-south auto, bus and truck route in western Washington. Another large noise generator outside the corridor is from industrial activities in Vancouver, Seattle, Everett, and other rural locations. The increased noise from additional passenger train traffic within the corridor will add only a slight amount of noise above that caused by Interstate 5 or the industrial activities along the corridor. This program improves the rail line and increases the speed of trains; therefore, the typical noise will decrease in duration. In addition, new track will be continuously welded steel rail, thus no joint noise will occur as the train rolls over the tracks.

The passenger equipment that is currently being used on the corridor for the passenger trains is quieter than the freight train equipment used on the corridor. While actual train noise volume associated with intercity passenger rail may decrease, the frequency of the noise will increase as a result of more frequent train service. Indirect and cumulative impacts of increased frequency of noise may be heard and felt in urban areas adjacent to the route. Freight rail traffic will continue to make the loudest noise; construction and increased passenger service will not significantly increase noise levels.

Impacts Summary – Noise and Vibration

Impacts from the Corridor Service Expansion Alternative can be avoided, minimized or mitigated.

Other Cumulative Effects

The Council on Environmental Quality's (CEQ's) regulations for implementing NEPA require agencies to consider three types of impacts: direct, indirect, and cumulative. Direct and indirect impacts are caused by an action either in the present or future,[18] whereas a cumulative impact is "the impact on the environment which results from the incremental impact of an action when added to past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.[19]

Climate Change

Greenhouse Gas Emissions

Vehicles emit a variety of gases during their operation; some of these are greenhouse gases (GHGs). The GHGs associated with transportation are water vapor, carbon dioxide (CO_2), methane (also known as "marsh gas"), and nitrous oxide (used in dentists' offices

[18] *See 40 CFR 1508.8, Protection of Environment, Council on Environmental Quality.*
[19] *See 40 CFR 1508.7, Protection of Environment, Council on Environmental Quality, Cumulative Impact.*

as "laughing gas"). Any process that burns fossil fuel releases CO_2 into the air. Carbon dioxide makes up the bulk of the GHG emissions from transportation.

Vehicles are a significant source of GHG emissions and contribute to global warming primarily through the burning of gasoline and diesel fuels. National estimates show that the transportation sector (including on-road vehicles, construction activities, airplanes, and boats) accounts for almost 30 percent of total domestic CO_2 emissions. However, in Washington State, transportation accounts for nearly half of GHG emissions because the state relies heavily on hydropower for electricity generation, unlike other states that rely on fossil fuels such as coal, petroleum, and natural gas to generate electricity. The next largest contributors to total GHG emissions in Washington are fossil fuel combustion in the residential, commercial, and industrial sectors at 20%; and in electricity consumption, also 20%.

What efforts are underway to reduce greenhouse gas emissions in Washington State?

In 2007, Governor Gregoire and the legislature set GHG reduction goals for Washington State:

- 1990 GHG levels by 2020
- 25% reduction below 1990 levels by 2035
- 50% by 2050.

In March 2008, the Governor signed Washington's Climate Change Framework/Green-Collar Jobs Act (HB 2815). This law includes, among other elements, statewide per capita vehicle miles traveled (VMT) reduction goals as part of the state's GHG emission reduction strategy. This law also established the Climate Action Team, which developed specific actions the state could take to reduce GHG emissions.

WSDOT's Secretary of Transportation, Paula Hammond, is a member of the Climate Action Team. WSDOT staff served on subgroups focused on strategies to reduce VMT and on how to include climate change in State Environmental Policy Act (SEPA) evaluations. The final report and other information is available at: http://www.ecy.wa.gov/climatechange/2008CAT_overview.htm.

In addition to working with others in our state, WSDOT is leading the development of effective, measurable, and balanced emission reduction strategies. Current WSDOT activities that reduce GHG emissions include:

- **Transportation Options –** For 30 years, WSDOT has supported carpooling, vanpooling, and public transportation through the funding, building, and maintenance of the freeway HOV system, ferries, rail, and other programs, thereby reducing VMT and peak period congestion.
- **Incident Response Team** (IRT) –. IRT clears 98.6 percent of all incidents in less than 90 minutes, reducing the amount of time motorists spend sitting and idling in traffic.

- **Biodiesel Use** –. WSDOT is increasing its use of biodiesel fuels in ferries and maintenance vehicles, thus improving both local air quality and the Earth's climate.

Finally, the most valuable contributions are found in the delivery of well-planned transportation improvements. These efforts combine to create more efficient driving conditions, offer mode choices, and help to move toward state GHG reduction goals.

What effect will the increased PNWRC passenger rail service improvements have on greenhouse gas emissions?

The passenger rail service improvements proposed for the corridor will increase the frequency and speed of the trains. Increased frequency and speed will give the public more travel options and increase ridership, thus removing cars from the roads. The new locomotives that will be purchased to support the increased trip frequency will be at least 10 to 12 percent more energy-efficient than the current locomotives. This improved efficiency means that less fuel will be used, thus reducing GHG emissions.

How is Washington State's climate change response strategy likely to address future risks to the rail corridor resulting from changing climate?

The Governor of Washington committed the state to preparing for and adapting to the impacts of climate change as part of Executive Order 07-02. A focus sheet entitled "Preparing for Impacts" provides a brief summary of the key climate changes that Washington State is likely to experience over the next 50 years:

- increased temperature (heat waves, poor air quality)
- changes in volume and timing of precipitation (reduced snow pack, increased erosion, flooding)
- ecological effects of a changing climate (spread of disease, altered plant and animal habitats, negative impacts on human health and well-being)
- sea-level rise, coastal erosion

In 2009, the WA State Legislature passed E2SSB 5560 – Agency Climate Leadership. That law directs the Washington Department of Ecology in consultation with WSDOT and other agencies to develop a response strategy to climate change impacts. WSDOT is the lead for developing the Infrastructure chapter of the state's strategy. WSDOT will work with BNSF and others to identify vulnerable infrastructure including rail, highways, seawalls, and more.

If vulnerable sections of this rail corridor are identified, actions will likely be recommended to protect rail and other vital transportation infrastructure as well as protecting communities and public safety. No recommendations are currently available. Possible strategies to address vulnerabilities include raising rail berms or bridges to span inundated areas. The state's climate response strategy is due by the end of 2011.

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Chapter Six Agency and Public Involvement

The Washington State Department of Transportation regularly interacts with federal agencies, freight railroad companies, state regulatory and resource agencies, local governments, tribes, and the public to allow for ongoing participation in the Pacific Northwest Rail Corridor (PNWRC) projects.

Since its designation as one of the five original high speed rail corridors by the Federal Railroad Administration (FRA) in 1992, WSDOT has worked to extensively involve local governments and the public in the development of the rail corridor. This has included both corridor-wide rail studies, as well as project-specific environmental documents.

