
H. B. Van Duzer Forest Corridor – Steel Bridge Road

**ORE 18/ORE 22
Polk County**

**Environmental Assessment and
Draft Section 4(f) Evaluation**

**Oregon Department of Transportation
Federal Highway Administration**

September 2002

Going Metric

In accordance with recent Executive Orders and Secretary of Commerce direction, Federal Highway Administration and supporting agency project plans were to be converted to metric units by 2000. However, the Oregon Department of Transportation is now in the process of converting back to English units. This document, where appropriate, will reflect both English and metric units side by side to assist the reader. The following is a brief summary of the conversion factors and units used in this document.

<u>From English Units</u>	<u>To Metric Units</u>	<u>Multiply By</u>
mile (mi)	Kilometer (km)	1.609
foot (ft)	meter (m)	0.3048
cubic yard (cy)	cubic meter (m ³)	0.7646
acre (ac)	hectare (ha)	0.4047
miles per hour (mph)	Kilometers per hour (km/h)	1.609

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Executive Summary

This environmental assessment contains descriptions and analyses of the broad, general locations and impacts of the projects proposed to improve approximately 9 miles of ORE 18 and ORE 22 between the H. B. Van Duzer Forest Corridor (MP 18.79) and Steel Bridge Road (MP 28.21). These projects comprise the Build Alternative. It also describes the impacts of the No Build Alternative. In addition, it describes the various alternatives considered but not advanced studied by a Steering Committee, a Technical Advisory Committee, and interested citizens. The recommendations of these groups became the Build Alternative. The decision to be made is whether the location of the proposed improvements to ORE 18 is supported or if a no-build alternative is preferred.

Three rural communities are located in the project area – Grand Ronde, Valley Junction, and Fort Hill. The purpose of the project is to decrease congestion and improve safety. This segment of ORE 18/22 serves local, commuter, commercial and recreational traffic between the metropolitan areas of Portland and Salem and the central Oregon coast. In addition, the Spirit Mountain Casino and Resort, a major tourist destination, is located on ORE 18 near Grand Ronde.

The Build Alternative includes the following proposed projects: widen the highway to four lanes, including three bridges over the South Yamhill River; install non-traversable medians; construct interchanges at Grand Ronde and the Casino/Valley Junction area; realign the Fort Hill intersection; consolidate and close private approach roads; and construct local service roads. These projects would be built in phases.

The No Build Alternative would leave the highway segment as is without coordinated plans for improvement. Required maintenance projects would occur and other improvements to this segment of ORE 18 would continue as individual projects. At this time two projects identified in the *Statewide Transportation Improvement Program* are scheduled for 2003 or 2004. These are the realignment of the Fort Hill intersection and the addition of an eastbound passing lane between Fort Hill and Wallace Bridge. A local service road between Fort Hill and Wallace Bridge is currently proposed.

Impacts to the socioeconomic environment that would occur if the Build Alternative were implemented include the displacement of approximately 7 to 8 residences, 3 to 4 businesses, 4 to 5 community facilities, and portions of 8 utilities. Approximately 40 hectares (99 acres) would be acquired for right-of-way. Of these 40 hectares, approximately 5 are zoned residential, 8-9 are commercial, 14-15 are farm/forest and farm/forest overlay, 9 are exclusive farm use, and 2 are heavy industrial. Indirect effects could result from changes in access to ORE 18 and cumulative effects could result from pressures to increase development in the area.

Natural resources that would be impacted if the Build Alternative were implemented include wetlands, water quality, wildlife habitat, threatened and endangered fish and plant species.

Efforts to avoid many of the wetlands in the area reduced the impacts. Nevertheless, of approximately 42 hectares (104 acres) of wetlands within the project area, approximately 3 to 4 hectares (9 to 10 acres) would be impacted if the Build Alternative were implemented. Both the Division of State Lands and the U. S. Army Corps of Engineers regulate most, if not all of these wetlands and would require compensatory mitigation for the unavoidable wetland impacts.

Impacts to water quality of the South Yamhill River, due to the highway improvements, would be negligible. Construction impacts would be limited in duration and magnitude and would be minimized by Best Management Practices and other mitigation measures. Operational impacts could, on occasion, contribute to the total minimum daily load for phosphorus. The South Yamhill River is listed on the Department of Environmental Quality 303(d) list for bacteria in the fall, for temperature in the summer, and has a minimum daily load set for phosphorus. The Build Alternative would include treatment for highway runoff for phosphorus.

Fish and wildlife habitat would be subjected to temporary and permanent impacts, depending on the distribution, abundance, mobility, habitat requirements and sensitivity of the species to disturbance. Of approximately 327 hectares (919 acres) of wildlife habitat in the project area, 62 hectares (153 acres) would be impacted by the Build Alternative.

The proposed actions of the Build Alternative may affect, and are likely to adversely affect, the Upper Willamette River evolutionary significant units of steelhead trout and chinook salmon and their habitat and Nelson's checker-mallow. These fish and plant species are federally listed as threatened species. ODOT has initiated consultation with the National Marine Fisheries Service and the U. S. Fish and Wildlife Service. Mitigation measures include following Best Management Practices and other specified actions to minimize and mitigate impacts to the species and their habitat.

Efforts were made to avoid historic properties in the corridor. However, improving and extending South Street in Grand Ronde would likely adversely effect the Grand Ronde Historic District. A Section 4(f) analysis is included in this environmental assessment. ODOT will prepare a determination of eligibility and a finding of effect report and other appropriate documents.

The Build Alternative would impact 7 sites containing potentially hazardous materials. Visual inspection and soil and groundwater testing is recommended for some of the named sites.

This environmental assessment describes the public involvement process that was implemented from the beginning of the corridor planning process. It also lists the agencies cooperating to study proposals and recommend solutions.

ODOT will initiate further analysis of impacts to the environment when the individual projects enter design stage, should the Build Alternative be implemented.

Project Identification

Project Name: H. B. Van Duzer Forest Corridor – Steel Bridge Road

County: Polk

Highways: Salmon River and Three Rivers

Highway Nos.: ORE 18 and 22

Funding Source: National Highway System¹

Cost Estimate: \$60.5 million

ODOT Region: 2

Begin: MP 18.8

End: MP 28.2

Length: 15.1 kilometers (9.4 miles)

The Scope of This Environmental Assessment

The Oregon Department of Transportation (ODOT) proposes to improve approximately nine miles (15 kilometers) of ORE 18/22 between the H. B. Van Duzer Forest Corridor and Steel Bridge Road. These proposed projects consist of a combination of highway improvements to be implemented over a time period of approximately 20 years. This proposal is more than a concept and less than a construction plan.

The purpose of this environmental assessment is to identify the location and assess the impacts of elements such as four lanes with non-traversable medians, interchanges, realigned intersections, consolidated accesses, and local service roads, which would make the highway safer and less congested.

This proposal consists of a number of projects and strategies that are not yet in the design stage. This environmental assessment addresses the impacts of these projects in general terms. Once each project is funded for development and preliminary design, separate environmental documents will be prepared for each and impacts will be addressed in detail.

The purpose of preparing a general location environmental assessment is to analyze the overall corridor impacts, reach decisions on individual projects, and, as each project is approved, proceed with development of those projects. The preparation of a location environmental assessment also notifies agencies and individuals of the long-range plans for the highway.

¹ For the Fort Hill to Wallace Bridge Section

Specific designs and detailed assessment of impacts will be addressed during the design process. For instance, an interchange is planned for the intersection of ORE 18 and ORE 22 between the Spirit Mountain Casino and Valley Junction. The main location impacts are assessed in this document. The specific impacts would be assessed during individual project development, within 5 to 15 years.

This document describes the Build Alternative, the No Build Alternative, and other alternatives considered but not advanced. It analyzes the environmental impacts of the Build Alternative and the No Build Alternative and includes proposed mitigation measures for any adverse impacts.

Description of the Proposal

The Oregon Department of Transportation proposes to widen 15 kilometers (9.4 miles) of ORE 18 to four lanes, construct non-traversable medians, construct interchanges at Grand Ronde and Valley Junction, intersections, realign the intersection at Fort Hill, consolidate local accesses and provide access and local service roads at various locations along the route. Median breaks with left-turn channels are proposed at A. R. Ford, Fire Hall, Jahn, and Rowell Creek Roads. Improvements such as straightening curves and widening shoulders on the section of ORE 22 (Three Rivers Highway) between Valley Junction and Grand Ronde Agency would complete the plan.

Although a grade-separated interchange was considered at Fort Hill, it is not part of the proposal at this time. Traffic volumes at the intersection are not projected to meet minimum levels required for an interchange during the 20-year planning period used for this project. However, ODOT will continue to monitor traffic conditions at the realigned Fort Hill intersection. If traffic volumes reach a level that causes operation and safety problems, the need for an interchange will be evaluated.

The west boundary of the project is the H. B Van Duzer Forest Corridor at milepoint 18.79. The east boundary is the intersection of ORE 18 and Steel Bridge Road at milepoint 28.21. The project area includes three communities: Grand Ronde, Valley Junction and Fort Hill. The city of Willamina lies east of the project area. See Figures 1-1 and 1-2 for the project location.

Purpose and Need

The **purpose** of these projects is to increase safety and decrease congestion as a result of increased traffic and a relatively high rate of traffic accidents on this stretch of highway. ODOT's proposed series of short and long-range projects described above address these issues.

The following excerpts from the ODOT 2000 analysis summary of highway traffic patterns illustrate the **need** to improve safety on this segment of highway:

- The *1999 Oregon Highway Plan* (OHP) establishes mobility standards for state highways using the volume to capacity (v/c) measurement. The volume to capacity measurement is a ratio that compares the number of vehicles using a roadway segment (volume) to the

Figure 1-1
Location and Project Map
B&W
8.5" x 11"
Front

Figure 1-1
Location and Project Map
B&W
8.5" x 11"
Back

Figure 1-2
Location and Project Map
B&W
8.5" x 11"
Front

Figure 1-2
Location and Project Map
B&W
8.5" x 11"
Back

maximum number of vehicles the roadway segment can handle (capacity). The OHP sets the v/c ratio for statewide National Highway System (NHS) expressway highways such as ORE 18 at 0.70. The section of ORE 18 between Grand Ronde Road and Wallace Bridge interchange currently exceeds the 0.70 v/c standard. Table 1 shows projected v/c ratios for the through traffic on ORE 18 would exceed 0.70 in the year 2008 if action is not taken.

- The two intersections of Fort Hill Road and Grand Ronde Road with ORE 18 have a relatively high number of crashes. See Figures 2-1 and 2-2 for accident numbers and locations within the project area.

TABLE 1
V/C Ratios for Year 2008* at Key Locations on ORE 18

Location	Geometry	Traffic Movement	V/C Ratio
West of Grand Ronde Road	Two lanes	Through	0.84
East of Grand Ronde Road	Two lanes	Through	0.94
West of ORE 22	Two lanes	Through	1.13
East of ORE 22	Two lanes	Through	1.24
East of Fort Hill Road	One eastbound lane, two westbound lanes	Eastbound through only	1.22
East of Fort Hill Road	One eastbound lane, two westbound lanes	Two westbound through only	0.34

*V/C ratios for the design year 2018 were not calculated for the No Build because a 10-year projection provides adequate trend information.

The 1999 Oregon Highway Plan

It is also the **purpose** of this project proposal to help meet the policies of the *1999 Oregon Highway Plan* (OHP). The OHP defines policies and investment strategies for Oregon's state highway system for the next 20 years and directs policy and investment for the corridor plans and transportation system plans being prepared throughout the state. The OHP applies general directives to the state highway system and emphasizes the following:

- Efficient management of the system to increase safety, preserve the system and extend its capacity
- Increased partnerships, particularly with regional and local governments
- Links between land use and transportation
- Access management
- Links with other transportation modes
- Environmental and scenic resources

The *1999 Oregon Highway Plan* also requires specific volume to capacity and access standards for various categories of roadways. The section of ORE 18 proposed for

improvements is categorized as a statewide highway, National Highway System, freight route and rural expressway. Standards for the various categorizations are as follows:

Statewide Highways—National Highway System

These typically provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by interstate highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal.

A **purpose** of these proposed projects is to bring this section of ORE 18 up to the standards of the 1999 *Oregon Highway Plan* by improving the highway so traffic can move safely, efficiently, at high-speed and with continuous flow. According to traffic studies, a major section of the project currently operates at capacity. Therefore, the **need** is to provide the capacity for the amount of traffic using the roadway.

Freight Route

A primary function of state highways is to support economic development by linking producers, shippers, markets, and transportation facilities. Trucks handle the bulk of freight transportation in Oregon. The State Highway Freight System is intended to facilitate interstate, intrastate, and regional movement of trucks.

A **purpose** of these proposed projects is to meet the state policy to balance the **need** for movement of goods with other uses of the highway system, and to recognize the importance of maintaining efficient through movement on major truck freight routes.

Rural Expressway

Expressways are a subset of statewide highways. They are complete routes or segments of existing two-lane and multi-lane highways and planned multi-lane highways that provide for safe and efficient high-speed and high-volume traffic. Their primary function is to provide interurban travel and connections to ports and major recreation areas with minimal interruptions. In rural areas, speeds are high. Usually there are no pedestrian facilities, and bikeways may be separated from the roadway. Private approach roads are discouraged, public road connections are highly controlled, traffic signals are discouraged in rural areas, non-traversable medians are encouraged and parking is prohibited.

A **purpose** of the proposed projects would be to meet the **need** to control access to the highway by constructing interchanges, consolidating access points, and constructing local service roads that would allow local traffic to access the highway at controlled entry and exit points. Traffic would be able to circulate within and between communities without having to use the highway. The widening projects would meet the need of expressways for high-speed, high-volume through traffic.

Figure 2-1
Accident Locations and Numbers
B&W
8.5" x 11"
Front

Figure 2-1
Accident Locations and Numbers
B&W
8.5" x 11"
Back

Figure 2-2
Accident Locations and Numbers
B&W
8.5" x 11"
Front

Figure 2-2
Accident Locations and Numbers
B&W
8.5" x 11"
Back

The Interim Corridor Strategy, 1997

In addition, the *Interim Corridor Strategy, 1997*² provided guidance for the **purpose** and **need** for the proposed project in the form of the following goals and objectives to meet the needs of this highway corridor:

1. Provide for a balanced mix of modes of transportation within the corridor in order to provide a range of modal choice for urban and rural users of the transportation system.
2. Develop transportation facilities within the corridor to provide a high degree of regional connectivity for all corridor users, both internal to the corridor as well as those passing through the corridor to other parts of the state and nation.
3. Operate all transportation facilities within the corridor at a volume to capacity ratio that is both cost effective and appropriate for the area they serve.
4. Continually improve all facets of transportation safety within the corridor.
5. Promote economic health and diversity through the efficient and effective movement of goods, services, and passengers in a safe, energy efficient and environmentally sound manner.
6. Provide a transportation corridor that has positive social impacts by providing for the safe movement of goods and people while reducing the negative impacts caused by transportation/land use conflicts.
7. Provide a transportation system throughout the ORE 99W/18 corridor that is environmentally responsible and encourages protection of natural resources.
8. Provide a transportation system that minimizes transportation-related energy consumption through the use of energy efficient and appropriate modes of transportation for the movement of people and goods. (from the *Draft Willamina-Grand Ronde Corridor Refinement Plan, July 1999*)

History

The Van Duzer to Steel Bridge Road corridor is a segment of a well-established route between the Willamette Valley and the Oregon Coast. Initially a Native American trail, then a wagon route in the mid-1800s, the Salmon River Trail, as it was called, became ORE 18 in the early 1900's and was paved in the 1920s. This route is a major connection between the Portland and Salem metropolitan areas, Lincoln City and the central Oregon coast. It is also the route to the recently developed Spirit Mountain Casino and Resort near the community of Grand Ronde. It is a well-used corridor for recreation, commuter, commercial and local rural traffic.

² The following section "History" provides the context for this strategy.

Recent Planning History

The *Interim Corridor Strategy, 1997*, published by the Oregon Department of Transportation, described proposed highway activities along ORE 99W and ORE 18. This document contained material responding to the requirements of the *Intermodal Transportation Efficiency Act of 1991* that provides for corridor planning. The *2000-2003 Statewide Transportation Improvement Program (STIP)*, also prepared by ODOT, lists two projects for the Van Duzer – Steel Bridge Road section of ORE 18. The first would realign the intersection at Fort Hill. The second would add an eastbound passing lane to ORE 18 between Fort Hill and Wallace Bridge. These projects are scheduled to begin in 2004 and the effects of their location will be documented in this environmental assessment as elements of the Build Alternative.

Most recently, the Steering Committee and the Technical Advisory Committee, building on the information contained in the *Interim Corridor Strategy, 1997*, developed a *Draft H. B. Van Duzer Forest Corridor to Steel Bridge Road Corridor Refinement Plan, July 2000*, and has since developed Amendment #1, October 2000. This document contains discussions of concerns and issues, development of proposals for solutions, and recommendations for preferred solutions from among the many alternatives the committee members and citizens studied.

Decision-Making

The Decision

The decision to be made is whether the locations of the proposed improvements to ORE 18/22, analyzed in this environmental assessment are supported or if a no-build alternative is preferred.

The Process

Several entities work together to make the decision for the environmental assessment. Federal Highway Administration has decision authority because federal funds would be used for parts of the proposed project. The Oregon Department of Transportation implements federal funds matched with state funds, and provides planning, design, construction, and maintenance of the proposed project. ODOT, working with The Steering Committee and the Technical Advisory Committee, makes recommendations to the Federal Highway Administration.

The Steering Committee is a group comprised of state, tribal, county, and other agency elected or appointed officials or staff members. This committee guides and directs the planning process for the Van Duzer to Steel Bridge Road corridor. Steering Committee meetings are open to the public and interested citizens often attend meetings. The Steering Committee reviews information, considers public input, and proposes solutions.

The Technical Advisory Committee is comprised of technical staff from state, tribe, and county jurisdictions. The members are specialists in access management, highway policy, traffic engineering, and environmental issues, among others. The Technical Advisory Committee provides detailed information and recommendations to the Steering Committee. The Steering Committee members and citizens often attend the Technical Advisory Committee meetings.

The Steering Committee and the Technical Advisory Committee studied the corridor and proposed solutions. The solutions they proposed are called the Build Alternative in this environmental assessment.

After public meetings, comments, and approval by Polk and Yamhill Counties, this environmental assessment will be revised to reflect the approved proposal. Then a revised environmental assessment will be published which includes Federal Highway Administration's decision on location.

Project Alternatives

The Build Alternative is the combination of solutions presented in the Draft H. B. Van Duzer Forest Corridor to Steel Bridge Road Corridor Refinement Plan, July 2000 (and Amendment #1, October 2000). The No Build Alternative would leave the highway as is, with the understanding that future projects (including the already planned Statewide Transportation Improvement Program projects) will likely occur.

The Build Alternative

The Build Alternative consists of proposed locations for the following design elements:

- A four-lane highway with a non-traversable median with breaks for accesses between the H. B. Van Duzer Forest Corridor to Steel Bridge Road;
- Two interchanges, one at Grand Ronde, the other at the Casino/Valley Junction area;
- A realigned, at-grade intersection at Fort Hill; and
- New access and local service roads and consolidated private approach roads to ORE 18/22.

See Figures 3-1 and 3-2 for an overview of the Build Alternative and Figures 4-1 to 4-10 for details.

Four-Lane Highway with Non-Traversable Median

ODOT would construct four travel lanes, a non-traversable median with breaks and left turn lanes, and paved shoulders with additional areas on both sides for ditches. The total roadway width including right-of-way would be approximately 30.5 m (100 feet). The highway would be widened in segments. Three bridges over the South Yamhill River would be widened or replaced.