High Speed Ground Transportation Study

The WSDOT High Speed Ground Transportation Study was published in October of 1992 and influenced the resurgence in rail transportation as a part of a balanced transportation system in Washington State. The study was guided by a steering committee that involved state, local, and federal agencies, railroads, ports, legislators, and the private sector. The steering committee conducted extensive communications and public outreach efforts to educate the public about the High Speed Ground Transportation Study, including newsletters, meetings, and statewide public forums in 1992.

In 1993, the Washington legislature appropriated funding to begin state-supported rail passenger service in the PNWRC. As part of this new service the WSDOT Rail Office conducted extensive public outreach in 1993-1995. These outreach efforts included:

- Presentations to 32 city and town councils on the corridor
- Presentations to the 9 county councils on the PNWRC
- Development of a video presentation on the purpose, need, and goals for the PNWRC
- A quarterly newsletter mailed to the public, elected officials, and interest groups to highlight the new rail passenger program.
- Presentations to Port Districts, Metropolitan Planning Organizations (MPOs) and Regional Transportation Planning Organizations (RTPOs).
- Presentation to the Ministry of Transport in the Province of British Columbia and the Greater Vancouver Regional District
- Presentations to various civic groups (Rotary Clubs, Washington Association of Rail Passengers, etc.)
- Cooperating agency scoping meetings were held with 42 cities, counties, ports, regional transportation councils, Washington Department of Ecology, Washington State Department of Fish and Wildlife, Fort Lewis, McChord Air Force Base,

State of Washington Military Department and National Guard, and the Tulalip Utilities Authority.

Pacific Northwest Rail Corridor Tier 1 (Programmatic) Environmental Impact Statement (EIS) Outreach History

In November 1995 Washington, Oregon, and the Province of British Columbia released the *"Options for Passenger Rail in the Pacific Northwest Rail Corridor"* report. This report was the beginning of a targeted public outreach effort to gather information for the Pacific Northwest Rail Corridor Tier 1 (Programmatic) Environmental Impact Statement (EIS).

On January 19, 1996, the Federal Highway Administration (FHWA) and FRA issued a Notice of Intent to prepare and Environmental Impact Statement for "a proposed high speed rail improvement program between Portland, Oregon and Vancouver, British Columbia."

The first phase of EIS preparation, consisting of agency and public scoping, began in December of 1995 and continued until the Alternative Review phase began in mid-1996. During agency and public scoping, WSDOT Rail Office staff discussed the proposed Pacific Northwest intercity passenger rail improvements face-to-face with over 1,000 interested parties employing Open Houses, Speaker's Bureau meetings, and Cooperating Agency scoping meetings. Additional education was conducted through advertising, public relations, direct mail and surveys, and television.

Open Houses and Speaker's Bureau Meetings

During January and February of 1996, the Rail Office conducted twenty public open houses and additional speaker's bureau meetings in communities along the Pacific Northwest Rail Corridor from Blaine, Washington to Vancouver, Washington. Participating groups included the WSDOT Rail Office, Northwest Region, Olympic Region, Southwest Region, and the Office of Communications and Public Involvement; EIS Interdisciplinary Team members; Amtrak; Burlington Northern Santa Fe Railroad; Operation Lifesaver; the Washington Association of Rail Passengers; the Washington Utilities and Transportation Commission; local transit agencies; the Regional Transit Authority; local communities; and WSDOT Rail EIS consultants.

At open houses, participating groups set up displays for public review and talked with participating community members in an informal, one-on-one setting.

At speaker's bureau events, speakers from the participating groups made formal presentations and then took questions and comments from attendees who often represented specific stakeholder groups. Examples include WSDOT regional staff, regional planning organizations, city councils, bus driver trainers, and members of the League of Women Voters.

Advertising and Public Relations

Print advertisements and media releases promoting the development of the PNWRC Programmatic EIS were distributed to communities on or near the rail corridor. The information included the Internet web site address, a toll-free telephone number for comments, the mailing address for written comments, and public meeting locations and times. Advertisements with similar information appeared in 47 newspapers along the corridor with a total circulation of over 900,000.

Pre- and post-meeting news coverage appeared in media in every county along the corridor, including coverage in community weekly newspapers, daily newspapers, radio stations and cable television.

Direct Mail and Survey

The *Rail Connection* newsletter, which included similar information as the media releases, was distributed to over 40,000 people along the corridor; targeted mailings reached over 5,000 local, state and federal policymakers. Information was distributed to every branch library along the corridor. In addition, over 250 participants responded to a rail survey designed to elicit comments from EIS public scoping participants.

Cooperating Agency EIS Scoping Meetings

Several agencies had a vested interest in the Pacific Northwest Rail Corridor project, including those with permitting or approval jurisdiction over the proposed action. Federal, state, and local agencies with jurisdiction or special expertise were invited to be Cooperating Agencies and invited to attend EIS scoping meetings within the corridor. Tribes in Washington State were also invited to participate in the meetings.

Agencies and Tribes were invited to comment on the EIS purpose and need and the criteria for alternative selection; and to identify any special concerns they had about the rail project.

In an effort to maximize interest and focus on the issues specific to a region, three regional meetings were conducted. The three regions were Southwest Washington, South/Central Puget Sound, and North Puget Sound. These meetings were held in May 1996 in Kelso, Tacoma and Mount Vernon.

Agencies and others participating in the three workshops by region are shown in Table 15.

Table 15. Agencies and other workshop participants

Southwest Washington	South / Central Puget Sound	North Puget Sound
City of Centralia	Burlington Northern Santa Fe Railroad	City of Bellingham
City of Kelso	City of Auburn	City of Blaine
City of Vancouver	City of Edmonds	City of Everett
City of Woodland	City of Kent	City of Marysville
Cowlitz County	City of Lacey	Department of Ecology

Southwest Washington	South / Central Puget Sound	North Puget Sound
Cowlitz-Wahkiakum Council of Governments	City of Lakewood	Port of Edmonds
Kalama Planning Commission	City of Roy	Port of Skagit County
Lewis County	City of Sumner	Skagit County
Port of Kalama	City of Tacoma	Tulalip Utilities Authority
Port of Longview	City of Tukwila	Whatcom County
Port of Ridgefield	City of University Place	
Private Citizen	Fort Lewis	
Southwest Regional Transportation Council	McChord Air Force Base	
Washington State Department of Fish and Wildlife	Pierce County	
Port of Chehalis	Tacoma Chamber of Commerce	
	Port of Tacoma	
	State of Washington Military Department and WA National Guard	

Cooperating Agencies were briefed on their responsibilities and were given the opportunity to discuss any concerns or issues relative to those responsibilities. There was general concurrence in the responsibilities, which included:

- Respond to the invitation to be a cooperating agency.
- Assist in identifying interest groups.
- Attend scoping and coordination meetings and joint field review.
- Provide meaningful and early input on issues of concern.
- Participate in joint involvement activities.
- Review and comment on pre-draft and pre-final environmental documents.
- Adopt the final document if it meets their agency's requirements for permits, approvals, or clearances.
- Cooperate in the application of principles for integration of NEPA/SEPA and the Section 404 permit process, as applicable.

Television

Another method used to reach the public about the WSDOT rail program and the development of the programmatic EIS was television. Washington Interactive Television, part of the state's Department of Information Service, was used to develop and broadcast two statewide programs on the plans for expanded intercity rail passenger service in the PNWRC. The first show, *The Future Is On Track: Intercity Rail In The Pacific Northwest,* aired on January 7, 1997. The second show, *The Future Is On Track* -

Amtrak Cascades, was first broadcast on October 27, 1999. Each show took questions and e-mails from viewers.

Programmatic Documentation to Project Documentation

One of the components to be included in the programmatic EIS was a corridor service plan. This plan showed how WSDOT and its partners would follow an incremental approach over a 20-year timeframe that would ultimately result in 13 daily round trips between Seattle and Portland and four daily round trips between Seattle and Vancouver, B.C. As WSDOT was working with the FHWA and the FRA in 1997 and 1998 on the 20-year incremental plan and the programmatic EIS, it was determined by the federal government that a programmatic EIS would not be necessary since the first set of proposed projects listed in the 20-year plan had logical termini and independent utility as stand-alone projects that would improve the existing service. Instead, a 20-year service plan that described incremental capital improvements to the Portland-Seattle-Vancouver, B.C. segment of the PNWRC and an Environmental Overview (with mapping) of the Washington segment of the PNWRC would be completed in lieu of the NEPA EIS.[20] Further, it was determined that future NEPA documentation would be project-specific. In August 2000, the Notice of Intent to prepare a programmatic EIS for the Portland-Seattle-Vancouver, B.C. segment of the PNWRC was rescinded.[21] Since that time, WSDOT has prepared project-level environmental documentation for a number of projects:

- Vancouver Rail Project – NEPA/SEPA EIS. The project, located in southwest Washington, would eliminate conflicts between freight trains and passenger trains in the heavily-congested Vancouver Rail Yard. The Final EIS was issued in May 2003, and the Record of Decision was issued in August 2003. In 2008, a NEPA Reevaluation was completed and signed by FHWA.
- Kelso-Martin's Bluff Rail Project – NEPA/SEPA Preliminary Draft EIS. In 2001, WSDOT began the development of a NEPA/SEPA EIS for the Kelso-Martin's Bluff Rail Project. This project would eliminate freight and passenger train conflicts near the Columbia River ports of Kalama and Longview. The environmental documentation only proceeded as far as a preliminary draft EIS due to state budget limitations and legislative direction.
- Point Defiance Bypass Rail Project – FHWA NEPA Documented Categorical Exclusion (DCE). The DCE was signed by FHWA in 2008. This project would build, reconstruct, or rehabilitate approximately 18 miles of track that bypasses the BNSF main line around scenic Point Defiance. The NEPA DCE was adopted under the State Environmental Policy Act (SEPA) as a Determination of Nonsignificance.
- Several crossovers and siding upgrades or extensions have been completed since 2000. These projects had state funding only; the environmental documentation

[20] Pacific Northwest Rail Corridor Intercity Passenger Rail Plan for Washington State, 1997-2020 and Pacific Northwest Rail Corridor Environmental Overview 1998.

[21] Federal Register, Volume 65, No. 164, Wednesday, August 23, 2000, p. 51401.

complied with SEPA and a SEPA Determination of Nonsignificance was issued for each project.

The 20-year incremental service plan was updated in February 2006 and is now called the "Washington State Long-Range Plan for Amtrak *Cascades"*.

Amtrak *Cascades* Mid-Range Plan

An advisory committee was formed to assist in the development of the 2008 mid-range plan. The advisory committee's role was to help WSDOT assess and evaluate beneficial impacts of rail infrastructure improvement on society, to help WSDOT understand concerns of local communities, and to share information and provide feedback during the mid-range plan development process. Advisory committee stakeholders involved in the development of the mid-range plan included:

- MPOs and RTPOs in the I-5 corridor
- Counties and cities within the study area
- Oregon State
- Province of British Columbia
- Private railroads
- Amtrak
- Washington Public Ports Association
- WSDOT planning units in different modes
- WSDOT regions
- All tribes in Washington State with an interest in the I-5 corridor
- Passenger rail advocacy groups

Two advisory committee meetings were held at WSDOT. The first was held on July 23, 2008 and the second was held on October 1, 2008. These meetings were led by State Rail and Marine Office staff who provided progress reports and opportunities for public comment and discussion. The draft Mid-Range Plan was made available for public review and comment from November 3-14, 2008. Some public comments were incorporated into the final draft and the remainder were included in Appendix 13 of the Mid-Range Plan. The comments received were supportive of the intercity passenger rail service and some dealt with technical issues.

The final Amtrak *Cascades* Mid-Range Plan was delivered to the Washington State legislature in December 2008.

Agency, public, and tribal outreach completed for the Pacific Northwest Rail Corridor since the decision was made to proceed with project-level documentation

Vancouver Rail Project NEPA/SEPA EIS

The Vancouver Rail Project would construct a rail bypass track and associated improvements as well as an overpass over W. 39th Street.

As part of the early development process for the EIS, the project team met with City of Vancouver Transportation and Planning staff to discuss the scope of the traffic analysis as well as potential alternatives for the West 39th Street overpass. At the suggestion of city representatives, a community team was established for this project. For an eight month period beginning in January 2000, a Vancouver Community Resource Team (CRT) worked with the project team to develop additional alternatives. The CRT consisted of representatives from the City of Vancouver Planning Department, Fire Department and Police Department; the Regional Transportation Council, the Vancouver School District, the Vancouver Housing Authority, neighborhood groups; the Port of Vancouver; and other regional and local agencies/groups. Working with the project team, the CRT helped establish a fatal flaw evaluation methodology to identify alternatives for study in the environmental document (EIS). Using the project's purpose and need as a foundation for fatal flaw review, the CRT and project team evaluated a number of preliminary alternatives. The CRT was instrumental in the development of a bypass alternative that became the preferred alternative for the project.

On March 6, 2002, following release of the Draft EIS, a public hearing was held. Twenty-eight community members and agency representatives attended this public hearing.

During the course of the public hearing, 12 individuals made a public statement. In addition to these verbal comments, numerous residents and interested citizens e-mailed or mailed in their comments on the EIS. In total, 63 written comments were received. Of these comments, eleven were from local, regional, state, and federal agencies.

Rail Office staff made presentations to the Vancouver City Council, which was televised for local access television, and at neighborhood association meetings.