Interchanges at Grand Ronde and Casino/Valley Junction

Grand Ronde Interchange (Option GR-D)

The letters in parentheses refer to the names given to these proposals in the *Draft H. B. Van Duzer Forest Corridor to Steel Bridge Road Corridor Refinement Plan*, July 2000).

The proposed interchange at Grand Ronde would replace the current intersection of ORE 18 and Grand Ronde Road with a jug-handle interchange. Ramps would be located in the northeast and southwest quadrants. Grand Ronde Road would pass over ORE 18, connecting the north part of Grand Ronde community to the south. The northeast ramp would allow vehicles to make right turns to or from ORE 18; it would connect to Grand Ronde Road across from South Street. The connection of the ramp straight across from South Street does not meet *1999 Oregon Highway Plan* access management standards; ODOT would apply for a major deviation. The ramp in the southwest quadrant also would provide right-turn only capability; it would connect to the south portion of Grand Ronde Road. See Figure 4-3.

Casino/Valley Junction Interchange (Option VJ-Ee)

The proposed Casino/Valley Junction interchange would realign ORE 22 west of the present Valley Junction intersection. ORE 22 would cross over ORE 18 and continue to the

Spirit Mountain Casino on a downward grade that connects to the Casino south of the parking lot. Loop ramps would be located in the northwest and southeast quadrants. The current Valley Junction intersection (ORE 18 and ORE 22) would be closed; the existing roadway would become a cul-de-sac. The existing Casino jug-handles would be closed but the underpass would remain open. The distance between the Grand Ronde interchange and the Casino/Valley Junction interchange does not meet the 1999 *Oregon Highway Plan* standards for spacing between interchanges. ODOT would apply for a major deviation from this standard. See Figure 4-5.

Intersection at Fort Hill (Option FH-A)

The intersection realignment at Fort Hill Road is part of the *Statewide Transportation Improvement Program* project scheduled to begin January 2003. The plan is to realign the Fort Hill intersection at-grade east of its present location. The existing Fort Hill intersection would be closed. Left turn channels would be added and the South Yamhill River Road would be closed at its present intersection with ORE 18 and connected at the new Fort Hill Road intersection. See Figure 4-6.

A grade-separated interchange at Fort Hill would only be considered if future traffic volumes reach a level where operation and safety become problems. Based on current traffic projections, that appears unlikely within the 20-year time frame of this project. In addition, the Steering Committee has requested that the decision should be based upon the number and severity of accidents at this location. As a result, a disproportionate rate in the increase of accidents relative to traffic volume increases will also be considered in the decision.

Access Management

The Build Alternative proposes control of local access to ORE 18 including construction of access and local service roads and consolidation of private property accesses. Access management plans are presented by sections located along the project area from the Van Duzer Corridor to Steel Bridge Road as follows:

H. B Van Duzer Forest Corridor to Grand Ronde (MP 18.79 to 21.18)

In this segment the four-lane highway with a non-traversable median would gradually widen from the two-lane roadway at the boundary of the H. B. Van Duzer Forest Corridor. Private property accesses would be consolidated and limited to right-in and right-out accesses. See Figures 3-1 and 4-1 to 4-3.

The following design features are planned:

- Widen ORE 18 to four lanes with a non-traversable median open for access at A. R. Ford and Fire Hall Roads (these accesses may be reassessed when the total project is completed);
- Improve a culvert or construct a bridge at Jackass Creek;
- Construct the Grand Ronde interchange;

- Improve South Street and extend it west beyond A. R. Ford Road as a local service road (north of ORE 18);
- Construct a local service road between A. R. Ford and Fire Hall Roads (south of ORE 18);
- Construct a local service road that extends Andy Riggs Road to Fire Hall Road (south of ORE 18).

Grand Ronde to Valley Junction (MP 21.18 to 23.04)

Private property approach roads would be consolidated and limited to right-in and right-out access only. See Figures 3-1 and 4-2 to 4-5. The following design features are planned:

- Widen ORE 18 to four lanes with a non-traversable median;
- Widen a bridge over the South Yamhill River;
- Realign Jahn Road intersection and access to the Seventh Day Adventist Church and School (left turns would be allowed here);
- Extend Jahn Road as a local service road toward Valley Junction;
- Construct the Casino/Valley Junction interchange connecting to the Casino and ORE 22 (Three Rivers Highway).

Valley Junction to Fort Hill (MP 23.04 to 23.85)

The approach roads would be consolidated and limited to right-in and right-out only access only. See Figures 3-2, 4-5, and 4-6. The following design features are planned:

- Widen ORE 18 to four lanes with a non-traversable median open for access at Rowell Creek Road;
- Widen two existing bridges or construct two new bridges at South Yamhill River crossings;
- Construct local service roads at Rowell Creek Road south and north of ORE 18.

Fort Hill to Wallace Bridge (MP 23.85 to 27.16)

Local approach roads would be consolidated or closed. The weigh station would be relocated. See Figures 3-2 and 4-6 to 4-9. The following design features are planned:

- Widen ORE 18 to four lanes with a non-traversable median;
- Realign the Fort Hill intersection and wrap an access road around the service station and restaurant;
- Relocate Fort Hill Road east of the mill;
- Construct a local service road from Fort Hill Road to the east with an overpass connecting to the South Yamhill River Road and the Willamina interchange.

Wallace Bridge to Steel Bridge Road (MP 27.16 to 28.21)

See Figures 3-2, 4-9, and 4-10. The following design features are planned:

- Widen ORE 18 to four lanes with a non-traversable median;
- Consolidate local accesses.

Implementation in Phases

The Build Alternative would be constructed over a twenty-year period. Highway construction, including widening, bridge improvements, interchanges, access consolidation, and construction of local service roads would proceed in phases. The anticipated phases are as follows.

Phase 1: Construct projects between Fort Hill and Wallace Bridge

Work would include the following:

- Realign the Fort Hill intersection at-grade east of its present location (*Statewide Transportation Improvement Plan* project, funded and scheduled for construction in 2003);
- Add an eastbound passing lane east of Fort Hill to Wallace Bridge and construct a non-traversable or open median (*Statewide Transportation Improvement Plan* project, funded and scheduled for construction in 2004);
- Relocate Fort Hill Road east of the mill as county funds or other funding becomes available;
- Construct a local service road from Fort Hill Road, north of ORE 18, with an overpass connecting it to South Yamhill River Road. However, members of the Steering and Technical Advisory Committees and citizens strongly recommend this part of the proposal be implemented with the two projects described above.

Phase 2: Construct projects between Spirit Mountain Casino and Fort Hill

Work would include the following:

- Widen ORE 18 to four lanes with a non-traversable median;
- Construct the Casino/Valley Junction (ORE 22/18) interchange;
- Replace or widen two bridges;
- Consolidate private property approach roads to ORE 18;
- Construct local service roads south and north of ORE 18 at Rowell Creek.

Phase 3: Extend the four-lane, non-traversable median roadway from Spirit Mountain Casino west past Grand Ronde Road.

Work would include the following:

- Construct the Grand Ronde interchange;
- Relocate the Jahn Road intersection with a left-turn median break across from the Seventh Day Adventist Church and School;

- Extend Jahn Road to the east toward Valley Junction as a local service road using the roadbed of a former railroad as much as possible.

Phase 4: Widen the Wallace Bridge-Willamina Interchange Area

Widen the highway to four-lanes with a non-traversable median between the Wallace Bridge and the Steel Bridge Road including adjustment of the eastbound ramps. This phase may need to be accelerated if the results of earlier phases place too much demand on this area.

Phase 5: Complete the highway widening from the Grand Ronde area to the Van Duzer Forest Corridor

The four-lane section would transition from a non-traversable median to a painted median to a two-lane segment to meet the two-lane segment at the forest corridor boundary. Work would include the following:

- Complete a local service road along South Street extending beyond A. R. Ford Road north of ORE 18 (Note: This road could be constructed as local development occurs);
- Complete local service roads south of ORE 18 connecting Fire Hall Road to Andy Riggs Road;
- Close and consolidate private property approach roads to the highway.

Phase 6: Realign curves and widen the shoulders of ORE 22 (Three Rivers Highway)

Improve the highway between Valley Junction and Grand Ronde Agency. Complete this work earlier if safety problems begin to increase on ORE 22 due to construction of sections of ORE 18.

Phase 7: Complete local service road connections south of ORE 18

Construct local service roads between A. R. Ford and Fire Hall Roads as needed and as development occurs.

The No Build Alternative

This alternative would leave ORE 18, between the H. B. Van Duzer Forest Corridor and Steel Bridge Road, as is. No coordinated plans for road widening, non-traversable medians, interchanges, realigned intersections, or access management would be made. The required maintenance projects would occur.

Improvements to this segment of ORE 18 would, however, continue as individual projects.

See Figures 5-1 and 5-2: The No Build Alternative Overview.

Figure 3-1
The Build Alternative, Overview
color
11" x 17"
Front

Figure 3-1
The Build Alternative, Overview
color
11" x 17"
Back

Figure 3-2
The Build Alternative, Overview
color
11" x 17"
Front

Figure 3-2
The Build Alternative, Overview
color
11" x 17"
Back

Figure 4-1
The Build Alternative, Detail
B&W
11" x 17"
Front

Figure 4-1
The Build Alternative, Detail
B&W
11" x 17"
Back

Figure 4-2
The Build Alternative, Detail
B&W
11" x 17"
Front

Figure 4-2
The Build Alternative, Detail
B&W
11" x 17"
Back

Figure 4-3
The Build Alternative, Detail
B&W
11" x 17"
Front

Figure 4-3
The Build Alternative, Detail
B&W
11" x 17"
Back

Figure 4-4
The Build Alternative, Detail
B&W
11" x 17"
Front

Figure 4-4
The Build Alternative, Detail
B&W
11" x 17"
Back

Figure 4-5
The Build Alternative, Detail
11" x 17"
Front

Figure 4-5
The Build Alternative, Detail
11" x 17"
Back

Figure 4-6
The Build Alternative, Detail
11" x 17"
Front

Figure 4-6
The Build Alternative, Detail
11" x 17"
Back

Figure 4-7
The Build Alternative, Detail
11" x 17"
Front

Figure 4-7
The Build Alternative, Detail
11" x 17"
Back

Figure 4-8
The Build Alternative, Detail
11" x 17"
Front

Figure 4-8
The Build Alternative, Detail
11" x 17"
Back

Figure 4-9
The Build Alternative, Detail
11" x 17"
Front

Figure 4-9
The Build Alternative, Detail
11" x 17"
Back

Figure 4-10
The Build Alternative, Detail
11" x 17"
Front

Figure 4-10
The Build Alternative, Detail
11" x 17"
Back

Figure 5-1
The No Build Alternative
color
11" x 17"
Front

Figure 5-1
The No Build Alternative
color
11" x 17"
Back

Figure 5-2
The No Build Alternative
color
11" x 17"
Front

Figure 5-2
The No Build Alternative
color
11" x 17"
Back

Alternatives and Design Options Considered But Not Advanced

The Steering Committee, the Technical Advisory Committee and citizens working with these groups studied a wide variety of preliminary alternatives. They considered five substantially different alternatives with over thirty variations or options. Alternatives and design options considered but not advanced are discussed below with the reasons for their dismissal. Following are the five major alternatives proposed and studied but not advanced:

- Limited Build
- By-passes
- Five-Lane Highway With Center Turn Lane
- Four-Lane Divided Highway With Non-Traversable Median
- Interchange Design Options at A. R Ford Road, Grand Ronde, Valley Junction, and Fort Hill

Limited Build

The Limited Build Alternative included the two *Statewide Transportation Improvement Program* projects described above and added some relatively small, low-cost improvements, as follows:

- Control access by closing and consolidating private property approach roads to ORE 18, and limiting remaining ones to right-in and right-out turning movements;
- Install traffic signals and lighting at the major intersections;
- Add right-turn lanes at the north and south approaches to ORE 18 from Grand Ronde Road;
- Widen the shoulders between Grand Ronde and the Spirit Mountain Casino and Resort;
- Make bike and pedestrian improvements on Grand Ronde Road;
- Improve local road connections to ORE 18 at various locations.

Access Controls, Right Turn Lanes, Shoulder Widening, Bicycle and Pedestrian, and Local Road Improvements

The limited improvements would provide some benefits for local travel. For example, combining private property approach roads would reduce conflict points on the highway and pedestrian and bicycle improvements could improve safety, especially on Grand Ronde Road and local roads. These individual improvements are not enough in themselves to meet

the needs for highway improvement, but they are important components. Access control for ORE 18 and bicycle and pedestrian improvements for Grand Ronde Road were incorporated into the Build Alternative.

Signals

Because signals could be quickly installed at a relatively low cost, the committee members made considerable effort to determine if signals would work effectively. Traffic signals were proposed for the intersections of ORE 18 with Grand Ronde Road, ORE 22 at Valley Junction, and Fort Hill Road.

However, the management objective in the *1999 Oregon Highway Plan* for statewide rural highways and expressways is “to provide for high-speed, continuous-flow and through traffic movement.” Traffic signals are discouraged and approval of traffic signals would require supporting documentation to assure the State Traffic Engineer that all other options have been appropriately considered.

In addition to the overriding policy consideration, the Transportation Analysis Report determined that traffic signals are not acceptable for several reasons. These reasons included a lack of improvement in capacity, signals operating in isolation stopping flows at random, and additional references to *1999 Oregon Highway Plan*, including the fact that signals are discouraged on expressways, in rural environments and on 45 to 55 mph facilities. The proposed installation of traffic signals on ORE 18 was rejected because signals would not solve or reduce congestion, could increase frequency and severity of accidents and did not meet policy objectives of the *1999 Oregon Highway Plan* for rural highways and expressways.

By-passes

Committee members and citizens studied two by-pass proposals, prompted by the desire to avoid impacts to the existing communities, natural resources and potential hazardous materials sites. The by-pass routes were estimated to have less impact to wetlands, floodplains, threatened and endangered species and pre-historic and historic sites than other alternatives and they would have less direct physical impacts to residents and businesses along ORE 18.

Extended South By-pass

The longer of the two proposed by-passes would extend from ORE 18 near the Little Rogue River west of A. R. Ford Road and proceed south of ORE 18 through the foothills, generally following the 400-foot contour. It would join ORE 18 at a point between Wallace Bridge and Steel Bridge Road. This option would include an interchange connection to ORE 22 at the Willamina-Salem Highway interchange and another south of Valley Junction to provide a connection to ORE 22 at Three Rivers Highway. See Figure 6.

Partial South By-pass

The shorter by-pass option would follow the same path as the extended by-pass, but would connect to ORE 18 just east of Fort Hill near Gold Creek Road. It would also connect to a road to Valley Junction and ORE 22 (Three Rivers Highway). See Figure 6.

The by-pass alternatives were rejected for several reasons. They were more costly than the other alternatives and do not provide any significant transportation benefit until entirely constructed. As a result project benefits would not accrue until all phases were complete. Substantial impacts to the natural environment would also be expected because the bypass alignments are largely through relatively undisturbed areas. Finally, the bypass would have negative economic impacts to existing businesses. Alternatives using the existing alignment can be constructed in phases, thereby providing incremental transportation improvement.

Five-Lane Highway with Center Turn Lane

This alternative was popular with many local residents as the study began. It consisted of four travel lanes with a fifth center lane for left turns. While an immediate construction of a five-lane section on ORE 18 might provide temporary relief, it could be quickly overcome as traffic volumes increase.

This alternative was dismissed because of safety problems associated with allowing left turns on high speed, high volume highways.

Four-Lane Divided Highway with Non-Traversable Median

This alternative consisted of four travel lanes with a non-traversable median open for turns at limited locations. Traffic signals at major intersections and periodic left turn lanes were considered as part of this alternative. Interchanges were not considered. Left turn lanes would be constructed at Grand Ronde, Valley Junction, and Fort Hill to facilitate local traffic movement; the non-traversable median would reduce potential for conflicts at other locations. However, the high traffic volumes on ORE 18 would still present fewer safe gaps for local turning traffic. Both the Technical Advisory and Steering Committees rejected the proposed installation of traffic signals on ORE 18 because signals would not solve or reduce congestion and could increase frequency and severity of accidents.

This alternative was not advanced because it would not solve congestion resulting from high traffic volumes and signals would cause more traffic delay. However, aspects of this proposal, such as four lanes with a non-traversable median with turning breaks, were incorporated into the Build Alternative.

Four-Lane Highway with Interchanges—Interchange Designs and Other Options

Numerous interchanges and related options were studied at A. R. Ford Road, Grand Ronde, Valley Junction, and Fort Hill.

Interchanges usually offer the best opportunity to reduce the overall number of accidents and to provide for future mobility through an area. However, interchanges would require more land than a simple intersection and depending upon design decisions, could impact more local residences and businesses. To determine if the impacts could be reduced, a large number of options were studied. Interchanges would make the most substantial impacts on commercial lands and operations at Grand Ronde and Valley Junction; some businesses at

these locations would no longer be viable if an interchange were built. Although none of the interchange options at Fort Hill would actually remove commercial operations, businesses would lose direct access to ORE18/22 and their customers would gain access by realigning the roadway from the west side of the businesses to the east side of the businesses. Access would thus be changed from direct access to Highway 22 to access from Fort Hill Road. The following options were considered but not advanced:

A. R. Ford Road Interchange, Figure 7

This proposal was developed to avoid impacts to businesses, community facilities, and residences at Grand Ronde. A jug-handle interchange at A. R. Ford Road would include a new road west of Grand Ronde Road. The new road would connect ORE 18 to ORE 22 (Three Rivers Highway). Another version connected the new road to a local service road north of ORE 18.

This option was not advanced for two main reasons. First, residents of Grand Ronde using this route would go two miles out-of-direction if they were heading east, the direction of most traffic from Grand Ronde Road. Second, this option would require considerable construction through a mix of agricultural, residential, farm/forest, farm/forest overlay and industrial lands.

Grand Ronde Interchange Options

Several interchange solutions were explored to address safety and congestion problems that could not be solved with signals or by other means. Grand Ronde Road has the second highest volume of traffic connecting to ORE 18 in the study area (the highest is at the ORE 22, Willamina-Salem Highway, connection to ORE 18 near Wallace Bridge).

Options considered but not advanced included interchange patterns for all four quadrants of the current intersection. The “jug-handle” type of interchange uses the least amount of land and was therefore the prominent design for the various options. All interchange options also included an elevated structure (overcrossing) containing a roadway with two travel lanes, a continuous center left-turn lane, and two six-foot shoulders for pedestrians and bicyclists. All Grand Ronde interchange options would need a deviation to satisfy the *1999 Oregon Highway Plan* access management standards. The design options considered but not advanced are as follows:

Grand Ronde Interchange With a North-South Collector Road

While studying the Grand Ronde interchange proposal, consideration was given to the impacts of an ORE 18 interchange solely at Grand Ronde, with no other interchanges to be constructed in the study area. The first impact that could be expected was increased vehicle travel along Grand Ronde Road between ORE 22 (Three Rivers Highway) north of the community area and ORE 18 at the intersection with Grand Ronde Road. A high percentage of the vehicles would be trucks. This traffic would add to the increase already expected from development in the area. Even without this additional burden, the existing Grand Ronde Road is inadequate to safely handle future automobile, pedestrian, and bicycle use. Additionally, limitations imposed by existing constraints such as the Tribal Cemetery, bridge crossing, and housing make improvements difficult on the existing alignment.

To accommodate the traffic resulting from a single interchange, an alternate collector road was proposed approximately 214 meters (700 feet) east of the present Grand Ronde Road. A review of the Regional Problem Solving study indicated a road at this location would serve proposed land uses as well as reduce traffic over the existing road. Some of the drawbacks of this proposal were additional construction on wetlands and through riparian areas, an additional river crossing, and increased traffic flow along the front of the Grand Ronde Elementary School. (This option is related to the *Valley Junction Right-In, Right-Out* option described below).