A Final EIS was completed in May 2003. The EIS had wide distribution to federal, state, and local agencies; the CRT; and neighborhood associations. FHWA issued a Record of Decision on August 1, 2003, which was again widely distributed to federal, state, and local agencies; the CRT; and neighborhood associations.

In addition, notices were published in the newspaper when the Draft EIS, the Final EIS, and the Record of Decision were issued.

When the NEPA Reevaluation was completed in 2008, it was mailed to federal, state, and local agencies; and neighborhood associations.

Rail Office and regional WSDOT staff have continued to keep agencies and the public informed of project progress via project meetings and newsletter mailings at key milestone achievements.

Cultural Resources

A cultural resources survey was completed and mailed to the Chinook Tribe for review and comment. No comments were received. The survey was also sent to the Department of Archaeology and Historic Preservation for review. The Vancouver Rail Project, as originally proposed and analyzed, was going to have an adverse effect on an historic house that was eligible for the National Register of Historic Places; an MOU was prepared and signed by all parties. When the project was later re-designed, the house was no longer impacted and the MOU was not updated.

Tribal consultation

The Chinook Tribe was consulted for the Vancouver Rail Project in 2001. They had no comment on the project or on the cultural resources survey.

When the NEPA Reevaluation was prepared, the Cowlitz Tribe and the Chinook Tribe were consulted. Neither tribe had comments on the project or the updated cultural resources survey.

Kelso-Martin's Bluff Rail Project NEPA/SEPA EIS

The Kelso-Martin Bluff Rail Project, 18 miles long, would add a third main line to the existing two-track main line; add about 130,000 feet of additional siding and yard tracks; and improve highway-rail grade crossing safety.

Scoping

Scoping for the Kelso-Martin's Bluff Rail Project EIS began in early 2001, with the official scoping period occurring from March 13 to April 13. More than 125 scoping notices were sent to federal, state, and local agencies; elected officials; and community stakeholders. Additional public outreach consisted of a press release, a display advertisement, a newsletter meeting announcement, and radio announcements about upcoming public open houses.

Interviews were conducted with nine community and business organizations and local residents to get an early indication of issues and concerns related to the project and to elicit ideas and suggestions for effective public information and public involvement approaches in the project area.

Two open houses/scoping meetings were held for interested citizens.

Field trips/site visits were conducted with federal, state, and local agencies.

Meetings with government agencies and businesses

Meetings were held with the Cowlitz-Wahkiakum Council of Governments, City of Kelso, City of Longview, Diking Districts, Port of Longview, Port of Kalama, Cowlitz County, City of Kalama, Port business representatives, Rail Policy Advisory Committee, City of Kelso Planning Commission over a period of three weeks.

Agency scoping

Meeting attendees included U.S. Environmental Protection Agency, Washington State Department of Fish and Wildlife, City of Kelso, City of Kalama, Cowlitz County, Port of Kalama, Cowlitz-Wahkiakum Council of Governments, Port of Kalama, and BNSF. Comments expressed during the meeting included the topic areas of safety and grade crossings; the natural environment and fish and waterways; the community and the economy; rail operations; and the cumulative effects analysis.

Official agency scoping letters were received from the U.S. Environmental Protection Agency Region 10; U.S. Fish and Wildlife Service Portland Office, Washington Department of Ecology, Washington State Department of Fish and Wildlife, Washington State Department of Natural Resources, Port of Kalama, City of Kelso Community Development Department, and the City of Kelso Public Works Department. Agency comments addressed concerns about impacts on fish, listed species, wetlands, riparian habitats, stream channels, access issues, grade crossings, and cumulative effects.

Public open houses

Two public open houses were held in Kalama and Kelso. Comments made by attendees during the open houses included the topic areas of culverts; pedestrian and wheelchair access; noise; vehicle and road access; sewer and water lines; and wetlands mitigation.

Other comments made by the attendees showed that they were very supportive of the project. Attendees stated that rail was a great alternative to highway congestion, and that the project was a win-win for everyone.

Additional public outreach

As alternative options were developed for certain Kelso grade crossing closures, a community meeting was held. Between 50 and 60 people attended, and provided a public alternative that was subsequently moved forward in the EIS. In addition to a notice in the newspaper about the meeting, flyers inviting residents to the meeting were left at neighborhood houses, and flyers were posted in nearby businesses.

Another meeting was held at the Port of Kalama about pedestrian overpass alternatives. Unfortunately, the evening selected was the night that President Bush was making a statement about the 9/11 World Trade Center terrorism. No one attended the meeting. The notice for the meeting had been placed in the local newspaper prior to September 11.

Tribal outreach

The Cowlitz Tribe was consulted regarding the proposed project.

Point Defiance Bypass Rail Project

The Point Defiance Bypass Rail Project would construct 3.5 miles of new track, reconstruct 10.5 miles of existing track, and improve five at-grade crossings.

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.

Additional public involvement efforts continued to keep agencies, tribes, and the general public informed of project progress. The initial phase of these activities included a public open house and local agency and tribal scoping meetings.

After learning about the Point Defiance Bypass Project, most agencies and citizens did not indicate any significant environmental issues or concerns. Issues and concerns that emerged through the agency and public scoping process included grade-crossing safety, air quality impacts, noise, increased congestion and traffic back-ups, and potential loss of property value. These issues were addressed and analyzed as part of the environmental review process.

Public and agency involvement activities for the scoping process included stakeholder interviews, agency meetings, agency scoping meetings, and a public open house.

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 be affected by the project. These agencies were the cities of DuPont, Lakewood, and Tacoma; Lakewood City Council; Environment and Public Works Subcommittee of the Tacoma City Council; Pierce County; and Fort Lewis.

Public Scoping Meeting

On November 14, 2006, the project team hosted a public open house in Lakewood. 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. The open house was advertised in local newspapers; agencies were sent invitation letters.

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. 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.

Informational materials supporting scoping efforts

- Letters to local jurisdictions 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 inviting their participation in the formal scoping process.
- A project folio that presented basic information about the project.
- A project website that provided information about the project.
- A paid ad in the *Tacoma News Tribune* advertising the open house.

Additional agency coordination

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

A project folio was mailed to over 200 adjoining property owners and interested parties.

Tribal consultation

On September 1, 2006, WSDOT sent letters to the Nisqually Tribe, the Puyallup Tribe, the Snoqualmie Nation, and the Squaxin Island Tribe, initiating formal government-to-government consultation, pursuant to *Section 106* of the *National Historic Preservation Act*[22]. The Nisqually Tribe and the Puyallup Tribe accepted the invitation for a meeting to discuss the project.

Environmental Summary

An *Environmental Summary* was prepared that was intended to provide the community and local agencies with general information about the effects of the project and the measures that had been incorporated into the project design to avoid, minimize or reduce

[22] *36 CFR 800.2(c)(4)*

those effects. The information in the summary was taken from detailed environmental analyses performed by WSDOT as part of required federal and state environmental regulations.