This option designating Grand Ronde as the only interchange in the study area was not advanced because of the resulting increase in traffic through the community of Grand Ronde. Although a traffic flow analysis revealed that an interchange at Grand Ronde Road and ORE 18 was necessary, an interchange at only this intersection was not satisfactory. Thus, the study did not advance the collector road concept but did continue to study specific interchange layouts in order to minimize impacts at Grand Ronde.

Grand Ronde Interchange Option GR-A, Figure 8

Option GR-A was a jug-handle interchange with ramps in the northeast and southwest quadrants of the intersection. The northeast ramp connected to Grand Ronde Road across from an old rail right-of-way and between the Grand Ronde General Store Center and the Fire Station. The southwest ramp was constricted to avoid impacts on the Anderson home. This and the other interchange alternatives and options throughout the refinement area were considered in conjunction with a four-lane divided highway.

This option was not advanced, although in the early stages of the process, it appeared that Option GR-A might prevent substantial impacts to the Bonanza building. However, it was found that the highway widening would cause removal of the Grand Ronde General Store Center and the Bonanza building, regardless of the type of interchange. Despite positive aspects such as not affecting the post office and Sprint building, the option was not advanced because the northeast ramp lacked enough horizontal distance for a proper design grade. The northeast ramp is smaller in this option than in the preferred alternative where the northeast ramp is longer and connects to Grand Ronde Road opposite South Street rather than opposite the old railroad grade.

Grand Ronde Interchange Option GR-B, Figure 8

This interchange option was a jug-handle with ramps in the northwest and southeast portions of the quadrant. The northwest ramp connects to South Street and becomes the access onto Grand Ronde Road.

This option was not advanced because it could have impacts to the former Bank of Grand Ronde, a structure potentially eligible for listing on the National Register of Historic Places. The former antique store in the southeast quadrant would be displaced. However, the primary reason for its rejection was the southeast ramp required placement on part of Rock Creek, and this generated construction and environmental complications.

Grand Ronde Interchange Option GR-C, Figure 9

This jug-handle option was very similar to GR-B. The ramps are in the same quadrant, but have different curvature. The northwest ramp connects to the old rail right-of-way instead

of South Street and the southeast ramp connects to Grand Ronde Road so as to avoid a residence. As in GR-B, the antique store in the southeast quadrant would be displaced.

This option was also not advanced because of the limits imposed by Rock Creek.

Grand Ronde Interchange Option GR-E, Figure 9

This option placed jug-handle ramps in the northwest and southwest quadrant. As with GR-B, the northwest ramp connected to South Street, while the southwest ramp was in approximately the same location as shown in GR-A. The intent of this option was to avoid impacts on property such as the fire station, post office, and Sprint building. It also avoided problems associated with Rock Creek.

This option was not advanced because it would displace the former Bank of Grand Ronde, a potentially historic building.

Grand Ronde Interchange with Relocated Highway Options GR-G and GR-H, Figure 10

Two options to realign the highway south of the Grand Ronde intersection were also evaluated. Because of their similarity, they are discussed together.

Starting approximately 610 meters (2,000 feet) east of Grand Ronde Road, these options generally straighten the highway. Option GR-G is the straightest option. It crosses Grand Ronde Road approximately 91 meters (300 feet) south of the existing intersection. The second option (GR-H) is located farther south with an interchange having northwest/southeast ramps.

These options were not advanced for several reasons. First, although they generally avoided the impacts and removal of most structures at Grand Ronde, they impacted residential property not previously affected. Second, they would move drive-by traffic away from businesses. And third, both options required more land, including environmentally sensitive resource land. Both were considerably more expensive than the preferred Option GR-D. Construction of three bridges, a new roadbed, and the acquisition of additional lands elevated the costs. Table 2 shows the relative cost and land area impacts, greater than those anticipated occurring from GR-D, an interchange proposed within the existing alignment at the intersection of Grand Ronde Road and ORE 18.

TABLE 2
Comparison of Options GR-D, GR-G, and GR-H

Option	Const. Cost	Full Cost	Land Used	Cost of Land
GR-D, existing alignment	N/A	N/A	0.5 hectares (1.3 acres) AR-5	\$771,000
GR-H, relocated ORE 18	+3.45 million	+6.13 million	2.6 hectares (6.6 acres) AR-5	\$1,192,000
GR-G, relocated (most southerly)	+3.45 million	+6.13 million	3.7 hectares (9.3 acres) AR-5	\$827,000

+ in addition to the cost of GR-D option. AR-5 = 5-acre residential zone

Note: The relocated options construction costs are approximately the same.

Grand Ronde Couplet Option, Figure 11

A couplet on ORE 18, in conjunction with traffic signals, was initially promising because of the opportunity to use an old rail right-of-way, some of which is owned by ODOT, and an opportunity to avoid impacts associated with an interchange.

The option was not advanced because the length of road between the couplet's highway sections was well below that needed for storage of turning traffic and the rail right-of-way ran through the center of an active wood processing mill. Both the Technical Advisory and Steering Committees rejected the proposed installation of traffic signals on ORE 18 because signals would not solve or reduce congestion and could increase frequency and severity of accidents.

Valley Junction Interchange Options and Other Proposals

Early in the corridor planning effort before an interchange was proposed, an alternative was discussed that closed access at Grand Ronde and made Valley Junction the primary access for all traffic from Grand Ronde and ORE 22 (Three Rivers Highway). Factors considered during the discussions were the out-of-direction (north) travel required for many users, the potential for Grand Ronde to become more developed, impacts on local businesses, difficulty of accessing the school and post office, and emergency protection for those residents living near ORE 18 east, south, and west of the Grand Ronde intersection.

The disruption to the local community was too great to advance this alternative. Another version of this would leave the Grand Ronde Road at-grade intersection open, but this scenario would lead to continued accident problems because of the likelihood that residents would travel the shortest distance to ORE 18 and only rarely use Valley Junction as the primary access. This discussion led to another non-interchange proposal, a right-in, right-out only intersection, discussed next.

Valley Junction Right-In, Right Out

Although not an interchange, this option was among the first solutions considered in the Valley Junction area. It led to the eventual consideration of an interchange. The option involved closing the intersection to left turns from ORE 22 (Three Rivers Highway), which is the movement made by the majority of the highway's users. This option assumed that an interchange was present at Grand Ronde and residents on Three Rivers Highway (ORE 22) wishing to travel east would proceed out-of-direction to Grand Ronde Road, travel south to an interchange, and use the interchange to proceed east, increasing traffic through the community of Grand Ronde on Grand Ronde Road. This option could lead to as much as 5 miles of additional travel. Another version of this option used the ODOT owned rail right-of-way as the bed for a road from Valley Junction to the Casino's interchange. This version considerably reduced out-of-direction travel to approximately 402 meters (¼ mile).

This option was not advanced because the topography and location of the Casino's interchange would make it extremely difficult for wide-turning trucks to use the connecting road. Another consideration in rejecting this option was the use of the Casino's private road system as a public road. Additionally, the entrance back onto the highway was inadequate.

As this option was being investigated, the proposal to develop Fort Yamhill State Park Interpretative Center surfaced. Discussions with an official from the Oregon State Parks and

Recreation Department revealed the timetable for opening the park was within the 20-year planning period. The proposed park is expected to attract a high number of tourists, resulting in an increase in the numbers of vehicles turning onto and off ORE 22. With the addition of the park traffic, the option was even less desirable.

Valley Junction Interchange Option VJ-A, Figure 12

This interchange option consisted of jug-handle ramps in the northwest and southeast quadrants with the overcrossing of ORE 18 approximately 53 meters (175 feet) west of the present intersection. A local access road along the rail right-of-way would serve the properties on the north side of the highway. To the south, the overcrossing would blend into an access road proceeding west to the Casino area. As with the other Valley Junction options, this would allow ORE 22 traffic to access ORE 18, while allowing ORE 18 travelers to proceed to the Spirit Mountain Casino or the proposed state park and other points along ORE 22.

Land use was also a concern for interchange designs in the Valley Junction area. The Regional Problem Solving Committee invested considerable effort to determine commercial, industrial, and residential needs along the study area. Of the approximately 12 hectares (29.6 acres) of commercial lands available in the Valley Junction area, Option VJ-A would use approximately 2.5 hectares (6.0 acres).

This option was not advanced because it did not appear to accommodate the heavy truck traffic of ORE 22 as well as other options, especially VJ-D. Vehicles, including trucks, would have to stop to make left turns. Also, the SE quadrant ramp was close to the South Yamhill River and could cause impacts to the river and be impacted by it. This option does not meet the *1999 Oregon Highway Plan* access management standards.

Valley Junction Interchange Option VJ-B, Figure 13

Option VJ-B was a partial interchange with only one jug-handle ramp located in the northwest quadrant. This option relies on the Casino's interchange for traffic desiring to proceed east from ORE 22. Operation for this traffic would be similar to a version of the right-in, right-out option. This option uses approximately 3 hectares (7 acres) of land proposed to be zoned as commercial.

Option VJ-B was not advanced because the southern access road section of the interchange would not meet 1999 Oregon Highway Plan design standards for access to a ramp. Because access from adjacent property would not be allowed on this southern part of the interchange, the lands between it and ORE 18, bounded also by the Casino and the South Yamhill River, would be removed from commercial use. This option does not meet the 1999 Oregon Highway Plan access management standards.

Valley Junction Interchange VJ-C, Figure 13

Option VJ-C consisted of a full diamond interchange. Its location was approximately mid-way between Valley Junction and the Casino interchange. This conventional interchange option removed the Casino's interchange. It used the largest amount of land at approximately 7 hectares (17 to 18 acres).

Option VJ-C was not advanced because it cost more than twice that of the others, used at least twice the amount of land, and rerouted access to the Casino.

Valley Junction Interchange Option VJ-D, Figure 14

This interchange would replace the current ORE 18 and ORE 22 intersection but leaves the Casino interchange in place. It is a jug-handle type with the ramps located in the northeast and southwest quadrants with a structure crossing ORE 18 and becoming a road connecting to the Casino's road network.

The two-lane northeast quadrant ramp starts approximately 58 meters (190 feet) east of the current intersection. It would allow vehicles to make a right turn off or onto ORE 18. The ramp connects to ORE 22 forming an intersection across from a proposed local access road on the old rail right-of-way. It is anticipated the ORE 18 ramp would have a free right-turn to accommodate the relatively high percentage of large vehicles using this interchange to get to the Casino.

The southwest quadrant ramp begins approximately 76 meters (250 feet) west of the current intersection and also provides right-turn only capability. The ramp connects to an extension of the overcrossing.

A two-lane structure with travel lanes and shoulders would cross over ORE 18. Originally, it was anticipated this design would allow connections to the southern local access road to the Casino and commercially zoned lands would have access. The *1999 Oregon Highway Plan* requires a distance of 400 meters (1,312 feet or ¼ mile) between the ramp connection and any intersecting roads. Construction of this alternative will require a major deviation from access policy.

The safety benefits of an interchange were again the overriding considerations in this proposal. Additionally, there were gains in levels of service for citizens turning onto ORE 18 from ORE 22. Some commercially zoned properties in the northwest quadrant remain viable as long as a local access road is constructed, preferably along the old rail right-of-way. The design also appeared to be more conducive to truck turning movements.

This option was not advanced because of its impacts on current land uses, its proximity to the South Yamhill River, and its proximity to the Casino interchange. On the north side of the intersection, up to seven buildings, including a residence, businesses, and outbuildings bordering the current alignment of ORE 22 would require displacement. Additionally, there was concern that the roadway location was too close to the river and might prevent interchange expansion sometime in the future. Placement of the roadway close to the river might also necessitate future repairs due to erosion of the riverbank and highway construction and operation could impact water quality and wildlife habitat. The close spacing of this interchange to the Casino interchange, which was to remain open, created operational and safety concerns. Finally, this option does not meet the *1999 Oregon Highway Plan* access management standards.

Valley Junction Interchange Option VJ-E, Figure 15

This interchange was located roughly halfway between the Casino and the current Valley Junction intersection of ORE 18 and ORE 22 (Three Rivers Highway). This option required the Casino interchange to be closed to ORE 18 traffic. It was a jug-handle type with the

ramps located in the northwest and southeast quadrants with a three-lane overpass crossing ORE 18 and becoming a road connecting to the Casino's road network.

The two-lane northwest ramp would start approximately 411 meters (1,350 feet) west of the current Valley Junction intersection. It would allow vehicles to make a right turn off or onto ORE 18. The ramp forms a "T" intersection with a re-aligned ORE 22 (Three Rivers Highway).

The southeast ramp begins approximately 290 meters (950 feet) west of the current intersection and also provides right-turn only capability. The ramp connects to an extension of the overcrossing.

Again, the safety benefits of an interchange were the overriding considerations in favoring this option over non-interchange options. Additionally, there were gains in levels of service for drivers turning onto ORE 18 from ORE 22. The location allows an acceleration lane for traffic leaving the Casino.

This option was not advanced because the vertical grade of the overpass that would connect to the Casino parking lot and would have a negative effect on trucks and other large vehicles. This grade was improved in the preferred option VJ-Ee.

Fort Hill Options

Three Rivers Highway (ORE 22) Partial Relocation, Figure 16

This alternative was developed while studying options at Fort Hill. During that time, the Technical Advisory Committee and Steering Committee were made aware of a potential action to designate ORE 18 as an expressway; in spring of 1999 ORE 18 received that designation. As an expressway, the minimum distance standards between interchanges, 4.82 kilometers (3 miles) contained in the March 1999 *Oregon Highway Plan* became a factor in decision-making.

The 1.27-kilometer (0.79-mile) distance between Fort Hill and Valley Junction was less than the expressway requirement, so an alternative was developed that re-routed Three Rivers Highway (ORE 22) east. The rerouted highway followed the old rail right-of-way between Valley Junction and Fort Hill and connected to Fort Hill Road north of the mill. This alternative removed any interchange at Valley Junction but retained one at Fort Hill.

This alternative was dismissed when a geologic study showed a segment of the alignment crossed a slide. This presented significant engineering and geotechnical issues to overcome as well as likely long term maintenance and potential slide repair problems.

Fort Hill Under and Overcrossing Option FH-B, Figure 17

Combining the relocated intersection with a combination under and overcrossing located approximately 37 meters (120 feet) west of the current intersection and closing the left-turn channel associated with Option FH-A made this option operate as an interchange. The positive aspects of this option were its service to pedestrians and bicyclists at the nearby recreational vehicle park and its phasing compatibility.

This option was not advanced because it required either the displacement of the restaurant and gas station or the construction of a retaining wall approximately 4 meters (13 feet) high.

Also, Fort Hill Road remained located through the middle of the mill. This option was unsatisfactory because of these negative impacts on the local businesses and industry.

Fort Hill Interchange Option FH-C, Figure 18

This option called for the eventual replacement of the relocated intersection with an overcrossing at the same location. Jug-handle ramps would be located in the northeast and southeast quadrants. An overcrossing would connect the realigned Fort Hill road to the South Yamhill River Road. The design is intended to be compatible with the realigned Fort Hill intersection that is part of the Build Alternative.

This option was not advanced because it is too close to the Casino/Valley Junction interchange to meet the *1999 Oregon Highway Plan* access standards of 3 miles between interchanges on a rural expressway. It would require a major deviation.

A grade-separated interchange was not advanced at this time. ODOT will monitor traffic and conditions at the realigned Fort Hill intersection. If traffic volumes should meet or exceed a level where operation and safety becomes a hazard, an interchange would be considered for this intersection. Based on current information and traffic volume projections, meeting or exceeding that standard appears unlikely within the 20-year time frame of this project.

Fort Hill Interchange Option FH-D, Figure 19

Option FH-C was modified twice as FH-D and FH-E. Option FH-D routed Fort Hill Road from a new overcrossing located east of the current intersection, then proceeding behind the restaurant and gas station to follow a path by-passing the mill to the west. This routing aimed to minimize impacts on farmlands and to take advantage of a short public road section.

This option was not advanced because, it would be located on a narrow area next to the river, traverse wetlands, and displace three residences.

Fort Hill Interchange Option FH-E, Figure 20

This option was also a modification of the FH-C concept. With this option, Fort Hill Road retained its route through the mill, behind the restaurant and gas station, and to the eventual overcrossing of ORE 18. This option required a slightly different overcrossing skew.

This option was not advanced because retaining a road through the center of the mill operations was not acceptable.

Wallace Bridge Interchanges

Two interchange options that would replace the existing interchange at the Wallace Bridge area were reviewed. Although congestion was not anticipated to be a problem, the options were considered necessary because of reports of accidents at the point where South Yamhill River Road crosses ORE18/22 and connects to ORE 18 Business. Both options would have required obtaining right-of-way from the Coastal Fibre (mill) property adjacent to the existing interchange and one proposed a roadway approximately through the center of the business. In an effort to avoid the impact, development of a third option on the east side of

the river began. This option proceeded far enough to make it obvious that a new interchange in the area would be extremely difficult to design without major impacts.

These options were not advanced because accident data was updated and showed that accident numbers and severity had decreased to almost none since ODOT modified the interchange a few years earlier. Since the modification had resolved the accident problem and congestion was not anticipated to be a problem during the planning period, a new interchange at the Wallace Bridge location was not pursued.

Figure 6
By-Pass Alternatives
B&W
11" x 17"
Front

Figure 6
By-Pass Alternatives
B&W
11" x 17"
Back

Figure 7
A. R. Ford Road Proposed Interchange
B&W
8.5" x 11"
Front

Figure 7
A. R. Ford Road Proposed Interchange
B&W
8.5" x 11"
Back

Figure 8
Grand Ronde, GR-A and GR-B Interchanges
B&W
8.5" x 11"
Front

Figure 8
Grand Ronde, GR-A and GR-B Interchanges
B&W
8.5" x 11"
Back

Figure 9
Grand Ronde GR-C and GR-E Interchanges
B&W
8.5" x 11"
Front

Figure 9
Grand Ronde GR-C and GR-E Interchanges
B&W
8.5" x 11"
Back

Figure 10
Grand Ronde GR-G and GR-H Interchanges with Relocated Highway
B&W
11" x 17"
Front

Figure 10
Grand Ronde GR-G and GR-H Interchanges with Relocated Highway
B&W
11" x 17"
Back

Figure 11
Grand Ronde Couplet Option
B&W
8.5" x 11"
Front

Figure 11
Grand Ronde Couplet
B&W
8.5" x 11"
Back

Figure 12
Valley Junction VJ-A Casino Interchange
B&W
11" x 17"
Front

Figure 12
Valley Junction VJ-A Casino Interchange
B&W
11" x 17"
Back

Figure 13
Valley Junction VJ-B and VJ-C Casino Interchanges
B&W
11" x 17"
Front

Figure 13
Valley Junction VJ-B and VJ-C Casino Interchanges
B&W
11" x 17"
Back

Figure 14
Valley Junction VJ-D Interchange
B&W
11" x 17"
Front

Figure 14
Valley Junction VJ-D Interchange
B&W
11" x 17"
Back

Figure 15
Valley Junction VJ-E Casino Interchange
B&W
11" x 17"
Front

Figure 15
Valley Junction VJ-E Casino Interchange
B&W
11" x 17"
Back

Figure 16
Fort Hill Three Rivers Highway Relocation
B&W
11" x 17"
Front

Figure 16
Fort Hill Three Rivers Highway Relocation
B&W
11" x 17"
Back

Figure 17
Fort Hill FH-B Under/Over Crossing
B&W
8.5" x 11"
Front

Figure 17
Fort Hill FH-B Under/Over Crossing
B&W
8.5" x 11"
Back

Figure 18
Fort Hill FH-C Interchange-East Reroute
B&W
8.5" x 11"
Front

Figure 18
Fort Hill FH-C Interchange-East Reroute
B&W
8.5" x 11"
Back

Figure 19
Fort Hill FH-D Interchange
B&W
8.5" x 11"
Front

Figure 19
Fort Hill FH-D Interchange
B&W
8.5" x 11"
Back

Figure 20
Fort Hill FH-E Interchange
B&W
8.5" x 11"
Front

Figure 20
Fort Hill FH-E Interchange
B&W
8.5" x 11"
Back

Other Types of Alternatives

Other types of alternatives include solutions to safety and traffic problems that do not require construction of a wider highway with non-traversable medians, interchanges, and local service and access roads. These include travel demand management, air, rail, public transit, and pedestrian and bicycle modes of travel. The Steering Committee and the Technical Advisory Committee studied several of these modes and determined that they would not have important impacts on traffic reduction along this corridor within the next twenty years. Some aspects of these other types of alternatives already exist or are included in the Build Alternative.

Travel Demand Management (TDM)

Travel demand management techniques are generally accepted as a method to reduce automobile travel on a congested roadway (e.g., carpooling, park and ride, flex time, telecommuting). According to the U. S. Department of Transportation, these techniques become more productive as traffic congestion increases in volume to capacity ratios. However, these techniques are more appropriate to commuting traffic in an urban setting than to vacation or tourist traffic in a rural setting.

Travel Demand Management is already practiced and could be expanded by the Spirit Mountain Casino and Resort, the largest employer in the project area. The Casino currently employs shuttle services from the Salem, Portland and Vancouver areas seven days a week.

Casino employee shift changes are staggered to prevent a sudden infusion of vehicles onto ORE 18. For the employee's benefit, the Casino may wish to consider summer Sunday shift times that avoid the period from approximately 1:00 p.m. through 6:00 p.m. Avoiding those times may prevent employees from experiencing delays entering ORE 18. The Casino could also encourage carpooling for its employees.

A paved park-and-ride lot is located at the Wallace Bridge interchange. Area residents commuting to work use the lot, accessible from the Willamina-Sheridan Highway.

Pedestrian and Bicycle Travel

Amenities for pedestrian and bicycle travel are included in the Build Alternative by incorporating wider shoulders, sidewalks, bikeways, and crossing safety improvements. However, these improvements are not expected to reduce congestion, although they will improve safety for bicyclists and pedestrians.

Public Transit

Public transportation services are unlikely to be effective in reducing congestion during weekends. Vehicle trips to the coast begin Friday and continue through Sunday morning.

Travelers choose schedules to fit their personal desires and the time spread on the outbound phase of travel appears too large to make public transportation effective. However, the return trips are fairly concentrated on Sunday afternoons and evenings; public transportation could have an impact on congestion during that period, but its use would depend on choosing public transportation for the initial trip. As of October 2000, public bus service (Greyhound) provides two round-trips daily from Portland and Salem via Portland to Grand Ronde. The round-trip fare for one person from Portland to Grand Ronde is \$20.50, from Salem \$37.00.

Rail

Passenger rail has been suggested as a means of reducing traffic through the corridor or as an economic development strategy. However, Fort Hill Lumber Company uses the easterly portion of the existing rail line, Hampton Rail Road, for freight hauling. The rails would require upgrading to handle passenger trains. Additionally, re-construction of the rail line to Valley Junction and Grand Ronde would involve purchase of the vacated rail right-of-way. Although no complete study has been done on the passenger rail service through the project area, the *Yamhill Commuter Rail Study*, January 1998 contains a study of an excursion train to Grand Ronde, concluding that a regular off-peak and weekend service would probably not be justified in the foreseeable future. The study showed the cost of improvements in the tens of millions; operation costs were estimated at \$1,417,000 per year. For these reasons the rail options were not advanced as part of the Build Alternative.

Areas of Critical Concern and Controversial Issues

The following issues and concerns about the proposed project surfaced at meetings of the Steering Committee, the Technical Advisory Committee, open houses and through verbal and written communication from citizens:

- Impacts to existing businesses, residences and farmlands
- Local access to and from ORE 18
- Conformance with Oregon Highway Plan distance requirements between interchanges and accesses
- Local concerns versus statewide concerns

For more detail about issues discussed at open houses, focus groups, and Steering Committee Meetings see the Public Involvement section of this document.

Probable Permit Needs and Planning Actions

More information about permit needs will be available as the project reaches design stage. The following are the probable permits needed and agencies to consult for this project:

- *1999 Oregon Highway Plan (OHP) Spacing Deviations.* The OHP spacing requirements between approach roads and interchanges would not be met in some cases and would require major deviations most likely for the Grand Ronde, Casino/Valley Junction interchanges and the Fort Hill intersection and other interchanges and access points. ODOT would apply for the major deviations.

- ODOT is directed by statute (ORS 824.202)

To achieve uniform and coordinated regulation of railroad-highway crossings and to eliminate crossings at grade wherever possible [and] to control and regulate the construction, alteration, and protection of railroad-highway crossings.

The Build Alternative contains two proposals that would necessitate crossing the railroad owned and operated by Hampton Lumber Company. ODOT or the authority building the road would apply for an order from the Rail Division to cross the railroad. See OAR 741-200-0010 to 741-200-0090 for the application process.

- *Clean Water Act (1972, 1977, 1987).* This act covers the protection of waters of the United States to include wetlands. It establishes various programs such as the National Pollution Discharge Elimination System (NPDES) governing pollution point sources, an indirect source control program, and the 404 Process and permits controlling pollution and filling in wetlands and deep water habitat. ODOT will apply for a Section 404/Removal Fill Permit from U.S. Army Corps of Engineers (USACE) if needed as the proposed projects move into design stage.
- A state fill removal permit from the Division of State Lands will be applied for if needed.
- *National Historic Preservation Act (1971).* This act establishes national policy to identify and protect cultural resources, historic, and archaeological sites. It requires agencies to identify historically significant properties and address impacts. It requires concurrence of the State Historic Preservation Officer and the President's Advisory Council on Historic Places before commencing with actions that may impact significant properties. ODOT is consulting and will continue to consult with the State Historic Preservation Office (SHPO) regarding cultural resources in the project area. See the Cultural Resources and Section 4(f) discussion in this document concerning historical structures and the Historic District of Grand Ronde and Appendix D, State Historic Preservation Office Consultations.
- *Federal Endangered Species Act (1973).* This act requires the protection of federally designated threatened and endangered animal and plant species. Avoidance of taking individuals or jeopardy to populations is required. Agencies are required under Section

7 to consult with appropriate federal resource agencies before taking any action. ODOT has initiated formal consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) concerning listed fish species found in the project area. ODOT has also initiated formal consultation with USFWS regarding the listed bird, wildlife, and plant species. See Appendix C, Natural Resource Consultations.

Transportation Impacts

Existing Conditions

ORE 18 (Salmon River Highway) is classified as a statewide National Highway System freight route highway. The Oregon Transportation Commission recently designated it an expressway. ORE 22 is classified as a statewide highway; it intersects ORE 18 at the unincorporated community of Valley Junction and runs concurrently with ORE 18 to the Wallace Bridge interchange. See Figures 1-1 and 1-2. The project area is approximately 20 miles east of Lincoln City, 50 miles southwest of Portland, and 25 miles west of Salem.

ORE 18 experiences heavy seasonal traffic during the summer months both within and outside of the project area. Drivers travel this route from Portland and the Willamette Valley to the coast for recreational purposes. Summer weekend traffic flows are especially high. Westbound traffic often operates at capacity for an hour or two on Saturdays, but the delay is minimal. Eastbound traffic often operates at capacity for six or seven hours on August Sundays; drivers are delayed considerably. The through traffic volume is often so high that local drivers have difficulty finding adequate gaps in the traffic that allow them to turn left onto the highway.

Capacity: The maximum volume of traffic that the roadway section is able to carry on a sustained basis.

ORE 18 is generally a two-lane highway within the project area. However, there is a center turn lane between A. R. Ford Road and Grand Ronde Road and a westbound passing lane between the Fort Hill Road intersection and the interchange at Wallace Bridge.

The areas of Grand Ronde and Fort Hill are expecting development due to the success of the Spirit Mountain Casino and Resort located south of ORE 18 between Valley Junction and Grand Ronde Road. The Casino is one of the major tourist spots in Oregon and is attracting the development needed to support it in the form of more housing for employees and other support services. Recent development both within and out of the study area has increased traffic on ORE 18 at the expense of safety and driver delay.

1998 Analysis Summary

ODOT's Transportation Analysis Unit studied the highway traffic patterns. Their analysis of the study area indicates that:

- The two-lane portion of ORE 18 located between ORE 22 at Valley Junction and Fort Hill Road is operating at or near capacity.
- The one eastbound lane between Fort Hill Road and Wallace Bridge Interchange is operating at or near capacity.

- The two westbound lanes between Fort Hill Road and Wallace Bridge Interchange are operating at a v/c of 0.27 during the 30th highest hour in the year 1998.
- ORE 18 currently exceeds the maximum acceptable volume-capacity ratio (v/c) standard allowed by the 1999 *Oregon Highway Plan* within the two-lane sections of roadway located between Grand Ronde Road and Wallace Bridge Interchange.
- The left turns from Grand Ronde Road, ORE 22 at Valley Junction, and Fort Hill Road onto ORE 18 exceed capacity.
- Weaving distance is substandard on the eastbound on-ramp to the Wallace Bridge interchange, which increases congestion and the potential for accidents.
- The two intersections of Fort Hill Road and Grand Ronde Road with ORE 18 have a relatively high number of crashes. Anecdotal information exists about near misses and the observations and experiences of local residents and through travelers lead to the perception that this segment of highway is congested and dangerous. See Figures 2-1 and 2-2: Accident Numbers and Locations.

Traffic Volumes

The average daily traffic (ADT) is the total volume of vehicles on the road during an average day. Existing traffic volumes vary along the length of the project area with the highest traffic flow volumes occurring in the eastbound direction between Valley Junction and Wallace Bridge. Average daily traffic volumes for ORE 18 were determined from late September 1997 counts. The traffic volumes are shown in Table 3.

TABLE 3
1997 Traffic Volumes*

MP ORE 18	Location	1997 ADT
14.90	Tillamook-Polk County line	8,400
20.66	West of Fire Hall road	9,300
21.17	West of Grand Ronde Road	10,700
22.96	East of Grand Ronde Road	12,200
23.16	West of Three Rivers Highway (ORE 22)	15,800
23.16	East of Three Rivers Highway (ORE 22)	18,000
23.76	ATR 27-001, 0.7 miles east of Three Rivers Highway	17,900
26.76	West of Willamina Sheridan-Highway (ORE 18 Bus.)	17,500
27.91	East of Willamina-Sheridan Highways (ORE 22)	7,900
29.76	Polk-Yamhill County line	8,000

*From *Draft H. B. Van Duzer Forest Corridor to Steel Bridge Road Corridor Refinement Plan*, 2000, compiled from ODOT's 1998 transportation volume tables

An automatic traffic recorder located 1.13 kilometers (0.7 miles) east of Valley Junction on ORE 18 supplied data for the following traffic volume information:

- The traffic flows on ORE 18 increased 104 % between the years 1983 and 1997 (an average of 7.4% a year).
- In 1997 there was an average of 17,900 vehicles per day crossing the detector loops of the automatic traffic recorder. In 1998 the average was 18,600 vehicles a day, showing an increase of 4.2% for the year.
- The highest travel day in 1997 was Saturday, August 16 with 29,000 vehicles a day.
- The lowest travel day in 1997 was Monday, January 6 with 11,100 vehicles a day.
- On 22 days in 1997 daily traffic volumes exceeded 25,000 vehicles a day. The automatic traffic recorder indicated the 30th highest hour in 1997 was a Sunday in August. The amount of traffic of the 30th highest hour is important. It is the target hour ODOT uses to design projects to efficiently accommodate traffic flows. It is called the design hour.
- Approximately 62% of the 30th highest hour traffic flows are traveling eastbound.

Design Hour:

ODOT designs for traffic conditions at the 30th highest hourly traffic volume of the year. In this case, it is an August Sunday.

Volume to Capacity Ratio

Volume to capacity (v/c) ratio is a measure of roadway congestion. It is calculated by dividing the number of vehicles passing through a section of highway during the peak hour by the capacity of the section. Highway mobility standards are rated by volume to capacity ratios. The *1999 Oregon Highway Plan* calls for a v/c ratio of 0.70 for statewide National Highway System expressways and freight routes in unincorporated communities and rural lands. The section of ORE 18 in the study area fits these categories.

v/c (volume/capacity):

The ratio of the volume of traffic to the capacity of the roadway at any given point.

ODOT calculated v/c ratios at key intersections and points on ORE 18 from the Wallace Bridge interchange to Fire Hall Road. These v/c ratios are shown in Tables 4 and 5. The *1999 Oregon Highway Plan* (OHP) standards require the v/c ratios to be less than 0.70.

TABLE 4
V/C Ratios for Year 1998 Design Hour Traffic at Key Points on ORE 18

Location	Geometry	Traffic Movement	V/C Ratio
West of Grand Ronde Road	Two Lanes	Through	0.66
East of Grand Ronde Road	Two lanes	Through	0.72
West of ORE 22 at Valley Junction	Two lanes	Through	0.91
East of ORE 22 at Valley Junction	Two lanes	Through	1.00
East of Fort Hill Road	One eastbound lane Two westbound lanes	Eastbound through only	0.99
East of Fort Hill Road	One eastbound lane Two westbound lanes	Two westbound through only	0.27

All but two segments of the project area showed v/c ratios exceeding the 0.70 standard. The congestion results in slow speeds on the highway through the area creating a potentially unsafe speed differential. There are long queues and extended peak periods instead of a one-hour peak period. Vehicles are closely spaced, which leaves few acceptable gaps for vehicles turning onto the highway.

Volume to capacity ratios vary according to day of week and direction of travel. The V/C ratios in Table 4 were calculated using year 1998 August Sunday hourly traffic volumes since the 30th highest hourly traffic volumes occurs on an August Sunday. The eastbound direction operated at capacity for more than three hours during an August Sunday in the Year 1998 between the ODOT weigh station and Wallace Bridge interchange. The westbound direction operated under capacity at a v/c ratio of 0.37. In the westbound direction, the additional westbound lane in combination with lower westbound traffic flows decreases the v/c ratio considerably.

TABLE 5
V/C Ratios for Year 1998 Design Hour Volumes at Key Intersections

Intersection	Approach	Movement	V/C
Grand Ronde Road/ORE 18	North Approach	North to East	2.81
	South Approach	South to West	0.14
	West Approach	West to North	0.09
ORE 22/ORE 18 at Valley Junction	North Approach	North to East	2.98
	West Approach	West to North	0.03
Fort Hill Road/ORE 18	North Approach	North to East	1.45
	South Approach	South to West	0.05
	West Approach	West to North	0.07

The left turns from Grand Ronde Road, ORE 22 at Valley Junction, and Fort Hill Road intersections onto ORE 18 exceed capacity (v/c ratio is more than 1.0). Drivers will continue to have unacceptable delays while accessing ORE 18 during peak travel times. Drivers will find shorter and less frequent gaps in the traffic for making turns, increasing the likelihood of a crash.

The v/c ratios for the left turns from ORE 18 to the intersecting roadways are acceptable.

Traffic Speeds

ORE 18, classified as a statewide National Highway System freight route and expressway, is located in a rural environment; it is a 45 to 55-mph facility. The management objective in the *1999 Oregon Highway Plan* for a highway of this kind in a rural area is “to provide for safe and efficient high-speed, continuous-flow operation.” Expressways are meant to provide safe and efficient high speed and high volume traffic movements. Their primary function is to provide for interurban travel and connections to ports and major recreation areas with minimal interruptions. Accesses are controlled. Large speed differentials are discouraged; they can lead to increased crash rates.

Safety

A relatively high number of crashes occur at the Fort Hill, Valley Junction and Grand Ronde intersections. The intersection of Fort Hill Road and ORE 18 was included within the top 10 percent of the State Priority Index System (SPIS), a listing of accident data, until recently. SPIS used a new formulation after 1998, so the comparison to earlier listings is not exact. The Grand Ronde intersection was listed in SPIS in 1992, 1993, and 1994. Crashes also occur along the highway between major intersections. Figures 2-1 and 2-2 show the crash and fatality sites in the project area from 1991 through 1997.

ODOT crash statistics show that between January 1, 1998 and December 31, 1999, 61 crashes were reported on ORE 18 in the study area. As a result of these crashes, 82 people were injured and 10 were killed.

Anecdotal information exists about near misses and the observations and experiences of local residents and through travelers lead to the perception that this segment of highway is congested and dangerous.

Access

Currently, access to the project area of ORE 18 is uncontrolled with major intersections at Grand Ronde, Valley Junction, and Fort Hill. Many other roads and driveways access the highway between the H. B. Van Duzer Forest Corridor at the west boundary and Wallace Bridge at the east end of the project.

Bicycles and Pedestrians

ORE 18 is designated as a shared bicycle route. This means bicyclists share the shoulders of the highway with other highway uses. Pedestrians share the shoulder as well—no sidewalks or trails exist for walkers. Excluding bridges, more than half of the shoulders along the project area of ORE 18 are 6 feet or wider. The remaining shoulders are 4 feet to 6 feet wide. Because of the volume of traffic and high speeds, crossing from one side of the highway to

the other is sometimes difficult for bicyclists and pedestrians. Their easiest crossing is at the Casino interchange underpass.

Polk County, in its Transportation System Plan, designates the South Yamhill River Road as a shared bicycle route. Although narrow, motor vehicle use is low and views are scenic.

Impacts of the Build Alternative

ODOT traffic studies for this 20-year plan began in 1998 and the end date for traffic analysis projections is 2018.

Four-Lane Highway with Non-Traversable Median

Widening the highway and constructing non-traversable medians would improve both through and local traffic flows. This is expected to reduce fatalities from head-on collisions. The non-traversable median would increase safety by reducing the number of conflict points along the highway. Widening the highway would provide passing opportunities for an ever-increasing number of vehicles using the highway at different speeds. A four-lane highway in conjunction with the other elements of the Build Alternative would provide a volume to capacity ratio of 0.65, through 2018, which meets OHP requirements.

Interchanges at Grand Ronde and Casino/Valley Junction and a Realigned Intersection at Fort Hill

Because most of the non-fatal accidents on ORE 18 are associated with vehicles turning to or from other roads, the major intersections would be realigned or replaced with interchanges for safety reasons. The proposed interchanges would improve local access to ORE 18. Drivers could access the highway via interchanges reached by access and local service roads rather than waiting at one of the many existing local access points for a gap in the traffic.

Grand Ronde Interchange, Figure 4-3

An overpass would allow local residents to travel safely by vehicle, bicycle or on foot through the community on Grand Ronde Road without having to travel on ORE 18. This would be especially helpful for children attending the Grand Ronde Elementary School on the north side of the highway. Heavy traffic coming from the community of Grand Ronde would turn right from Grand Ronde Road to a loop connecting to eastbound ORE 18. Heavy traffic flows from the east on ORE 18 would turn right from the westbound on/off ramps to travel north on Grand Ronde Road.

Valley Junction/Casino Interchange, Figure 4-5

This interchange would be located approximately halfway between the Spirit Mountain Casino interchange and the existing ORE 22/ORE18 intersection at Valley Junction. ORE 22 would cross over ORE 18 and connect the Casino property to the interchange. The Casino's existing interchange access to ORE 18 would be closed, but the underpass would remain open to access property on the north side of ORE 18. The existing intersection at Highways 18 and 22 would be closed. The proposed interchange would handle both Casino and ORE 22 traffic flows adequately. Casino traffic would be able to access ORE 18 safely and efficiently. Constructing a single interchange between the Casino and Valley Junction would

improve safety by eliminating the potential weaving problem on ORE 18 that is introduced when two interchanges are too close together. Combining these two interchanges comes closer to meeting the interchange spacing standards of the *1999 Oregon Highway Plan*.