The *Environmental Summary* was sent to the affected cities, the county, the military bases, and the affected Tribes, and was posted on the project web site.

Cultural Resources

A cultural resources survey was completed and mailed to the tribes for review and comment. No comments were received. The survey was also sent to the Department of Archaeology and Historic Preservation for review. The SHPO concurrence with a No Adverse Effect determination was signed on March 28, 2008.

Additional public review

The FHWA-signed NEPA DCE was adopted under SEPA as a Determination of Nonsignificance, published in the newspaper, and mailed to federal, state, and local agencies for additional public review and comment. A copy of the *Environmental Summary* for the project was included in the mailing.

Crossovers and siding extensions or upgrades – SEPA DNSs

For SEPA, the threshold determination is made by the lead agency; WSDOT is the lead agency for state transportation projects. If a project is not exempt from SEPA and the project does not warrant a Determination of Significance (DS) which would lead to an EIS, then a Determination of Nonsignificance (DNS) is made. An Environmental Checklist is prepared and accompanies the DNS for agency and public distribution.

WSDOT has prepared DNSs and Environmental Checklists for three crossover projects and two siding extensions and upgrades. The project documentation for each project was sent to the Washington Department of Ecology (Ecology) SEPA Unit for posting in the SEPA Register. The permit unit at Ecology reviews all transportation projects; the appropriate Ecology region also reviews the project. In addition, WSDOT sent the project documentation to the affected city, county, agencies, and Native American Tribes.

If the project was not exempt, a cultural resource survey was prepared and mailed to the tribes for review and comment. The survey was also sent to the Department of Archaeology and Historic Preservation for review and concurrence.

Public notices

Public notices for each project are placed in local newspapers.

Project web pages

For each rail project, a project web site is developed; the web site address is included in all public outreach materials. Environmental documents are placed on the project web page so that the public has easy access to the project information.

Outreach to Native American Tribes

In Washington State, Native American Tribes have determined their areas of interest for WSDOT projects. When a project is proposed, the affected Tribes are consulted on a government-to-government basis. This government-to-government consultation occurs either as a Section 106 consultation or as an Executive Order 05-05[23] consultation.

For NEPA/SEPA EISs: Section 106 consultation with the Tribes is begun at the project proposal stage. Scoping documents are sent; meetings are offered if the Tribes want them. Comments on any cultural resource issues regarding the proposed projects are also solicited from the Tribes. The completed cultural resource survey is sent to the Tribes for their review and comment. The environmental document is also sent to them for review and comment.

The Washington Department of Archaeology and Historic Preservation will not issue a finding on cultural resources until tribal consultation is complete.

SEPA DNSs: Governor's Executive Order 05-05 consultation is begun at the project proposal stage. WSDOT follows the same consultation and review process with the Tribes for state-funded crossovers and siding extensions as is done for Section 106 projects.

Other

Washington State Legislature

The Washington State Legislature Senate and House hold public hearings every legislative session to discuss the rail program and projects. These hearings vary in size and subject matter each session, but illustrate the legislature's open involvement and support for the rail program. The hearings are broadcast live and also recorded to be shown across the state on the TVW[24] channel in evening peak viewing hours.

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[23] *The Governor's Executive Order 05-05 order all state agencies to: "Review capital construction projects and land acquisitions for the purpose of a capital construction project, not undergoing Section 106 review under the National Historic Preservation Act of 1966 (Section 106) with the Department of Archaeology and Historic Preservation (DAHP) and affected Tribes to determine potential impacts to cultural resources. This review shall be required on all capital construction projects unless they are categorically exempted by DAHP."*

[24] *TVW is Washington State's Public Affairs Network which broadcasts and webcasts Washington state legislative deliberations, public policy events and other content of interest to Washington citizens.*

State Freight Rail Plan

During the development of the Freight Rail Plan, several public meetings have been held during which the interaction between freight and passenger rail on the Pacific Northwest Rail Corridor is discussed.

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APPENDIX A
Mapping

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APPENDIX B
Census Data

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Census Tract	County	Total Population	White	%	Black or African American	%	American Indian and Alaska Native	%	Asian	%	Hispanic or Latino	%	Below Poverty Level	%
403	Clark	4923	4674	94.9	36	0.7	38	0.8	26	0.5	76	1.5	286	5.9
409.05	Clark	2736	2562	93.6	25	0.9	0	0.0	120	4.4	0	0.0	207	7.6
409.07	Clark	3554	3261	91.8	36	1.0	0	0.0	128	3.6	9	0.3	161	4.5
409.08	Clark	5506	5082	92.3	0	0.0	157	2.9	89	1.6	194	3.5	144	2.6
410.03	Clark	4027	3593	89.2	73	1.8	76	1.9	28	0.7	196	4.9	328	8.3
410.05	Clark	2055	1720	83.7	12	0.6	5	0.2	22	1.1	169	8.2	707	34.7
410.07	Clark	3057	2720	89.0	77	2.5	17	0.6	35	1.1	155	5.1	296	9.7
410.08	Clark	3697	3364	91.0	73	2.0	29	0.8	67	1.8	64	1.7	113	3.1
420	Clark	1524	1445	94.8	13	0.9	18	1.2	7	0.5	37	2.4	143	9.5
421	Clark	2612	2243	85.9	76	2.9	14	0.5	49	1.9	141	5.4	237	9.1
423	Clark	2782	2409	86.6	52	1.9	17	0.6	31	1.1	196	7.0	542	19.5
424	Clark	1442	1300	90.2	35	2.4	0	0.0	35	2.4	86	6.0	365	47.6
2	Cowlitz	3689	3282	89.0	80	2.2	148	4.0	30	0.8	221	6.0	686	23.7
3	Cowlitz	844	624	73.9	0	0.0	16	1.9	28	3.3	185	21.9	237	28.1
8	Cowlitz	6483	6115	94.3	0	0.0	79	1.2	94	1.4	55	0.8	170	2.6
9	Cowlitz	5863	5472	93.3	31	0.5	82	1.4	0	0.0	146	2.5	628	10.9
10	Cowlitz	1346	1221	90.7	0	0.0	33	2.5	0	0.0	65	4.8	342	25.7
11	Cowlitz	5765	5115	88.7	12	0.2	65	1.1	100	1.7	426	7.4	1482	25.8
12	Cowlitz	4017	3795	94.5	18	0.4	23	0.6	7	0.2	124	3.1	347	8.7
13	Cowlitz	3570	3203	89.7	18	0.5	64	1.8	34	1.0	267	7.5	539	15.3
15	Cowlitz	8056	7441	92.4	7	0.1	157	1.9	18	0.2	440	5.5	848	10.7
16	Cowlitz	4766	4569	95.9	24	0.5	50	1.0	37	0.8	99	2.1	772	16.5
17	Cowlitz	4664	4397	94.3	15	0.3	65	1.4	11	0.2	77	1.7	330	7.1
20.01	Cowlitz	3336	3191	95.7	0	0.0	36	1.1	21	0.6	58	1.7	192	5.8
20.02	Cowlitz	5502	5207	94.6	23	0.4	112	2.0	22	0.4	183	3.3	511	9.4
9702	Lewis	2657	2498	94.0	28	1.1	15	0.6	37	1.4	45	1.7	154	6.1
9704	Lewis	5046	4460	88.4	0	0.0	60	1.2	24	0.5	590	11.7	710	14.1
9705	Lewis	2000	1953	97.7	0	0.0	9	0.5	0	0.0	103	5.2	280	14.2
9706	Lewis	1953	1731	88.6	0	0.0	28	1.4	7	0.4	232	11.9	427	22.7
9707	Lewis	4277	3697	86.4	29	0.7	46	1.1	46	1.1	531	12.4	815	19.4