Fort Hill Realigned Intersection, Figure 4-6

According to 1998 statistics, approximately 32 vehicles/hour traveling southbound on Fort Hill Road turned east on ORE 18 during the 30th highest hour. The v/c ratio for this movement is 1.45. These drivers experience unacceptable delays while waiting for acceptable gaps on ORE 18. In the year 2018 approximately 41 vehicles/hour or 540 vehicles/day would travel southbound on Fort Hill Road and turn east onto ORE 18.

Phase 1 of the Build Alternative at Fort Hill includes two projects identified in the *Statewide Transportation Improvement Program* (STIP). These would improve safety by closing Fort Hill Road and the service station and restaurant accesses, realigning the intersection and providing a wrap-around access behind the service station and restaurant. This realignment would improve safety by improving the sight distance for traffic entering ORE 18 from Fort Hill Road and from South Yamhill River Road. Realigning Fort Hill Road east of the mill would increase safety and prevent potential safety hazards by moving traffic around the sawmill rather than through it.

Controlled Accesses

The Build Alternative would control access along the highway with interchanges at Grand Ronde and Valley Junction, a realigned intersection at Fort Hill, and by consolidating private approach roads and constructing local service roads with accesses to ORE 18 at several intersections.

Limiting the number of accesses to and from ORE 18 would improve safety by reducing the number of conflict points along the highway. Most local traffic could access ORE 18 at the proposed interchanges and at several intersections using local service roads without having to travel long distances out-of-direction. Some local access to ORE 18 would be right-in and right-out only.

Impacts of the No Build Alternative

Traffic analysis of the impacts of the No Build Alternative shows projections of volume to capacity ratios that would exceed the *1999 Oregon Highway Plan* standard of 0.70.

Table 6 shows V/C ratios for the year 1998 August Sunday hourly traffic volumes at key locations on ORE 18.

The eastbound direction operated at capacity for more than three hours during an August Sunday in the Year 1997, between the ODOT Weigh Station and Wallace Bridge Interchange. The section of ORE 18 between Grand Ronde Road and Fort Hill Road exceeds the maximum acceptable V/C standard of 0.70. The single eastbound lane on ORE 18 between Fort Hill Road and Wallace Bridge Interchange also exceeds operating standards.

The congestion results in slow speeds on the highway through the area creating an unsafe speed differential. There are long queues and extended peak periods instead of a one-hour

peak period. Vehicles are closely spaced which leaves few acceptable and safe gaps for vehicles turning onto the highway.

TABLE 6
V/C Ratios for Year 1998 No Build August Sunday Hourly Traffic Flows At Key Locations On ORE 18

Location	Geometry	Traffic Movement	V/C Ratio
West of Grand Ronde Road	Two lanes	Through	0.66
East of Grand Ronde Road	Two lanes	Through	0.72
West of ORE 22	Two lanes	Through	0.91
East of ORE 22	Two lanes	Through	1.00
East of Fort Hill Road	One eastbound, two westbound	Eastbound through only	0.99
East of Fort Hill Road	One eastbound, two westbound	Two westbound through only	0.27

Table 7 shows the projected hourly traffic for the design hour in 2008 at key locations on ORE 18. Because the analysis of the existing volumes shows failing conditions, ODOT decided a ten-year future would provide adequate trend information. The v/c ratios are provided during the 30th highest hour, the design hour, ten years from 1998 (year 2008).

TABLE 7
V/C Ratios for Year 2008* No Build August Sunday Hourly Traffic Flows At Key Locations On ORE 18

Location	Geometry	Traffic Movement	V/C Ratio
West of Grand Ronde Road	Two lanes	Through	0.84
East of Grand Ronde Road	Two lanes	Through	0.94
West of ORE 22 at Valley Junction	Two lanes	Through	1.13
East of ORE 22 at Valley Junction	Two lanes	Through	1.24
East of Fort Hill Road	One eastbound, two westbound	Eastbound through only	1.22
East of Fort Hill Road	One eastbound, two westbound	Two westbound through only	0.34

*V/C ratios were calculated for 2008, rather than for the design year 2018, because a 10-year projection would provide adequate trend information

The v/c ratios for the through traffic on ORE 18 at all key locations would exceed 1.0 in the year 2008; this indicates more demand to use the transportation facility than capacity available. As a result, there will be long queues and extended peak periods instead of a one-hour peak.

V/C ratios were also tabulated for the year 2008 for the key No Build unsignalized intersections along ORE 18. These values are shown in Table 8.

TABLE 8
V/C Ratios for Year 2008* No Build August Sunday Hourly Traffic Volumes At Key Intersections on ORE 18

Intersection	Location	Traffic Movement	V/C Ratio
Grand Ronde Road/ORE 18	North Approach	North to East	10.62
	South Approach	South to West	0.50
	West Approach	West to North	0.14
ORE 22/ORE 18 at Valley Junction	North Approach	North to East	6.98
	West Approach	West to North	0.04
Fort Hill Road/ORE 18	North Approach	North to East	4.50
	South Approach	South to West	1.24
	West Approach	West to North	0.11

*V/C ratios were calculated for 2008, rather than for the design year 2018, because a 10-year projection would provide adequate trend information

The ability of vehicles to turn left onto ORE 18 from Grand Ronde Road, ORE 22 at Valley Junction and Fort Hill Road intersections will continue to deteriorate. This is due to both higher traffic volumes over longer peak periods and drivers spaced more closely together on ORE 18. This will create both fewer and smaller gaps for drivers to access ORE 18.

Projected traffic flows for the project area indicate growing volumes of traffic. ODOT based the following traffic data on the information contained in the Traffic Volume Tables (TVT), a yearly ODOT publication showing traffic volumes at key locations on all the state highways. A linear regression analysis using data from the TVTs and a Valley Junction automatic traffic recorder (ATR) was used to determine the growth rates for nine locations. The 20-year growth factor for each location is shown in the third column of Table 9.

TABLE 9
Hose Count Locations and 20-Year Growth Factor

M.P. (ORE18)	Location	20-year Growth Factor* (percent)
14.90	Tillamook-Polk County. Line	1.37
20.66	West of Fire Hall Road	1.32
21.17	West of Grand Ronde Road	1.50
22.96	East of Grand Ronde Road	1.47
23.16	West of ORE22	1.66
23.16	East of ORE22	1.59
23.76**	ATR 27-001 (0.70 miles east of ORE22)	1.50
26.76	West ORE18 (Business)	1.46
27.91	East of ORE 18 (Business)	1.47
29.76	Polk-Yamhill County Line	1.42

* Applying the 20-year growth factor to the Year 1998 traffic volumes will estimate the Year 2018 traffic volumes

**Valley Junction ATR 27-001 (automatic traffic recorder)

The traffic flows on ORE 18 increased 104 percent between the years 1983 and 1997 and are projected to continue increasing. The traffic flows have increased approximately 44 percent in the last three years. The 20-year growth factor for the automatic traffic recorder is 1.50 percent. The year 2018 projected average daily traffic for the automatic traffic recorder site is 27,500 vehicles per day. In addition to an increase of through traffic, future development located within the project area will add to the volume of traffic on ORE 18.

There is no historical growth data for the roadways intersecting with ORE 18. To show growth on these roads, ODOT calculated future traffic volumes based on future development estimations. The additional traffic volumes due to development were added to the base year volumes to produce the future design year volumes. Table 10 shows the future estimated development provided by the Mid-Willamette Valley Council of Governments.

TABLE 10
Expected and Estimated Development

Location	Estimated Development
A. R. Ford Road (north)	10 acres of general light industrial
Grand Ronde Road	365 dwelling units
	10,000 sq. ft. supermarket
	96 unit RV park
	50 more dwelling units
	10,000 sq. ft. shopping center
Casino	100 unit hotel and Casino expansion
ORE 22	Interpretive center—Fort Yamhill
South of ORE 22	High use commercial
Fort Hill Road	High use commercial
All connecting roadways*	Some additional dwelling units

*No details available

If the No Build Alternative is selected, traffic would increase on this section of ORE 18 and exceed the 1999 Oregon Highway Plan standard of a volume to capacity ratio of 0.70. The volume of traffic would exceed the capacity of the highway. Highway congestion would increase. Drivers would encounter slow-moving traffic, long lines, jams, and increasingly smaller gaps for turns.

The complete transportation analysis for this project is contained in the *Draft Van Duzer to Willamina Interchange Refinement Study, Polk County, Salmon River Hwy (ORE 18) MP 18.79 to MP 28.21*, March 2000, Prepared by Harlan L. Nale, and Roxann Rivord.

Right-of-Way Impacts

Note: All right-of-way information in this section is based on preliminary location designs and is subject to change. As the project is refined some right-of-way requirements may be deleted and others added. The right-of-way information is presented to provide a general idea of the project's impacts. ODOT staff will identify specific right-of-way needs and contact individual landowners during the process of final design.

Acquisition Program

The Oregon Department of Transportation's land acquisition program is described in the brochure "Acquiring Land for Highways and Public Projects." A copy of this brochure is included in Appendix A and is available at the following address:

Region 2 Right-of-Way Office
455 Airport Road SE, Building A
Salem, OR 97301-5397
Phone: 503/986-2601

Occupants displaced by a highway project will be eligible for relocation benefits and assistance under the provisions of the Oregon Department of Transportation Relocation Assistance Program. The brochure, "Moving Because of the Highway or Public Project" included in Appendix A, outlines these provisions.

Acquisition and relocation assistance procedures are governed by the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 as amended, Federal Law 91.646, the code of Federal Regulations (CFR 49, Part 24), and Oregon Revised Statutes (ORS) 281.045 to 281.105). Oregon Department of Transportation policy requires that displaced persons receive fair and humane treatment and not suffer unnecessarily as a result of a highway project.

Owners of properties that are needed to provide right-of-way in order to implement the Build Alternative for the H. B. Van Duzer Forest Corridor-Steel Bridge Road project would be entitled to just compensation for land and improvements. Just compensation includes the estimated value of all land and improvements within the area needed for the project. If only a portion of the property is acquired, just compensation would include any legally compensable, measurable loss in value to the remaining property due to the partial acquisition. In addition, an offer would be made to purchase any remaining property determined to have no remaining economic value to the owner.

See Appendix A for ORS (Oregon Revised Statute) 374.312, Section 3 containing information about compensation or relief for access modifications specifically relating to property required for access and frontage roads. Also see OAR (Oregon Administrative Rule) 734-051-0520, Offer of Remedies, also contained in Appendix A.

Impacts of the Build Alternative

Implementation of the Build Alternative would require acquisition of approximately 39 to 40 hectares (97 to 98 acres) of land. In addition to the land, ODOT would likely need to displace approximately 7 to 8 residences, 3 to 4 businesses, 4 to 5 community facilities, and impact portions of 8 utilities in order to implement the Build Alternative.

These amounts of land and numbers of residences, businesses, facilities and utilities are approximate. As each phase moves toward construction, design detail will become available that will allow for development of accurate numbers.

Table 11 contains the best estimate of right-of-way land acquisitions at this time. See Figures 3-1 and 3-2 and Figures 4-1 to 4-10 for proposed locations of road widening, interchange construction, intersection realignment, consolidation of local accesses, and construction of local service roads.

The figures in Table 11 are based on location design estimates. A hectare is a metric unit equal to 2.471 acres.

TABLE 11
Build Alternative—Land Needed for Right of-Way

Highway Segment	Total Hectares	Total Acres
H. B. Van Duzer Forest Corridor to Grand Ronde Road		
Local access road, A. R. Ford-Fire Hall Road	1.4	3.5
Local access road, Fire Hall to Andy Riggs Road	0.6	1.5
Local access road, South Street extended west	2.6	6.4
Grand Ronde interchange	2.7	6.7
Highway widening	4.0	9.9
Grand Ronde Road to Valley Junction		
Jahn Road intersection realignment	0.2	.5
ORE 22 (Three Rivers Highway) realignment	2.2	5.4
Casino/Valley Junction interchange	3.5	8.6
Highway widening	5.5	13.6
Valley Junction to Fort Hill		
Local service roads at Rowell Creek	0.8	2.0
Highway widening	2.6	6.4
Fort Hill realigned intersection	0.9	2.2
Fort Hill Road realigned east of mill	1.4	3.5
Fort Hill to Wallace Bridge		
Local service road	8.8	21.7
Eastbound and westbound scale sites	0.4	1.0
Wallace Bridge to Steel Bridge Road		
Highway widening	2.0	4.9
ORE 22 Improvements		
Total Hectares/Acres	39.6	97.8

Residences

Approximately 7 to 8 residences would be displaced for right-of-way: 3 to 4 for construction of the Grand Ronde interchange and 4 for the construction of the Casino/Valley Junction interchange. See Figures 21-1 to 21-2 for residences, businesses, and community facilities likely to be displaced.

Businesses

Approximately 3 to 4 businesses would be acquired, for right-of-way for construction of four lanes between the Grand Ronde interchange and the Casino. These most likely are:

- Grand Ronde Shopping Center
- Barkley's Fast Cash
- Ken's Gems (also counted above as a residential displacement)
- Antique Shop (Bonanza)

A small strip of land for highway widening at other locations along the corridor would likely be acquired from the following businesses:

- Fort Hill Lumber
- Littlejohn Logging
- H. R. Jones Veneer
- Erickson Hardwood Company

Community Facilities

The following community facilities would be displaced and relocated:

- Grand Ronde Sanitary District Office
- Grand Ronde Community Water Association Office
- Grand Ronde Substation of the Willamina Fire District
- Grand Ronde Post Office
- Sprint telephone switching station (possibly)

A small portion of land may need to be acquired for right-of-way from the Grand Ronde Elementary School³ and the Seventh Day Adventist Church and School for road widening.

Utilities

The following 8 utility companies or agencies have facilities that would be impacted:

- The Grand Ronde Community Water Association: The water system line would be impacted by all phases of the project. Several lines or portions of lines would require relocation.
- Grand Ronde Sanitary District: Polk County manages the Grand Ronde Sanitary District. The extent of the impacts varies. It appears the Grand Ronde interchange and highway-

³ The portion of land removed from the elementary school is not part of the playground area. Therefore, there are no 4(f) considerations associated with this impact.

widening projects would require closure, relocation, and rerouting of approximately 1.2 kilometers (4,000 feet) of sewer laterals and removal and relocation of the office.

- **Sprint (United Telephone of the Northwest):** The telephone system uses overhead lines attached to electrical power poles. These lines would require relocation as part of any widening work. The switching station in Grand Ronde would possibly require relocation when the interchange is constructed.
- **US West Communications:** US West manages buried fiber optic lines along the active and abandoned rail right-of-way. Construction of any roads on or near the rail right-of-ways would require coordination with US West to assure the fiber optic lines are moved correctly and without damage.
- **Pacific Gas and Electric:** Pacific Gas and Electric provides electrical power throughout the project vicinity. The substation located adjacent to Grand Ronde Road would not require removal or relocation, although lines leading to and from it could require relocation.
- **Northwest Natural Gas:** A pipeline owned by Northwest Natural Gas runs through the project vicinity, provides gas transmission to the coastal cities and serves Willamina, Grand Ronde and businesses and residences along the corridor. Construction in all phases of the Build Alternative would impact some portion of the natural gas system. Generally, the construction work would require relocating these lines.
- **Bonneville Power:** An electrical tower in the Valley Junction area and one crossing location between Fort Hill and Wallace Bridge may be impacted during construction of the Build Alternative.
- **Hampton Rail Road** would be crossed by the realigned Fort Hill Road and by the local service road between Fort Hill and Wallace Bridge.

Accesses

Approximately 14 to 15 hectares (34 to 37 acres) would be acquired for right-of-way for local service roads described above in Table 11.

Land needed for private property access consolidation and construction has not yet been determined. Approximately 100 private property approach roads would be limited to right-in and right-out turns or closed and consolidated to access roads and local service roads leading to intersections or to the Grand Ronde and Casino/Valley Junction interchanges. When the various phases of the project come to the design stage, property needed to be acquired for consolidation and construction of access points would be identified. See Figures 4-1 to 4-10 for proposed access closures, intersections, interchanges, and local service roads.

Impacts of the No Build Alternative

The No Build Alternative would not require acquisition of any lands or displacement of any residences, businesses, facilities, or utilities.

Mitigation

Measures to minimize impacts to displaced residents and businesses are described above in the discussion of the Acquisition Program. As of August 10, 2002, the *Sheridan Sun* listed three homes for sale in the area with prices ranging between \$74,000 to \$131,500. In addition, two manufactured homes, one farm acreage, and one lot are for sale; one lot, two apartments in Willamina, one apartment in Sheridan, one duplex in Willamina, and three homes in the area are for rent. Land zoned for commercial use in the corridor is located at Grand Ronde, Valley Junction, and Fort Hill; displaced business could relocate within these areas. ODOT would assist displaced community facilities to relocate. These are most likely the Grand Ronde Post Office, the Grand Ronde Substation of the Willamina Fire District, the Grand Ronde Community Water Association, and the Grand Ronde Sanitary District office.

Figure 21-1
Buildings Displaced
B&W
8.5" x 11"
Front

Figure 21-1
Buildings Displaced
B&W
8.5" x 11"
Back

Figure 21-2
Buildings Displaced
B&W
8.5" x 11"
Front

Figure 21-2
Buildings Displaced
B&W
8.5" x 11"
Back

Business, Community Facility, Neighborhood and Residential Impacts

Study Boundaries

The study area boundaries for the socioeconomic analysis are the H. B. Van Duzer Forest Corridor (MP 18.79) on the west and the intersection of ORE 18 and Steel Bridge Road (MP 28.21) on the east. The South Yamhill River generally defines the southern limits. The northern limit is close to ORE 18 and includes valley bottom and foothills and the area bordered by ORE 18 and ORE 22 (Three Rivers Highway) between Valley Junction and Grand Ronde Agency. See Figures 1-1,1-2, 3-1 and 3-2.

Direct and indirect socioeconomic impacts of the Build Alternative occur mainly within the project vicinity. Cumulative effects may be further reaching in geographic extent and encompass local and regional effects. Regional effects would include parts of the northwest section of Polk County to the Tillamook County line to the west and into Yamhill County including Willamina and as far east as Sheridan.

Sources of Socioeconomic and Project-Related Data

The following agencies provided socioeconomic and project-related data:

- Polk County Planning Department
- Oregon Department of Transportation
- Oregon Office of Economic Analysis
- Mid-Willamette Valley Council of Governments
- Confederated Tribes of the Grand Ronde
- Spirit Mountain Development Corporation

The *Draft Willamina-Grand Ronde Corridor Refinement Plan* (July 1999)⁴ supplied most of the information used to prepare this section. The draft plan's Appendix B contains a list of supporting documents and data. Extensive information was also supplied by the *Grand Ronde-Willamina Regional Problem Solving Project Final Report* (June 1999). Conversations with business managers and owners along with reconnaissance of residences, businesses, public facilities, and utilities in the project vicinity provided additional information.

Existing Conditions and Trends

ORE 18 is a principal highway serving as a primary route for travel between the northern Willamette Valley and the central Oregon coast. It is part of the National Highway System

⁴ The final version of this report was renamed as the *H.B. Van Duzer Forest Corridor to Steel Bridge Road Corridor Refinement Plan*.

and classified as a statewide freight highway and an expressway. The highway cross section varies considerably in width, number of lanes and right-of-way throughout the project area.

Beginning at the west end, the 15.1-kilometer (9.4-mile) highway corridor passes through the communities of Grand Ronde, Valley Junction, and Fort Hill. The city of Willamina lies east and north of the project area. Grand Ronde is an urban unincorporated community and Valley Junction and Fort Hill are rural service centers. The area is generally rural. A major tourist destination, Spirit Mountain Casino and Resort, is located between Valley Junction and Grand Ronde. In the future, the State Department of Parks and Recreation plans to develop a park at the site of historic Fort Yamhill located northwest of Fort Hill.

Social

The population research conducted by the Regional Problem Solving Committee (RPS) includes an expectation that Willamina's population of 1,810 (1998 Portland State University estimate) will grow at a 2 per cent rate resulting in a population of approximately 2,820 in 2018. The rate of population increase in the unincorporated areas will slowly decline to 1.35 per cent and level off. By the year 2018 the unincorporated population is expected to be approximately 4,570. These figures do not include the population of the Confederated Tribes of the Grand Ronde, which is expected to reach slightly over 665 people living in the Grand Ronde area during this period. The slower growth rate in the unincorporated area is probable because of less available land and insufficient public facilities resulting in fewer permit approvals.

General social groups considered in this environmental assessment include minorities, elderly, disabled and low income. Native Americans are the main minority group in this area.

Household size is expected to continue at 2.6 persons per dwelling unit within Willamina. The number will decline in the remainder of the area from 2.8 to 2.7 as tribal housing (particularly the elder housing units) with their anticipated lower household size, are added to the overall household statistics.

Economic

Traditionally, people in this area have worked in the wood products industry; however, this is changing as substantial growth occurs in the service and retail sectors (also a state and national trend). In this area, much of the growth is associated with the Spirit Mountain Casino and Resort, the largest employer in Polk County with nearly 1,500 employees. Hampton Lumber employs approximately 250 people in its mills located at Willamina and Fort Hill.

At this time the Spirit Mountain Casino and Resort is the main business in the project area that is a destination for tourists. Several other businesses are local destinations – the mills for employees and deliveries, the gas station and restaurant at Fort Hill, the grocery stores (the Country Store between Valley Junction and Fort Hill, the Shopping Center at Grand Ronde and Seaview Market west of Grand Ronde), the car sales lot, Berry Creek, towing services, and Jim's Trading Post. These businesses also rely on through traffic.

Housing units in Willamina will probably increase from an estimated 688 (1995) to approximately 1,070 by 2018. This is well under the total number of available units estimated in the Regional Problem Solving Buildable Lands Inventory. An estimated 467 new non-tribal rural housing units would be needed to accommodate the general population growth; 325 units would meet tribal needs (*RPS Willamina-Grand Ronde Draft Report*).

Impacts of the Build Alternative

Social Effects

Social effects analyzed in this report include direct effects, such as displacement or disruption to residences, social groups, neighborhoods, community cohesion, or community facilities. Indirect and cumulative social effects may include, but are not limited to changes in travel patterns and pressure for changes in development patterns. This analysis provides an overview of changes that reasonably may be expected to occur. As the project progresses and the designs for the highway improvements are available, details of the impacts to social and economic resources will be evaluated and disclosed.

Residential Impacts

Within the 20-year project period, as construction progresses, approximately 7 to 8 residences would be acquired in order to widen the highway, realign intersections and build interchanges. All are located at the proposed sites for the Grand Ronde and Casino/Valley Junction interchanges.

The largest impact to residences would be the change of access to ORE 18. Rather than direct access to the highway, many residences would have driveways consolidated to one access point with right-in right-out turns only, or they would be connected to local service roads leading to intersections or the major interchanges.

Effects on General Social Groups

Preliminary analysis indicates that the Build Alternative would not disproportionately affect members of general social groups by displacement or acquisitions. The Build Alternative directly affects a range of low to middle income residents.

Changes in Community or Neighborhood Cohesion

The property acquisitions and displacements, access closures and consolidation, and construction of local service roads are expected to result in both positive and negative changes in community cohesion. Positive changes could include:

- Improved traffic flow, reduced vehicle congestion, and improved pedestrian and bicycle crossings at interchanges may allow for improved local access and community cohesion, especially in the Grand Ronde area.
- The Fire Station and Post Office would be relocated. These also help provide an identity to the rural community of Grand Ronde. Their relocation site could add to community cohesion.

- Construction of local access and local service roads would encourage cohesiveness by allowing easier and safer access between neighbors and service areas by providing routes that avoid travel on or across ORE 18. This is especially advantageous for young people and others who walk or ride bikes.

Although not a part of this project, rezoning recommended by the Regional Problem Solving Committee provides a potential for displaced businesses and services to relocate close to each other and potentially to move the “Grand Ronde downtown core” close to the tribe’s main service area. In conjunction with relocating displacements resulting from this project, the rezoning may create a more centralized Grand Ronde community. There is some opposition to this suggestion.

Negative changes could include:

- Displacement of businesses (Bonanza and Grand Ronde Shopping Center) on the north side of the Grand Ronde intersection could result in the loss of identity of Grand Ronde as a focal point for the community.
- At locations where there is not an interchange, the increased number of lanes may discourage pedestrian and bicycle travel and discourage community cohesion.
- Because the Casino/Valley Junction interchange would be constructed before the Grande Ronde interchange, some Grand Ronde drivers might go “the back way” (ORE 22 from Grand Ronde Agency to Valley Junction) on busy weekends to enter ORE 18. For some people this may become a permanent route of travel and they would by-pass the main center of Grand Ronde, possibly reducing business and community cohesion.
- The Fire Station and Post Office would be relocated. These also help provide an identity to the rural community of Grand Ronde. Depending on their relocation site, their displacement could negatively affect community cohesiveness.

Effect on Community Facilities

Community facilities within the project area are the library, schools, churches, sewer and water districts, telephone company, fire department, post office and the utilities – water, electric, gas, sewer, fiber optic, telephone lines, and rail. The exact number and types of facilities will be clearer when preliminary designs are completed for individual projects.

The proposed Grand Ronde Interchange is the only portion of the project expected to impact community facilities, and it is expected to impact the seven community facilities listed below in Table 12. See Figures 21-1 to 21-2 for locations of community facilities likely to be displaced, as well as residences and businesses.

TABLE 12
Community Facilities Likely to Be Impacted by the Build Alternative

Facility	Impact	Access
Seventh Day Adventist Church and School	Some land needed for right-of-way	Access consolidated and shared with neighbors
Grand Ronde Elementary School	Some land may be needed for right-of-way next to Grand Ronde Road	Safer crossing at ORE 18 with the construction of the Grand Ronde interchange
Grand Ronde Sanitary District Office	Relocate	
Grand Ronde Post Office	Relocate	
Grand Ronde Substation of the Willamina Fire District	Relocate	
Grand Ronde Community Water Association Office	Relocate	
Sprint Telephone Switching Station	Possibly relocate	

The Steering Committee and citizens developed the Grand Ronde portion of this alternative to avoid direct impacts on the library (historic Bank of Grand Ronde) and other structures in the area that have historic value to residents and may be eligible for the National Register of Historic Places.

In addition to displacing several facility buildings, implementing the Build Alternative would temporarily impact utility lines. These impacts are addressed on pages 115 and 116.

Environmental Justice

Executive Order 12898 (Environmental Justice) requires agencies to evaluate and avoid or mitigate programs and actions that disproportionately adversely impact or negatively affect minority and other protected classes, and identify methods to better communicate with these groups on proposed actions.

The headquarters for The Confederated Tribes of the Grand Ronde is located in Grand Ronde and minority residents make up a relatively large portion of the project vicinity population. Tribal representatives serve on the Steering Committee for the H. B. Van Duzer to Steel Bridge Road refinement plan. Because a large number of Native Americans live in the Grand Ronde area, if the project were built today, one might expect them to be a minority disproportionately affected by the project. There are no other minorities that would appear to be disproportionately impacted by the project. However, many of the individual projects within the corridor may be constructed far in the future. Impacts to Native Americans and other minorities will be analyzed for each project as it is advanced.

Direct Impacts

Several residences (7 to 8) would be displaced. These households are non-minority with incomes estimated to be low to middle.

Secondary Impacts

Displacing the shopping center in Grand Ronde may impact low-income people more than other groups because those people may not have transportation to travel out of the community for convenience items including some groceries now offered at the Grand Ronde shopping center.

Cumulative Impacts

Currently, no major transportation activities independent of this proposed action are proposed within the study area. It is assumed that ongoing commercial and/or industrial developments as sanctioned under Polk County's Comprehensive Plan will occur over the lifetime of this proposed action. The majority of land in the area of the proposed projects is zoned for agricultural or timber uses and is not likely to be developed.

Therefore, no cumulative impacts are expected and the direct and secondary impacts described above address the likely full extent of social impacts associated with the projects.

Economic Effects

Economic effects of the Build Alternative include changes in the local economy and effects on existing highway-related businesses and business areas. Economic implications of implementing the Build Alternative may include, but would not be limited to effects on employment, consumer spending, personal income, business opportunities and government tax opportunities.

Direct economic effects include displacement of businesses, employment, and changes in property tax revenues as a result of ORE 18 and 22 improvements. Secondary and cumulative impacts would include changes to business and employment due to changes in through traffic and commuter traffic in the project area and extending to the region around it.

Through Traffic

Direct Impacts. The proposed Build Alternative is expected to reduce travel times and congestion for sections of ORE 18 and ORE 22 and improve ease and safety of access to and from the highway. The Build Alternative would directly benefit and expedite regional through traffic, especially tourist and commercial vehicles. Increased ease of travel may encourage additional through traffic and may benefit regional and local businesses that rely on through traffic. For example, gas stations and businesses located at interchanges, median breaks, and right-in and right-out accesses may benefit from improved highway access management and through traffic.

Secondary Impacts. Increases in through traffic volumes may encourage new commercial development, particularly in areas that had access difficulties prior to the improvements.

Commuter Traffic

Direct Impacts. The Build Alternative would allow more traffic to travel the highway and either maintain or even somewhat reduce commute times.

Secondary Impacts. Vehicular travel projections indicate ORE 18 would have the highest traffic volumes in the region in 2018. Volumes on ORE 22, ORE 18 Business, Grand Ronde

Road, A. R. Ford and Fort Hill Road would also increase, but would be low compared to ORE 18. Some weekend traffic volumes currently encountered may spill over to the weekdays, thus increasing conflicts with local commuter traffic.

Employment Effects

Employment effects addressed in this section are associated with business displacements and increases in employment resulting directly or indirectly from construction of improvements to ORE 18.

Direct Impacts. Displacement of employers – businesses and community facilities – could cause temporary or longer-term disruption to jobs, loss of jobs, or loss of work time. The largest employer in the area, Spirit Mountain Casino and Resort will not be displaced by the project. The second largest employer is Hampton Lumber with two mills, one at Fort Hill and one at the Wallace Bridge interchange. Neither will be displaced by the proposed project. Access to the mill at Fort Hill would be improved and the county road would no longer bisect the mill property.

Implementation of the Build Alternative would result in purchase for right-of-way of businesses and facilities such as Grand Ronde Shopping Center and Barkley's Fast Cash, Ken's Gems, the Bonanza Antique Shop, Sprint Switching Station (possibly), Grand Ronde Community Water Association office, Grand Ronde Post Office, Grand Ronde Sanitary District office, and the Grand Ronde Substation of the Willamina Fire District. These businesses and facilities employ relatively small numbers of people. See Figures 21-1 to 21-2 for locations of the businesses and facilities likely to be displaced.

Secondary Impacts. If the displaced businesses and community facilities relocate within the area, no direct impacts to employment would occur since the jobs would remain in the community. If they reopen outside the area or do not reopen, the local economy will be marginally affected over the short term due to lost jobs, incomes, and tax revenues. The Spirit Mountain Casino and Resort usually has a large number of job openings and its operation is growing; it could provide relief for some job losses.

Construction-Generated Employment

Direct Impacts. The estimated cost of project construction is approximately \$50 million. ODOT estimates that 15 jobs are created from project construction for every \$1 million of highway construction expenditure. Using this ratio, the resulting employment would be 750 new jobs directly attributable to project construction expenditures. However, this work is phased over a twenty-year period with roughly equal construction expenditures for each of the phases. A new phase is scheduled approximately every two years so there would be 120 new jobs created during each phase. In yearly increments, there would be 60 new jobs spread over 20 years. This spreads out over time benefits of the construction jobs, even though jobs will be temporary for the life of construction.

Secondary Impacts. Secondary employment effects would include employment by businesses providing goods and services to the project. Induced effects would include additional purchases by households due to project-related employment income. The long-term phasing of the work also creates a sustained demand on some local businesses. Gas

stations, restaurants, convenience stores, and similar establishments would realize business opportunities during the construction.

Property Tax Revenues

Impacts on tax revenues cannot be accurately estimated at this time because the projects have not reached the design stage that would allow identification of required right-of-way acquisitions. Also, impacts to tax revenue could vary between now and the time of acquisition if property values or land uses change.

Direct Impacts. Property tax loss would be minimal because of the low tax rates and relatively small amount of land impacted. The project's direct effect on property tax revenue is based on the amount of revenue lost, as right-of-way properties acquired by ODOT would become tax-exempt. An estimate of the short-term tax lost from removal of several businesses is under \$5,000.

Secondary Impacts. Development of new businesses may generate new revenues. Changing accesses may also result in less traffic and fewer customers for existing businesses.

Effects on Existing Highway-Related Businesses and Business Areas

Implementing the Build Alternative would impact two existing business areas, Fort Hill and Grand Ronde. Project construction would directly impact the commercial areas along ORE 18, and access management and change in traffic patterns would result in secondary and cumulative impacts.

Direct Impacts. Businesses would experience some combination of both beneficial and adverse impacts from the proposed highway projects. Adverse effects (for example, increased noise and less direct access) could result from the construction. These are discussed in the section "Construction and Staging" on page 233. More beneficial long-term direct impacts would extend past the construction work. Effects such as changes in travel patterns for local and through traffic and reduced congestion would affect businesses for an indefinite period of time. Most businesses would benefit from improved safety and reduced congestion.

Secondary Impacts. Access management would be implemented as part of the Build Alternative. It would include access closure and consolidation. Private property access closures would reduce the number of conflict points on the highway, improving safety and traffic flow.

The access closure and consolidation strategy could impact approximately 100 approach roads to ORE 18 (farm fields, residences, and businesses). Some would be served by local access roads while others would be right-in and right-out with median breaks at various locations, including A. R. Ford, Fire Hall, Jahn, and Rowell Creek Roads (at least initially, until the entire project is completed). Although some business owners expect restrictions to access to be detrimental to their businesses, restrictions may, in the longer-term, help their businesses: the decreased congestion resulting from the overall project will allow travelers easier access on and off the facility. The congestion of the No-Build Alternative would discourage travelers from departing the roadway to visit existing businesses. These impacts will be specifically addressed for individual projects as they are developed.

Overall, increased safety, revised access and traffic flow, plus decreased congestion provided by approach road closures, could draw additional customers to some highway-related businesses. The desirability of the project area would likely increase, providing greater value to existing businesses and opportunity for more intensive commercial development than might otherwise occur. Interest in additional commercial development would be strongest at interchanges, designated median breaks and intersections on the highway.

Over time, additional development and redevelopment activity would favor businesses that can position themselves to take the greatest advantage of new or altered customer travel patterns. Highway-related businesses that are relatively more dependent on local business would be unlikely to experience adverse long-term effects from changes in travel patterns. However, businesses that are dependent on through traffic could experience adverse effects if customers perceive them as less accessible due, for example, to non-traversable medians and access closures or if their competitors are more accessible.

Cumulative Impacts. Cumulative effects on highway-related businesses and established business areas are primarily associated with changes in travel patterns, overall accessibility of commercial areas, proximity of competitors and types of commercial development and redevelopment.

Currently, no major transportation activities independent of this proposed action are proposed within the study area. It is assumed that ongoing commercial and/or industrial developments as sanctioned under Polk County's Comprehensive Plan will occur over the lifetime of this proposed action. The majority of land in the area of the proposed projects is zoned for agricultural or timber uses and is not likely to be developed.

Therefore, no cumulative impacts are expected and the direct and secondary impacts described above address the likely full extent of economic impacts associated with the projects.

Impacts of the No Build Alternative

Social

Residential

The No Build Alternative would have no direct impact to private residences other than a probable increase in congestion and reduction in safety at the driveways due to additional traffic volumes.

Effects on General Social Groups

The No Build Alternative is not expected to generate direct project-related effects on social groups.

Community Cohesion

Longer-term secondary and cumulative effects could be adverse as traffic volumes and congestion increase and local residents find it increasingly more difficult to access business

and community centers. A heavily traveled and congested ORE 18 would separate the north parts of Grand Ronde, Valley Junction, and Fort Hill from the south.

Community Facilities

No impacts are anticipated to facility buildings or utility lines.

Environmental Justice

No impacts are expected.

Economic

Through Traffic

Congestion is expected to increase.

Commuter Traffic

Congestion is expected to increase.

Employment Effects

The No Build Alternative would not have an impact on employment in the area other than making commuting to work in the area more difficult as congestion increases.

Construction Generated Employment

No construction employment will be generated by the No Build Alternative.

Property Tax Revenues

No properties would be removed from the tax base as a result of the No Build Alternative.

Highway Related Businesses and Business Areas

Over time, as congestion worsens along the corridor, business will be negatively impacted because of the inability of through traffic to safely exit from or return to ORE 18. Congestion and delays from accidents will likely continue to increase along the full length of the project vicinity. This will be especially evident at Grand Ronde, Valley Junction and Fort Hill intersections. Businesses at those locations that rely on or benefit from through traffic will become less convenient and accessible to travelers and local traffic. Thus, local residents who work outside the community and through travelers would be those most apt to be deterred from shopping in these areas.

Measures To Minimize and Reduce Socioeconomic Effects

The Steering Committee considered various mitigation measures to minimize impacts to businesses, community facilities, neighborhoods and residences. They avoided impacts in many instances and incorporated mitigation measures into the options proposed for the Build Alternative. Mitigation measures would lessen some of the impacts to residents and businesses in the communities in the project area.

In some cases, the Oregon Department of Transportation is bound by applicable federal, state and its own regulations and policies to provide for mitigation of certain adverse impacts; for example, fair compensation for right-of-way acquisition (Appendix A, Right-of-Way Acquisition Provisions). In other cases, ODOT may not be bound by rules and departmental policies, but may assist the local communities in addressing their needs, including mitigation and other measures to reduce impacts.

Social

Residential

- Provide compensation to property owners for eligible relocation costs, loss of land, buildings, and improvements at fair market value.
- Provide owner occupants or renters relocation planning, advisory assistance, reimbursement of qualifying moving and related expenses.
- During construction, provide alternate routes and appropriate signs for traffic. Evaluate means to phase and time construction activities at periods least disruptive to local residents.

Economic

Highway Related Businesses and Business Areas

- Provide compensation to property owners for eligible relocation costs, loss of land, buildings, and improvements at fair market value.
- Provide signage to alert traffic to upcoming services and businesses.
- Work with individual businesses to redesign accesses as right-in and right-out, or provide accesses to local service roads.
- Work with Polk County to focus future development for businesses dependent on through traffic at major intersections or on local access roads serving interchanges.

Land Use and Zoning

Note: All land use and zoning information in this section of the environmental assessment is based on preliminary location designs and is subject to change. As the project is refined, some right-of-way requirements that may affect land use and zoning may be deleted and others added. The land use and zoning information is presented to provide a general idea of the project's impacts.

Existing Conditions

The proposed project is located within unincorporated portions of Polk County. Three unincorporated communities, lands held in tribal trust, and lands with various uses and zoning are located along ORE 18 in the project area between the H. B. Van Duzer Forest Corridor and Steel Bridge Road. The communities are, from west to east: Grand Ronde, Valley Junction and Fort Hill. The lands held in tribal trust for the Confederated Tribes of the Grand Ronde lie near the unincorporated community of Grand Ronde and the Grand Ronde Agency area and include the site of the Spirit Mountain Casino and Resort and tribal offices west of Grand Ronde.

The main land uses and zoning in the area, designated by the *Polk County Comprehensive Plan*, are: resource (farm and forest); industrial (mostly used for mills and wood products industries); commercial (gas stations, restaurants, other businesses or facilities); and rural residential. See Figure 22 for current zoning and tribal lands. The analysis in this section is based on current zoning.