Census Tract	County	Total Population	White	%	Black or African American	%	American Indian and Alaska Native	%	Asian	%	Hispanic or Latino	%	Below Poverty Level	%
9708	Lewis	3845	3530	91.8	27	0.7	61	1.6	6	0.2	364	9.5	689	18.9
9709	Lewis	1698	1447	85.2	0	0.0	32	1.9	0	0.0	239	14.1	452	26.8
9710	Lewis	2890	2571	89.0	90	3.1	36	1.2	22	0.8	100	3.5	419	16.0
9713	Lewis	5006	4644	92.8	2	0.0	55	1.1	31	0.6	306	6.1	556	11.1
9714	Lewis	2128	2089	98.2	0	0.0	13	0.6	26	1.2	19	0.9	155	7.3
9715	Lewis	6278	5920	94.3	9	0.1	62	1.0	32	0.5	215	3.4	798	12.7
9716	Lewis	3540	3337	94.3	9	0.3	57	1.6	6	0.2	139	3.9	557	15.9
116.10	Thurston	6697	5459	81.5	291	4.3	48	0.7	527	7.9	365	5.5	310	4.7
116.20	Thurston	14541	11691	80.4	629	4.3	104	0.7	1026	7.1	810	5.6	876	6.1
117	Thurston	8146	7324	89.9	45	0.6	85	1.0	272	3.3	173	2.1	234	2.9
118.20	Thurston	6733	6285	93.3	48	0.7	125	1.9	73	1.1	170	2.5	374	5.6
123.10	Thurston	6392	4543	71.1	492	7.7	74	1.2	624	9.8	415	6.5	377	5.9
123.20	Thurston	2698	1809	67.0	81	3.0	445	16.5	158	5.9	113	4.2	421	15.6
124.20	Thurston	3439	3175	92.3	40	1.2	50	1.5	21	0.6	111	3.2	214	6.2
126	Thurston	8426	7787	92.4	18	0.2	64	0.8	215	2.6	267	3.2	779	9.3
127	Thurston	11100	9801	88.3	74	0.7	107	1.0	93	0.8	833	7.5	1036	9.6
602	Pierce	883	797	90.3	47	5.3	5	0.6	6	0.7	29	3.3	211	23.9
603	Pierce	4027	3553	88.2	195	4.8	13	0.3	89	2.2	90	2.2	305	7.9
604	Pierce	4009	3584	89.4	84	2.1	28	0.7	73	1.8	132	3.3	205	5.1
605	Pierce	4028	3758	93.3	42	1.0	10	0.2	79	2.0	67	1.7	223	5.6
606	Pierce	5360	4740	88.4	301	5.6	89	1.7	43	0.8	198	3.7	467	8.7
609.03	Pierce	2995	2352	78.5	282	9.4	41	1.4	184	6.1	20	0.7	141	4.7
609.05	Pierce	6557	5451	83.1	458	7.0	0	0.0	273	4.2	257	3.9	1036	15.9
610.01	Pierce	3768	3318	88.1	98	2.6	0	0.0	140	3.7	180	4.8	286	7.6
615	Pierce	4482	3561	79.5	281	6.3	141	3.1	176	3.9	196	4.4	994	22.3
616.01	Pierce	1408	866	61.5	227	16.1	37	2.6	153	10.9	89	6.3	662	47.0
616.02	Pierce	637	448	70.3	109	17.1	37	5.8	0	0.0	15	2.4	207	32.5
617	Pierce	4129	1532	37.1	1435	34.8	80	1.9	545	13.2	369	8.9	1178	28.9
618	Pierce	2880	1920	66.7	360	12.5	108	3.8	117	4.1	140	4.9	546	19.7
621	Pierce	3267	1477	45.2	366	11.2	655	20.0	254	7.8	491	15.0	806	24.8

Census Tract	County	Total Population	White	%	Black or African American	%	American Indian and Alaska Native	%	Asian	%	Hispanic or Latino	%	Below Poverty Level	%
626	Pierce	2478	1569	63.3	264	10.7	28	1.1	145	5.9	244	9.8	463	19.2
628.01	Pierce	6158	3420	55.5	1360	22.1	124	2.0	390	6.3	514	8.3	1603	26.7
628.02	Pierce	3718	2280	61.3	516	13.9	0	0.0	320	8.6	298	8.0	408	11.0
629	Pierce	6685	4535	67.8	764	11.4	130	1.9	352	5.3	775	11.6	1143	17.4
703.03	Pierce	7235	6817	94.2	21	0.3	10	0.1	141	1.9	173	2.4	402	5.6
703.06	Pierce	4889	4577	93.6	27	0.6	17	0.3	41	0.8	137	2.8	209	4.3
705	Pierce	4106	3641	88.7	45	1.1	103	2.5	47	1.1	186	4.5	253	6.2
706	Pierce	420	371	88.3	0	0.0	0	0.0	24	5.7	16	3.8	29	6.9
709	Pierce	6369	4705	73.9	286	4.5	262	4.1	309	4.9	707	11.1	802	12.6
710	Pierce	6784	6030	88.9	208	3.1	134	2.0	112	1.7	144	2.1	464	6.9
712.05	Pierce	4116	3577	86.9	188	4.6	6	0.1	145	3.5	133	3.2	263	6.4
712.10	Pierce	4658	4069	87.4	68	1.5	27	0.6	231	5.0	171	3.7	96	2.1
718.03	Pierce	4782	2741	57.3	824	17.2	26	0.5	511	10.7	461	9.6	551	11.6
718.04	Pierce	7539	3939	52.2	1211	16.1	201	2.7	819	10.9	807	10.7	1538	20.5
718.05	Pierce	3525	1555	44.1	506	14.4	209	5.9	694	19.7	445	12.6	898	26.2
718.06	Pierce	4272	2037	47.7	740	17.3	47	1.1	328	7.7	880	20.6	1391	32.6
719.01	Pierce	4537	3155	69.5	468	10.3	27	0.6	529	11.7	286	6.3	444	9.8
719.02	Pierce	5164	4427	85.7	185	3.6	46	0.9	237	4.6	193	3.7	179	3.5
720	Pierce	4865	3046	62.6	818	16.8	62	1.3	235	4.8	559	11.5	1793	37.0
721.09	Pierce	3505	2867	81.8	216	6.2	45	1.3	232	6.6	188	5.4	276	7.9
723.07	Pierce	4450	3224	72.4	575	12.9	66	1.5	327	7.3	165	3.7	432	9.7
723.08	Pierce	7223	5509	76.3	525	7.3	11	0.2	674	9.3	257	3.6	374	5.3
723.09	Pierce	5699	4626	81.2	287	5.0	20	0.4	392	6.9	240	4.2	464	8.2
726.03	Pierce	4052	3815	94.2	4	0.1	36	0.9	5	0.1	97	2.4	368	9.1
728	Pierce	2162	1697	78.5	123	5.7	0	0.0	193	8.9	125	5.8	98	4.5
729.01	Pierce	4168	3211	77.0	279	6.7	68	1.6	183	4.4	337	8.1	259	7.3
729.03	Pierce	2958	1801	60.9	628	21.2	31	1.0	131	4.4	331	11.2	47	2.4
729.04	Pierce	16747	10069	60.1	3344	20.0	213	1.3	542	3.2	2310	13.8	1044	9.1
733.01	Pierce	4624	4092	88.5	81	1.8	76	1.6	15	0.3	404	8.7	436	9.5
733.02	Pierce	3575	3384	94.7	8	0.2	52	1.5	69	1.9	28	0.8	261	7.3