Proposed Land Use and Zoning Changes

The Regional Problem Solving (RPS) committee, a citizen group, began meeting in 1997 to study the area and plan for the growth associated with the development of the Spirit Mountain Casino and Resort. This committee recommended several zoning changes. Most of the proposed changes would align zoning with existing use, readjust rural community boundaries, rezone several areas for different types of residential use for anticipated population growth and remove zoning designations from tribal trust properties. Figures 23-1 and 23-2 show proposed zoning for the Grand Ronde, Valley Junction and Fort Hill areas. Although all or some of the proposed changes may be adopted by Polk County in the near future, they are not yet in place.

Impacts of the Build Alternative

The proposed Build Alternative would impact land use and zoning. These impacts are shown in Table 13 and described below by highway section. The milepoints, hectares and acres are approximate. The impacts are described as direct, indirect, and cumulative. Direct impacts occur from conversion of lands to right-of-way for the highway. Indirect impacts are those reasonably foreseeable land use impacts caused, but not immediately induced, by the proposed project, mainly related to changed highway access. Cumulative impacts are those that arise when the proposed project, in conjunction with other highway or non-highway projects, could result in additional land use impacts.

Of the estimated 39.6 hectares (97.9 acres)

- 5 hectares (12.4 acres) would be AR-5 (five acre residential)
- 8.4 hectares (20.7 acres) would be CG (commercial lands)
- 14.6 hectares (36.1 acres) would be FF and FFO (farm/forest and farm/forest overlay)
- 8.9 hectares (21.9 acres) would be EFU (exclusive farm use)
- 1.7 hectares (4.2 acres) would be IH (heavy industrial)

Acquisition of farm/forest, farm/forest overlay, and exclusive farm use land will be for highway widening, replacement of intersections with interchanges, and local access roads to replace direct highway access removed by the project or allow local trips without using the highway. All of these actions are consistent with statewide planning goals 3, 4, 11, and 14 according to OAR 660-012-0065(3) that was recently adopted into Polk County's zoning ordinance.

H. B. Van Duzer Forest Corridor to Grand Ronde Road, Milepoint 18.79 to 21.18

Construction includes widening the highway from the H. B. Van Duzer Forest Corridor to Grand Ronde, constructing the Grand Ronde interchange, and constructing local service roads south and north of ORE 18. See Figures 4-1 to 4-3.

Direct Impacts

Between the H. B. Van Duzer Forest Corridor and Grand Ronde approximately 8.7 hectares (21.5 acres) of land zoned AR-5, CG, FF and IH would become road right-of-way for ORE 18 and the local service roads. This includes:

- 2.2 hectares (5.5 acres) AR-5
- 3.7 hectares (9.1) CG
- 4.3 hectares (10.7 acres) FF and FFO
- 1.1 hectares (2.6 acres) IH

Figure 22
Current Zoning and Tribal Lands
color
11" x 17"
Front

Figure 22
Current Zoning and Tribal Lands
color
11" x 17"
Back

Figure 23-1
RPS Proposed Zoning
color
8.5" x 11"
Front

Figure 23-1
RPS Proposed Zoning
color
8.5" x 11"
Back

Figure 23-2
RPS Proposed Zoning
color
8.5" x 11"
Front

Figure 23-2
RPS Proposed Zoning
color
8.5" x 11"
Back

TABLE 13
Build Alternative—Land to be Acquired for Right-of-Way by Zone in Hectares/Acres

Highway Segment	AR-5	CG	FF	EFU	Tribal	IH	Total
<i>H. B. Van Duzer Forest Corridor to Grand Ronde Road</i>							
Local access road, A. R. Ford—Fire Hall Road	1.4/3.5						1.4/3.5
Local access road, Fire hall to Andy Riggs Road	0.59/1.5						0.6/1.5
Local access road, South Street extended west			2.3/5.8			0.3/0.6	2.6/6.4
Grand Ronde interchange		2.7/6.7					2.7/6.7
Highway widening	0.2/0.5	1.0/2.5	2.0/4.9			0.8/2.0	4.0/1.0
Totals	2.2/5.5	3.7/9.1	4.3/10.7			1.1/2.6	8.7/21.5
<i>Grand Ronde to Valley Junction</i>							
Jahn Road realigned intersection				0.2/0.5			0.2/0.5
ORE 22 (Three Rivers Highway) realignment		0.3/0.8		1.7/4.1	0.2/0.5		2.2/5.4
Casino/Valley Junction interchange		1.8/4.3		1.8/4.3			3.5/8.6
Highway widening	0.6/1.4	0.8/2.0		3.3/8.2	0.8/2.0		5.5/13.6
Totals	0.6/1.4	2.9/7.2		6.9/17.1	1.0/2.6		11.4/28.2
<i>Valley Junction to Fort Hill</i>							
Local service roads at Rowell Creek	0.4/1.0	0.4/1.0					0.8/2.0
Highway widening	1.0/2.6	0.8/1.9		0.8/1.9			2.6/6.4
Fort Hill realigned intersection		0.5/1.1	0.5/1.1				0.9/2.2
Fort Hill Road realigned east of the mill		0.1/0.3	0.8/2.0			0.4/1.0	1.4/3.5
Totals	1.4/3.6	1.8/4.4	1.3/3.2	0.8/1.9		0.4/1.0	5.7/14.9
<i>Fort Hill to Wallace Bridge</i>							
Local service road			8.8/19.9				8.8/19.9
Eastbound and westbound scale sites			0.2/0.5	0.2/0.5			0.4/1.0
Totals			9.0/22.2	0.2/0.5			9.2/22.7
<i>Wallace Bridge to Steel Bridge Road</i>							
Highway widening	0.8/2.0			1.0/2.5		0.2/0.5	2.0/4.9
Grand Totals	5.0/12.4	8.4/20.7	14.6/36.1	8.9/21.9	1.0/2.6	1.7/4.2	39.6/97.9

CG=Commercial General; FF=Farm Forest; FFO=Farm Forest Overlay; IH=Industrial; Heavy; IL=Industrial Light; AR-5=5 Acres Residential EFU=Exclusive Farm Use; T=Tribal lands. *This section of FF zoned lands includes some zoned FFO.

The construction of an interchange at Grand Ronde Road would modify or displace approximately 3 to 4 residences, approximately 3 businesses and 3 to 4 community facilities in the immediate vicinity. These most likely are:

- Grand Ronde Shopping Center and Barclay’s Fast Cast – business wholly displaced
- Ken’s Gems – business and residence wholly displaced
- Bonanza Building (Antique Shop) – business wholly displaced
- Post Office – community facility wholly displaced
- Fire District Substation – community facility wholly displaced
- Grand Ronde Sanitary District – community facility wholly displaced
- Sprint – community facility possibly wholly displaced

Secondary Impacts

Several private property approach roads to the highway will be changed to right-in, right-out only access. The proposed local service roads would provide routes to and from Grand Ronde that would allow non-highway travel.

Cumulative Impacts

Currently, no major transportation activities independent of this proposed action are proposed within the study area. It is assumed that ongoing commercial and/or industrial developments as sanctioned under Polk County’s Comprehensive Plan will occur over the lifetime of this proposed action. The majority of land in the area of the proposed projects is zoned for agricultural or timber uses and is not likely to be developed.

Improved access combined with tribal expansion and development could increase the possibility of future development in the Grand Ronde Road area. With this exception, no cumulative impacts are expected and the direct and secondary impacts described above address the likely full extent of land use impacts associated with the projects.

Grand Ronde Road to Valley Junction, Milepoint 21.18 to 23.04

Direct Impacts

Between Grand Ronde Road and Valley Junction approximately 11.4 hectares (28.2 acres) of land zoned AR-5, CG, EFU and Tribal would be acquired by ODOT for right-of-way for ORE 18 and the local service roads. This includes:

- 0.6 hectares (1.4 acres) AR-5
- 2.9 hectares (7.2 acres) CG
- 6.9 hectares (17.1 acres) EFU
- 1.0 hectares (2.6 acres) Tribal

The hectares described above would be used to:

- Widen ORE 18
- Realign ORE 22
- Replace the existing Valley Junction intersection (ORE 18 and ORE 22) with the Casino/Valley Junction interchange, and

- Construct local service roads to provide local access when direct highway access is removed

All of these actions are consistent with goals 3, 4, 11, and 14 according to OAR 660-012-0065(3) and can be authorized as land uses through Polk County's land use procedures.

The construction of the Casino/Valley Junction interchange would displace approximately four residences, the Grand Ronde Water District facility, and a billboard. See Figures 4-2 to 4-5.

Indirect Impacts

Existing commercial and residential properties located on the north side of the highway at the closed Valley Junction intersection would lose direct access to and from ORE 18. These properties would gain access to ORE 18 by the Casino/Valley Junction interchange connection to the realigned Ore 22 (Three Rivers Highway). Extension of Jahn Road as a local service road would afford easier access to the land it passes through and could cause pressure to change land use in that area.

South of the highway nearly 5 hectares (12 acres) currently designated for agriculture (EFU) would be isolated from the remainder of farm use properties located further to the south due to construction of the southeast loop of the interchange. This property would have no access to the highway. See Figure 4-5. As stated above, replacement of the existing Valley Junction intersection with an interchange is consistent with goals 3, 4, 11, and 14.

Cumulative Impacts

Currently, no major transportation activities independent of this proposed action are proposed within the study area. It is assumed that ongoing commercial and/or industrial developments as sanctioned under Polk County's Comprehensive Plan will occur over the lifetime of this proposed action. The majority of land in the area of the proposed projects is zoned for agricultural or timber uses and is not likely to be developed.

The Casino/Valley Junction interchange, combined with Casino expansion, could result in increased pressure for development in this area. With this exception, no cumulative impacts are expected and the direct and secondary impacts described above address the likely full extent of land use impacts associated with the projects.

Valley Junction to Fort Hill, Milepoint 23.04 to 23.85

Direct Impacts

Between Valley Junction and Fort Hill approximately 5.7 hectares (14.1 acres) of land zoned AR-5, CG, FF, EFU and IH would be acquired by ODOT for right-of-way for ORE 18 and the local service roads. This includes:

- 1.4 hectares (3.6 acres) AR-5
- 1.8 hectares (4.4 acres) CG
- 1.3 hectares (3.2 acres) FF
- 0.8 hectares (1.9 acres) EFU
- 0.4 hectares (1.0 acres) IH

The hectares described above would be used for road right-of-way for ORE 18. This would include land needed for widening the highway, widening or replacing two bridges over the South Yamhill River, realigning the Fort Hill intersection, realigning Fort Hill Road east of the mill, and constructing the local service roads south and north of Ore 18 at Rowell Creek intersection to allow removal of direct local access to the state highway. See Figures 4-5 and 4-6. All of these actions are consistent with goals 3, 4, 11, and 14 according to OAR 660-012-0065(3) and can be authorized as land uses through Polk County's land use procedures.

Indirect Impacts

The commercial property located at the Fort Hill Road intersection would lose direct access to ORE 18 and Fort Hill Road; access to both roads would be provided by the proposed wrap-around access road. Fort Hill Road would no longer bisect the mill, although the mill would still have access to Fort Hill Road at its new alignment.

The Fort Hill Road relocation would separate a 4.8-hectare (12-acre) farm field located between the gas station and the mill from the adjacent farmland to the east. According to the recommendations made in the Regional Problem Solving Report, property surrounded by commercial and industrial activities may be converted to non-resource use. If the recommendation is approved, approximately 3.2 to 3.6 hectares (8 to 9 acres) of easily accessible and desirable property could be available for development.

Development of these lands could increase traffic volumes at the Fort Hill intersection, negating improvements made as part of this project. To address this issue, Polk County has implemented a trip cap overlay zone in the area of the Fort Hill intersection similar to the overlay zone recently implemented to the west. The existing overlay is applied to the development zones located along ORE 18 at Grand Ronde and Valley Junction/Fort Hill. The overlay is to “limit the development of uses that create traffic at levels above...a) in residential zones, ten (10) average vehicle daily trips as per the Institute of Transportation Engineers Trip Generation, 6th Edition, 1997, and b) in commercial and industrial zones, ten (10) trips per acre per day with a maximum of 100 trips per day.” The overlay zone is to be in place until the local access road is completed, allowing an alternative to the Fort Hill intersection for eastbound vehicles.

Cumulative Impacts

Currently, no major transportation activities independent of this proposed action are proposed within the study area. It is assumed that ongoing commercial and/or industrial developments as sanctioned under Polk County's Comprehensive Plan will occur over the lifetime of this proposed action. The majority of land in the area of the proposed projects is zoned for agricultural or timber uses and is not likely to be developed.

The Oregon State Parks Department has purchased the historic Fort Yamhill site between Valley Junction and Fort Hill. It plans to develop an interpretive site and to purchase more land in the immediate area for support facilities. This will likely change land use in the area. With this exception, no cumulative impacts are expected and the direct and secondary impacts described above address the likely full extent of land use impacts associated with the projects.

Fort Hill to Wallace Bridge, Milepoint 23.85 to 26.86

Direct Impacts

Between Fort Hill and Wallace Bridge 9.2 hectares (22.73 acres) of land zoned FF/FFO and EFU would become road right-of-way for ORE 18 and the local service road. This includes:

- 9 hectares (22.23 acres) FF/FFO
- 0.20 hectares (0.49 acres) EFU

The hectares described above would be acquired by ODOT for road right-of-way for ORE 18 including highway widening, the relocation of the eastbound and westbound scale sites and construction of a local service road between Fort Hill and Wallace Bridge. See Figures 4-6 to 4-9. These actions are consistent with goals 3, 4, 11, and 14 according to OAR 660-012-0065(3) and can be authorized as land uses through Polk County's land use procedures. A conditional use permit would be required from Polk County for relocation of the scaling sites. Substandard parcels would not be created in the farm-forest areas because not enough land would be taken to reduce parcels to below minimum sizes, or, the parcels are already substandard.

Indirect Impacts

There are no reasonably foreseeable induced land use changes resulting from highway widening and relocation of the weigh station. Properties adjoining this section of the project are agricultural or farm-forest and would remain so for the foreseeable future since direct highway access would be removed by the project.

The construction of the local service road could increase pressure to convert land to non-forest or non-farm uses for an area of approximately 243 to 324 hectares (600 to 800 acres) lying between the proposed road and foothills.

Cumulative Impacts

At this time there are no known active plans or proposals for development in this area with the exception of a proposal to develop a gas station in the commercially zoned area.

Currently, no major transportation activities independent of this proposed action are proposed within the study area. It is assumed that ongoing commercial and/or industrial developments as sanctioned under Polk County's Comprehensive Plan will occur over the lifetime of this proposed action. The majority of land in the area of the proposed projects is zoned for agricultural or timber uses and is not likely to be developed.

No cumulative impacts are expected and the direct and secondary impacts described above address the likely full extent of land use impacts associated with the projects.

Wallace Bridge to Steel Bridge Road, Milepoint 26.86 to 28.21

Direct Impacts

Between Wallace Bridge and Steel Bridge Road 2 hectares (4.49 acres) of land zoned AR-5, EFU and IH would be acquired by ODOT for road right-of-way for ORE 18. This includes:

- 0.8 hectares (2.0 acres) AR-5

- 1 hectare (2.5 acres) EFU
- 0.2 hectares (0.5 acres) IH

The highway in the Wallace Bridge area would be widened to four lanes and extended to Steel Bridge Road to match the four-lane section there. See Figures 4-9 and 4-10. These actions are consistent with goals 3, 4, 11, and 14 according to OAR 660-012-0065(3) and can be authorized through Polk County's land use procedures.

Indirect Impacts

There are no reasonably foreseeable induced land use changes; most properties adjoining this segment of the project are agricultural resource or industrial and would remain so for the foreseeable future. The project would not change the desirability for this use and limiting access should limit the property's desirability for other uses.

Cumulative Impacts

Currently, no major transportation activities independent of this proposed action are proposed within the study area. It is assumed that ongoing commercial and/or industrial developments as sanctioned under Polk County's Comprehensive Plan will occur over the lifetime of this proposed action. The majority of land in the area of the proposed projects is zoned for agricultural or timber uses and is not likely to be developed.

No cumulative impacts are expected and the direct and secondary impacts described above address the likely full extent of land use impacts associated with the projects.

ORE 22 (Three Rivers Highway) Improvements

Direct Impacts

No land would be needed for improvements to ORE 22. These improvements would include widening shoulders and realigning several curves.

Indirect Impacts

No land would be acquired for right-of-way.

Cumulative Impacts

Current zoning would not result in business locations along the section of ORE 22 to be improved, but commercially zoned property exists at the intersection of ORE 22 and ORE 18 that could be developed.

Currently, no major transportation activities independent of this proposed action are proposed within the study area. It is assumed that ongoing commercial and/or industrial developments as sanctioned under Polk County's Comprehensive Plan will occur over the lifetime of this proposed action. The majority of land in the area of the proposed projects is zoned for agricultural or timber uses and is not likely to be developed.

No cumulative impacts are expected and the direct and secondary impacts described above address the likely full extent of land use impacts associated with the projects.

Impacts of the No Build Alternative

Direct Impacts

No land would be needed for the No Build Alternative.

Indirect Impacts

No land would be acquired for right-of-way. Land use would not change due to highway-related projects.

Cumulative Impacts

Land use may change in the area unrelated to highway plans. Polk County may adopt the Regional Problem Solving Committee's zoning proposals wholly or partially, and thereby change land use zoning. See Figures 23-1 and 23-2 for Regional Problem Solving Committee's proposed zoning.

Conformance with Land Use, Transportation and Other Planning Regulations

Compliance with Comprehensive Plans and Statewide Planning Goals

Yamhill County Transportation System Plan, March 1996

The Yamhill County TSP does not specifically address issues regarding ORE 18; however, the proposals contained within the Build Alternative for this project are compatible with the goals and policies of the county plan. The No Build Alternative would not address issues in the plan.

Yamhill County Commuter Rail Study, January 1998

This study included an examination of an excursion service from Grand Ronde to McMinnville. It concluded an excursion service was not viable.

Polk County Comprehensive Plan, 1978 (Updated, 1995)

The comprehensive plan contains two policies that apply to this section of ORE 18. These are:

- Discourage direct access from adjacent properties onto those highways designated as arterials whenever alternative access can be made available. The proposed projects of the Build Alternative implement this policy. The No Build Alternative would not manage accesses and therefore, does not comply.
- Discourage the construction of new roads within areas designated as forestlands, with the exception of secondary roads necessary for harvesting purposes. Construction of the new local service roads contained within the Build Alternative would require acquisition of land zoned farm/forest and farm/forest/overlay. This action is consistent with goals 3, 4, 11, and 14 according to OAR 660-012-0065(3) and can be authorized through Polk County's land use procedures. The No Build Alternative does not contain proposals that conflict with this policy.

Polk County Transportation System Plan, July 7, 1998

The Polk County TSP:

- Includes existing shared shoulder bikeway on ORE 18, the full length of the refinement area, and beyond;
- Proposes shared bicycle roadways on South Yamhill River Road and Grand Ronde Road;

- Aims to reduce the high number of accidents on ORE 18;
- Contains a project to realign Fort Hill and South Yamhill River Roads.

Other policies relating to this project area include:

- Participation in and support of state and regional transportation planning efforts;
- Recognition that the functions of ORE 18 and 22 are critically important to a wide range of statewide, regional and local users and that these highways serve as the primary route linking the mid-Willamette Valley to the Oregon Coast, with links to Lincoln City and Tillamook.

The Build Alternative supports and complies with these elements of the Polk County TSP. The No Build Alternative, because it contains no proposals for highway improvement, does not satisfy the TSP.

Polk County Conditional Use Permit

Chapter 119 of Polk County Ordinances addresses Conditional Uses. The two projects currently funded for construction, the Salmon River Highway at Fort Hill Road, and the Fort Hill–Wallace Bridge section of the Salmon River Highway including weigh stations, will require conditional use permits. Because both projects would be constructed within a similar time frame, both projects would be submitted within the same conditional use permit.