Census Tract	County	Total Population	White	%	Black or African American	%	American Indian and Alaska Native	%	Asian	%	Hispanic or Latino	%	Below Poverty Level	%
734.01	Pierce	7515	6448	85.8	156	2.1	88	1.2	253	3.4	451	6.0	792	10.6
734.03	Pierce	7547	6762	89.6	16	0.2	22	0.3	143	1.9	464	6.1	531	7.1
734.04	Pierce	6231	5657	90.8	61	1.0	74	1.2	72	1.2	271	4.3	305	5.1
5	King	3296	2936	89.1	21	0.6	18	0.5	176	5.3	84	2.5	143	4.3
14	King	4673	3817	81.7	173	3.7	18	0.4	359	7.7	244	5.2	333	7.2
15	King	2329	2213	95.0	0	0.0	0	0.0	58	2.5	91	3.9	104	4.5
16	King	3967	3534	89.1	57	1.4	8	0.2	242	6.1	60	1.5	223	5.6
31	King	6038	5607	92.9	43	0.7	77	1.3	161	2.7	191	3.2	270	4.5
32	King	7213	6476	89.8	81	1.1	45	0.6	297	4.1	257	3.6	487	6.8
57	King	5990	5126	85.6	134	2.2	62	1.0	378	6.3	197	3.3	377	6.4
58.01	King	4543	3844	84.6	101	2.2	7	0.2	389	8.6	174	3.8	324	7.1
58.02	King	4817	4140	85.9	116	2.4	33	0.7	278	5.8	257	5.3	320	7.3
69	King	3845	3421	89.0	45	1.2	23	0.6	150	3.9	75	2.0	196	5.1
70	King	6855	6037	88.1	143	2.1	10	0.1	373	5.4	217	3.2	549	8.1
71	King	1796	1499	83.5	85	4.7	28	1.6	65	3.6	90	5.0	184	10.2
72	King	2969	2340	78.8	82	2.8	66	2.2	294	9.9	142	4.8	468	17.8
80.01	King	3477	2574	74.0	305	8.8	86	2.5	286	8.2	181	5.2	717	20.6
80.02	King	2711	1910	70.5	330	12.2	61	2.3	236	8.7	97	3.6	604	22.6
81	King	3461	2507	72.4	412	11.9	71	2.1	238	6.9	274	7.9	1140	34.9
82	King	2954	2291	77.6	169	5.7	34	1.2	250	8.5	185	6.3	563	19.6
85	King	6025	3161	52.5	1755	29.1	156	2.6	593	9.8	459	7.6	917	34.1
91	King	1952	269	13.8	414	21.2	13	0.7	1139	58.4	38	1.9	966	49.6
92	King	1967	953	48.4	181	9.2	75	3.8	558	28.4	212	10.8	952	48.4
93	King	2562	1306	51.0	333	13.0	64	2.5	579	22.6	255	10.0	697	28.0
96	King	4919	4506	91.6	55	1.1	29	0.6	174	3.5	171	3.5	155	3.2
104	King	9002	1686	18.7	1275	14.2	16	0.2	5163	57.4	377	4.2	876	9.8
109	King	1091	676	62.0	87	8.0	80	7.3	123	11.3	122	11.2	211	19.3
110	King	6260	667	10.7	1408	22.5	181	2.9	3212	51.3	363	5.8	1161	18.7
117	King	5192	786	15.1	1323	25.5	4	0.1	2588	49.8	327	6.3	743	14.4
119	King	7161	2088	29.2	2176	30.4	26	0.4	2172	30.3	226	3.2	386	5.5

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201	King	3235	2937	90.8	5	0.2	12	0.4	144	4.5	32	1.0	157	4.9
208	King	4501	4007	89.0	54	1.2	9	0.2	139	3.1	87	1.9	187	4.2
209	King	3167	2496	78.8	83	2.6	42	1.3	423	13.4	44	1.4	171	5.5
260.02	King	5812	2835	48.8	1332	22.9	68	1.2	1083	18.6	345	5.9	767	13.5
261	King	6036	2226	36.9	1931	32.0	21	0.3	1324	21.9	287	4.8	639	10.6
262	King	4938	3053	61.8	689	14.0	37	0.7	511	10.3	553	11.2	505	10.3
263	King	1244	703	56.5	145	11.7	4	0.3	270	21.7	58	4.7	74	5.9
272	King	2206	1336	60.6	276	12.5	9	0.4	253	11.5	201	9.1	344	15.6
292.01	King	8751	6251	71.4	730	8.3	36	0.4	546	6.2	1226	14.0	1564	18.0
292.03	King	2628	1667	63.4	311	11.8	0	0.0	251	9.6	307	11.7	348	13.3
292.04	King	5195	3707	71.4	343	6.6	35	0.7	486	9.4	392	7.5	339	6.5
297	King	6173	4940	80.0	426	6.9	163	2.6	262	4.2	350	5.7	496	8.3
305.01	King	1913	1748	91.4	27	1.4	41	2.1	22	1.2	124	6.5	597	32.3
305.03	King	3904	3187	81.6	90	2.3	0	0.0	220	5.6	323	8.3	430	11.4
307	King	3845	3109	80.9	83	2.2	103	2.7	117	3.0	251	6.5	566	14.8
308.01	King	5958	4833	81.1	272	4.6	149	2.5	119	2.0	651	10.9	984	16.8
309.02	King	4651	3933	84.6	58	1.2	123	2.6	194	4.2	314	6.8	553	12.0
310	King	3084	2575	83.5	98	3.2	0	0.0	219	7.1	111	3.6	42	1.4
401	Snohomish	6241	5054	81.0	422	6.8	134	2.1	192	3.1	387	6.2	184	4.6
402	Snohomish	5607	4189	74.7	120	2.1	113	2.0	466	8.3	521	9.3	2065	37.3
404	Snohomish	3974	3439	86.5	69	1.7	169	4.3	58	1.5	239	6.0	537	13.7
405	Snohomish	2579	2178	84.5	8	0.3	57	2.2	82	3.2	237	9.2	273	10.7
406	Snohomish	970	799	82.4	47	4.8	43	4.4	16	1.6	63	6.5	217	22.7
407	Snohomish	3152	2703	85.8	100	3.2	27	0.9	80	2.5	151	4.8	553	21.1
408	Snohomish	2067	1795	86.8	33	1.6	107	5.2	48	2.3	94	4.5	303	14.9
409	Snohomish	2881	2680	93.0	12	0.4	20	0.7	126	4.4	16	0.6	89	3.1
413.01	Snohomish	4845	4257	87.9	24	0.5	5	0.1	181	3.7	175	3.6	173	3.6
413.02	Snohomish	6001	4891	81.5	159	2.6	98	1.6	582	9.7	215	3.6	271	4.5
420.01	Snohomish	5862	5003	85.3	144	2.5	0	0.0	441	7.5	115	2.0	208	3.5
420.03	Snohomish	3350	2796	83.5	36	1.1	21	0.6	291	8.7	77	2.3	112	3.4

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420.05	Snohomish	4838	3657	75.6	56	1.2	10	0.2	1002	20.7	58	1.2	60	1.2
501.01	Snohomish	2670	2173	81.4	69	2.6	25	0.9	318	11.9	100	3.7	67	2.5
502	Snohomish	4239	3924	92.6	22	0.5	0	0.0	228	5.4	84	2.0	197	4.7
503	Snohomish	5487	4976	90.7	9	0.2	31	0.6	265	4.8	75	1.4	100	1.8
505	Snohomish	6246	5850	93.7	18	0.3	107	1.7	153	2.4	52	0.8	221	3.6
506	Snohomish	912	848	93.0	0	0.0	2	0.2	43	4.7	11	1.2	22	2.4
521.04	Snohomish	1390	1248	89.8	9	0.6	13	0.9	45	3.2	42	3.0	135	9.7
528.03	Snohomish	5169	4425	85.6	82	1.6	14	0.3	234	4.5	337	6.5	352	6.9
528.04	Snohomish	6419	5820	90.7	42	0.7	111	1.7	158	2.5	254	4.0	415	6.5
528.05	Snohomish	4019	3712	92.4	8	0.2	45	1.1	147	3.7	57	1.4	153	3.8
529.01	Snohomish	7718	6897	89.4	118	1.5	75	1.0	179	2.3	402	5.2	528	7.0
529.03	Snohomish	4130	3672	88.9	0	0.0	78	1.9	93	2.3	359	8.7	365	8.9
530.02	Snohomish	5455	3971	72.8	54	1.0	1022	18.7	73	1.3	279	5.1	523	9.6
531.01	Snohomish	2770	2615	94.4	0	0.0	0	0.0	19	0.7	43	1.6	47	1.7
531.02	Snohomish	4461	4184	93.8	0	0.0	23	0.5	49	1.1	164	3.7	199	4.5
532.01	Snohomish	3597	3497	97.2	0	0.0	20	0.6	8	0.2	69	1.9	234	6.5
533.01	Snohomish	4542	4013	88.4	29	0.6	63	1.4	68	1.5	244	5.4	494	10.9
533.02	Snohomish	4753	4450	93.6	33	0.7	169	3.6	69	1.5	19	0.4	302	6.5
9508	Skagit	5472	5083	92.9	0	0.0	45	0.8	67	1.2	320	5.8	356	6.5
9516	Skagit	3551	3165	89.1	0	0.0	0	0.0	117	3.3	270	7.6	244	6.9
9517	Skagit	3374	2713	80.4	17	0.5	33	1.0	34	1.0	781	23.1	391	12.3
9518	Skagit	3411	2453	71.9	51	1.5	11	0.3	37	1.1	955	28.0	494	14.7
9522	Skagit	3450	2741	79.4	21	0.6	36	1.0	145	4.2	551	16.0	523	15.2
9523	Skagit	10951	7473	68.2	31	0.3	109	1.0	416	3.8	3857	35.2	1857	17.3
9524	Skagit	8819	7314	82.9	11	0.1	166	1.9	19	0.2	1518	17.2	950	11.3
9525	Skagit	3050	2411	79.0	31	1.0	76	2.5	66	2.2	570	18.7	682	23.8
9526	Skagit	3268	3001	91.8	7	0.2	39	1.2	31	0.9	295	9.0	234	7.2
9527	Skagit	3338	2991	89.6	9	0.3	59	1.8	0	0.0	191	5.7	200	6.0
2	Whatcom	6876	5955	86.6	20	0.3	174	2.5	293	4.3	474	6.9	895	13.1
3	Whatcom	5916	4933	83.4	72	1.2	167	2.8	359	6.1	393	6.6	1041	18.2

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4	Whatcom	6339	5927	93.5	12	0.2	57	0.9	55	0.9	187	2.9	567	9.2
5	Whatcom	7609	6793	89.3	96	1.3	170	2.2	174	2.3	449	5.9	2116	28.2
6	Whatcom	782	648	82.9	18	2.3	62	7.9	0	0.0	41	5.2	131	27.3
10	Whatcom	6890	5870	85.2	102	1.5	43	0.6	475	6.9	190	2.8	1892	52.0
11	Whatcom	6319	5959	94.3	21	0.3	46	0.7	97	1.5	125	2.0	754	11.9
12	Whatcom	8771	7795	88.9	15	0.2	104	1.2	307	3.5	341	3.9	2638	30.8
104.01	Whatcom	6609	5889	89.1	141	2.1	88	1.3	90	1.4	319	4.8	678	10.4
104.02	Whatcom	7582	6972	92.0	129	1.7	69	0.9	46	0.6	265	3.5	650	8.7
105.01	Whatcom	5599	5023	89.7	18	0.3	114	2.0	215	3.8	229	4.1	651	11.6
105.02	Whatcom	6203	5199	83.8	6	0.1	271	4.4	18	0.3	640	10.3	768	12.4
106	Whatcom	5695	5173	90.8	0	0.0	62	1.1	154	2.7	378	6.6	437	7.7