Most land use designations within the Polk County Zoning Ordinance (PCZO) permit transportation improvements outright. However, within the Exclusive Farm Use (EFU) and Farm Forest (FF) zones, a conditional use permit is required from the County for transportation improvements where acquisition of additional right-of-way is required, as is the case for both of these projects.

ODOT is preparing the findings for a conditional use permit for both of these projects. The conditional use permit findings will address Chapter 119, Conditional Uses, as well as:

- Farm Forest Zone (Chapter 138)
- Floodplain Overlay Zone (Chapter 178)
- Significant Resource areas Overlay Zone (Chapter 182)

The conditional use permit findings will also address consistency with specific elements of the Comprehensive Plan, including:

- Policy 1.3 Unincorporated Communities
- Policies 1.4 and 1.5 Agriculture
- Policy 2.2 Highways

All other Comprehensive Plan elements were reviewed and found to be not applicable to the findings for the conditional use permit.

The findings for the conditional use permit will be completed subsequent to the public hearing for the project when ODOT has selected a project alternative.

Sketch Transportation Analysis, Grand Ronde Tribal Master Plan, February 1996

The analysis is an adjunct to the Tribal Master Plan. It calls for several transportation upgrades throughout the area. One of these is widening Grand Ronde Road to accommodate bike and pedestrian traffic. Other improvements to Grand Ronde Road and connecting roads are also included in the analysis. The Analysis notes that in previous years ODOT has identified a need for a four-lane segment from Grand Ronde to Fort Hill and a fourth lane from Fort Hill to Wallace Bridge. These needs were identified prior to consideration of a casino development.

The Build Alternative addresses these concerns and so complies with the *Sketch Transportation Analysis*.

The No Build Alternative does not address the transportation upgrades called for in the *Sketch Transportation Analysis*.

Compliance with State Plans and Regulations

Transportation Planning Rule, December 16, 1999

Oregon's Transportation Planning Rule, OAR 660-12 implements Statewide Planning Goal 12, Transportation. Two provisions relate to this project. The first calls for counties to adopt Transportation System Plans. Polk County TSP calls for the county to support Oregon Department of Transportation's corridor refinement planning along ORE 18.

The Build Alternative complies with OAR 660-12. The No Build Alternative would not promote OAR 660-12.

The second provision, Section 065, governs whether a transportation improvement outside urban growth boundaries and through lands zoned for exclusive farm use requires an exception to Goal 3, Agriculture; Goal 4, Forest, Goal 11, Public Facilities; or Goal 14, Urbanization. Section 065, paragraphs 3(b), (d), (e), (g), and (o) notes that adding travel lanes, improvements to highway related facilities, road realignment, replacement of intersections with interchanges, new access roads to reduce local access to a state highway, and other transportation items for local needs are allowed.

The improvements in the Build Alternative fall under the provisions of Section 065 or ORS 215.213. Compliance with standards in Section 065 and with ORS 215.296 are addressed for each improvement in the following sections.

South Street Extension Local Access Road (Figures 4-2 and 4-3)

South Street in Grand Ronde would be improved and extended west past A. R. Ford Road as a local service road. The South Street extension would reduce local trips on ORE 18 by providing an east-west alternative. A portion of the new road would cross lands zoned for Farm/Forest use. A new access road is allowed on rural lands when the purpose of the road is to reduce local access to or local traffic on a state highway (660-065(3)(g)) subject to the provisions of Section 065(5) and ORS 215.296.

Section 065(5)(a)—Consider Reasonable Build Alternatives. Local access road options were considered as part of the Section 4(f) evaluation included in this EA (see Figure 4 in the

Section 4(f) evaluation). The two build options include the North Street Option and the Railroad Grade South of Bunnsville Option. The North Street Option was determined to be unreasonable because it crossed tribal lands and would possibly impact lands of traditional cultural significance to The Confederated Tribes of the Grand Ronde. The Railroad Grade option was not reasonable because its intersection with Grand Ronde Road would not meet the access spacing standards in the *1999 OHP*.

Section 065(5)(b)—Assess Affects on Farm and Forest Practices. The South Street Extension would use about 2.3 hectares (5.8 acres) of land zoned Farm/Forest as road right-of-way. The extension would not displace any structures or facilities. Access to property would be from the new access road. Farm vehicles would have to cross the new road to travel between farm fields. However, traffic on the new road would not be a substantial hindrance to movement.

Section 065(5)(c)—Select Alternative with Least Impacts on Farm and Forest Lands. The preferred alternative is the only reasonable alternative.

ORS 215.296—Standards for Approval of Certain Uses in Exclusive Farm Use Zones. (1)(a) — The use will not force a significant change in accepted farm or forest practices on surrounding lands: Changes in farming practices on the surrounding lands will be limited to changes in the patterns used by farm equipment to work the farm fields and travel between the farm fields.

(1)(b) — The use will not significantly increase the cost of accepted farm or forest practices on surrounding lands: The need to move farm equipment between farm fields may result in a small increase in costs.

Valley Junction Interchange and ORE 22 Realignment (Figure 4-5)

The proposed interchange at Valley Junction and associated ORE 22 realignment would replace the current intersection of ORE 18 and ORE 22. The replacement of an intersection with an interchange and realignment of an existing road are allowed on rural lands subject to compliance with standards in Section 065(5) and ORS 215.296.

Section 065(5)(a)—Consider Reasonable Build Alternatives. Alternatives considered and explanations of why they were not advanced are presented in the “Alternatives and Design Options Considered But Not Advanced” section of this EA. Those alternatives include by-pass proposals, adding signals to the existing intersection, and several interchange design options. The by-pass alternatives are not reasonable since they could not be built in phases and getting funding to build the entire project is unlikely. Signalizing the existing intersection is not reasonable because it would not meet the standards in the *1999 Oregon Highway Plan* for a rural highway of statewide importance. None of the interchange options were considered reasonable due to their inability to meet design standards or substantially higher cost.

Section 065(5)(b)—Assess Affects on Farm and Forest Practices. Approximately 3.4 hectares (8.4 acres) of lands zoned for exclusive farm use would be used as road right-of-way in the preferred alternative. Two fields will be divided creating four farm fields. No farm structures would be displaced other than fencing. The new interchange will provide a means for farm and forest vehicles and equipment to cross ORE 18 without conflicts with

through traffic. It will also provide a better connection between ORE 22 and ORE 18 that will improve access for farm and forest vehicles to and from processing facilities. ODOT access standards prohibit property access within ¼ mile of the interchange ramp ends. Therefore, access to these farm fields will not be possible from the realigned segment of ORE 22. Access to these fields will be identified when the interchange is further developed for construction.

Section 065(5)(c)—Select Alternative with Least Impacts on Farm and Forest Lands. The preferred alternative is the only reasonable alternative.

ORS 215.296—Standards for Approval of Certain Uses in Exclusive Farm Use Zones. (1)(a) – The use will not force a significant change in accepted farm or forest practices on surrounding lands: Changes in farming practices on the surrounding lands will be limited to changes in the patterns used by farm equipment to work farm fields. The proposed use will have no affect on forest practices.

(1)(b) – The use will not significantly increase the cost of accepted farm or forest practices on surrounding lands: The need to move farm equipment between farm fields may result in a small increase in costs. Those costs may be offset by the improved access to ORE 18 that will result from construction of the interchange.

Fort Hill Road Realignment & Associated Local Access Road (Figure 4-6)

Fort Hill Road would be realigned to the east and connect to ORE 18 at a new intersection east of the service station and restaurant. The existing ORE 18/Fort Hill Road intersection would be closed. A new local access road would be built north of the service station and restaurant. Moving the intersection to the east would improve sight distance for vehicles leaving and entering the highway. Realignment of the road along the northern and eastern boundaries of the Fort Hill Lumber Company mill would also remove conflicts between through traffic and mill operations since the road currently divides the mill. Realignment of a road is allowed on rural lands (660-065(3)(d)) subject to the provisions of Section 065(5) and ORS 215.296. The new access road is needed to provide access to the restaurant and service station since direct highway access would be removed by the project. A new access road is allowed on rural lands when the purpose of the road is to reduce local access to or local traffic on a state highway (660-065(3)(g)) subject to the provisions of Section 065(5) and ORS 215.296.

Section 065(5)(a)—Consider Reasonable Build Alternatives. Alternatives considered for the relocation of Fort Hill Road and explanations of why they were not advanced are presented in the “Alternatives and Design Options Considered But Not Advanced” section of this EA. The alternative alignments are included in discussions of Fort Hill Road/ORE 18 interchange alternatives. Alternatives include keeping the existing alignment and realigning Fort Hill Road west of the mill. Alternatives for the new access road include keeping the existing restaurant and service station highway access and not building the new road, shifting the road south onto commercially zone land, and moving the road further north. Maintaining the two existing business highway access points would not meet access spacing standard for expressways in the 1999 *Oregon Highway Plan*. Shifting the access road south onto commercial property would require moving its intersection with the realigned Fort Hill Road to close to the new intersection with ORE 18 to allow enough room for vehicles

waiting to turn onto the highway. The proposed alignment runs along the southern edge of an agricultural field, leaving a small parcel in the southeast corner. Shifting the alignment to the north would divide the agricultural parcel into three new parcels. None of these alternatives is reasonable.

Section 065(5)(b)—Assess Affects on Farm and Forest Practices. The realignment of Fort Hill Road and the associated access road would use approximately 1.3 hectares (3.1 acres) of land zoned Farm/Forest for road right-of-way. The realigned Fort Hill Road would run along the boundary of two agricultural fields that appear to be on the same parcel. The new access road would run along the southern boundary of an agricultural field. A portion of the parcel would be created in the southwest corner of the intersection of the new local access road and the realigned Fort Hill Road would probably be too small for agricultural use. The new access road or the realignment of Fort Hill Road would affect no structures or facilities. Fort Hill Road has relatively low traffic volumes and its relocation would not hinder the movement of farm vehicles or equipment. Access to the agricultural field east of the new alignment would be provided just south of the rail line. Access to the western field would be provided near the western end of the new local access road.

Section 065(5)(c)—Select Alternative with Least Impacts on Farm and Forest Lands. The preferred alternative is the only reasonable alternative.

ORS 215.296—Standards for Approval of Certain Uses in Exclusive Farm Use Zones. (1)(a) — The use will not force a significant change in accepted farm or forest practices on surrounding lands: Realigning Fort Hill Road and constructing the new local access road would create three farm fields. Two are currently being farmed separately and the project would require only minor changes in current agricultural practices. The third would be too small to be suitable for agricultural use.

(1)(b) — The use will not significantly increase the cost of accepted farm or forest practices on surrounding lands: The need to move farm equipment between farm fields may result in a small increase in costs.

Fort Hill to South Yamhill River Road Local Access Road (Figures 4-6 through 4-9)

A local service road would be constructed north of the highway from the realigned Fort Hill Road to S. Yamhill River Road near the east end of the project. The local access road would be needed to provide access to properties north of the highway when direct access to the highway is removed. A new access road is allowed on rural lands when the purpose of the road is to reduce local access to or local traffic on a state highway (660-065(3)(g)) subject to the provisions of Section 065(5) and ORS 215.296.

Section 065(5)(a)—Consider Reasonable Build Alternatives. Alternatives considered included locating the access road next to the railroad and farther up the hillside to the north. The proposed access road location was selected to avoid the substantial wetlands in the area to the south. Section 404 of the Clean Water Act requires avoidance of wetlands if possible. Shifting the alignment south into the wetlands would result in impacts to agricultural lands similar to those of the proposed alignment. Shifting the alignment to the north would move it closer to several residences and could require a wider right-of-way to accommodate cuts and fills needed on steeper slopes. Neither of these alternatives was considered reasonable.

Section 065(5)(b)—Assess Affects on Farm and Forest Practices. Approximately 8.8 hectares (19.9 acres) of land zoned Farm/Forest would be converted to right-of-way for the local access road. Several existing agricultural fields would be divided. No structures or facilities would be removed other than fencing and existing highway access. The local access road would have low traffic volumes that would have little effect on the movement of farm vehicles and equipment. Access to the farm fields would be provided from the new local access road.

Section 065(5)(c)—Select Alternative With Least Impacts on Farm and Forest Lands. The preferred alternative is the only reasonable alternative.

ORS 215.296—Standards for Approval of Certain Uses in Exclusive Farm Use Zones. (1)(a) — The use will not force a significant change in accepted farm or forest practices on surrounding lands: Changes in farming practices on the surrounding lands will be limited to changes in the patterns used by farm equipment to work the farm fields. The proposed use will have no affect on forest practices.

(1)(b) — The use will not significantly increase the cost of accepted farm or forest practices on surrounding lands: The need to move farm equipment between newly created parcels may result in a small increase in costs.

Oregon Transportation Plan, September 1992

The *Oregon Transportation Plan* (OTP) provides the long-range policies to guide the development of a safe, convenient, and efficient statewide transportation system that promotes economic prosperity and livability for all Oregonians. Goals and policies deal with an array of subjects including modal balance, accessibility, environmental responsibility, connectivity, safety, livability, land use, and economic development.

The projects contained in the Build Alternative would be consistent with the goals and policies of the OTP.

The No Build Alternative would not address the goals and policies of the OTP.

Oregon Highway Plan, March 1999

The *Oregon Highway Plan* represents one modal element of the overall transportation planning effort. As a modal plan, the OHP carries the OTP's mandate forward to the state highway system by defining its policies and investment strategies for the next 20 years, including corridor plans and transportation system plans. These latter plans will identify specific projects and modal alternatives. The Policy Element of the OHP is the key portion for the goals, policies, and actions applicable to this corridor plan. Compliance with the OHP is addressed below. Additional information is presented in tabular form in Appendix B

ORE 18 is classified as a statewide National Highway System freight route and rural expressway. Policies particularly applicable to the proposed projects in the ORE 18 study area are:

- Cooperation between state, regional and local governments working together and collaborating on decisions relating to the highway system;

- Mobility standards for statewide national Highway System freight routes, measured by volume to capacity (v/c) ratios;
- Medians to enhance the efficiency and safety of highways, and influence and support land use development patterns that are consistent with approved transportation system plans;
- Access control standards for rural expressways.

Cooperation

The OHP, in its general directives, calls for increased partnerships, particularly with regional and local governments working together and collaborating on decisions relating to the highway. Its System Management Goal 2 is to “work with local jurisdictions and federal agencies to create an increasingly seamless transportation system with respect to the development, operation, and maintenance of the highway and road system.”

Mobility Standards

Mobility standards are set by the OHP. They are based on volume to capacity ratios. Volume to capacity (v/c) is the ratio of the hourly volume of traffic on a highway segment to the maximum hourly traffic volume that can pass along the segment under good conditions. The objective for a statewide highway (NHS) rural expressway is to provide a v/c of 0.70 through unincorporated communities and rural lands. When the v/c is substandard and transportation improvements are not planned within a twenty year period to bring performance up to standard, the effort shall be to improve as much as possible and to avoid further degradation.

Expressways are complete routes or segments of existing two-lane and multi-lane highways and planned multi-lane highways that provide for safe and efficient high speed and high volume traffic movements. Their primary function is to provide for interurban travel and connections to ports and major recreation areas with minimal interruptions. Speeds are moderate to high and accesses are controlled. Private approach roads are discouraged, public road connections are highly controlled, traffic signals are discouraged in rural areas, non-traversable medians are encouraged and parking is prohibited.

Median Treatment

Median treatment is to be identified in corridor plans. Non-traversable medians must be designed and constructed in the modernization of all rural, multi-lane statewide (NHS) expressways that have traversable medians.

Access Standards

Access standards are set for interchanges and other access points. The standard for rural expressways on statewide (NHS) highways for interchange spacing is 5 kilometers (3 miles). Further expressway spacing standards apply to elements of the interchange, assuming a speed of 90 kph (55 mph) on the main highway:

- 1.6 km (1 mile) between the start and end of tapers

- 3.3 km (2 miles) between the nearest at-grade and ramp terminal intersections or the end/start of the taper section
- 400 meters (1,320 feet) to the first approach on the right; right-in/right-out only
- 400 meters (1,320 feet) to the first major intersection
- 400 meters (1,320 feet) between the last right-in right-out approach road and the start of the taper for the on-ramp

For expressway at-grade intersections the spacing requirement is 1,600 meters (5,280 feet) at speeds posted from 65 kph to > 90 kph (40 to > 55 mph).

No minor deviations are allowed for spacing standards on rural expressways. A major deviation study would be required to change these standards.

The Build Alternative complies with three of the OHP policies described above. These are cooperation, mobility standards, and median treatment. ODOT has worked closely with regional and local governments in a corridor planning process. The governmental agencies include: the Mid-Willamette Valley Council of Governments, the Regional Problem Solving Committee, Polk County, Yamhill County, the Confederated Tribes of the Grand Ronde, City of Willamina, and the Department of Land Conservation and Development. Implementation of the Build Alternative would contribute to attaining the required volume to capacity ratio of 0.70 to meet the mobility goal. Construction of non-traversable medians would conform to the median policy.

The build Alternative does not comply with the OHP spacing requirements between interchanges, public road intersections and private property approach roads. ODOT would design for compliance and would make the appropriate applications for major deviations as needed when the projects reach design stage.

The No Build Alternative would not promote cooperation and would not comply with mobility standards, median treatment, or access standards.

Rail and Highway Compatibility

ODOT is directed by statute (ORS 824.202) “to achieve uniform and coordinated regulation of railroad-highway crossings and to eliminate crossings at grade wherever possible [and] to control and regulate the construction, alteration, and protection of railroad-highway crossings.” The first action item of the rail and highway compatibility policy is to eliminate crossings at grade wherever possible and to consider the needs of local pedestrian, bicycle, or vehicle circulation.

The Build Alternative contains two proposals that would necessitate crossing the railroad owned and operated by Hampton Lumber Company. The realignment of Fort Hill Road east of the mill would require an at-grade crossing where the tracks leave the mill. The proposal to construct a local service road between Fort Hill and Wallace Bridge would include crossing the railroad with an overpass near Wallace Bridge. ODOT or the authority building the road would apply for an order from the Rail Division to cross the railroad. See OAR 741-200-0010 to 741-200-0090 for the application process.

The No Build Alternative would not impact railroad crossings.

Oregon Bicycle and Pedestrian Plan, June 1995

The Oregon Bicycle and Pedestrian Plan is a statewide plan that provides direction and guidance to bikeway and pedestrian programs in Oregon. Goals of the plan include:

- Provide safe, accessible and convenient bicycling and walking facilities;
- Support and encourage increased levels of bicycling and walking.

The Build Alternative projects are all in compliance with the Oregon Bicycle and Pedestrian Plan.

The No Build Alternative projects do not specifically address the goals listed above.

Oregon Rail Freight Plan, August 1994

The *Oregon Rail Freight Plan* describes the existing rail system in Oregon and analyzes possible rehabilitation improvements to the system. This plan is used to help qualify improvement projects for federal funding. Policies address economic development, retention of local rail service, protection of abandoned rights-of-way, and integration into state and local land use planning processes. Within this section of the corridor there are no proposed upgrades to the rail system contained in the Build or No Build Alternatives.

Willamette Valley Transportation Strategy, May 1995

This document addresses the problems and opportunities of “transportation interdependence” among the Willamette Valley communities. The project area lies within the scope of the *Strategy*. Three goals were identified for the valley: mobility, industrial growth, and livability. None of the individual strategy elements are specific to the Van Duzer to Steel Bridge Road area. However, the overall intent of the Willamette Valley Strategies was considered as the Build Alternative projects were developed. The No Build Alternative would not address the opportunities in the *Strategy*.

State Agency Coordination Agreement, December 1990

Oregon Department of Transportation’s State Agency Coordination Program (OAR 731-015) assures that highway improvement projects and other ODOT actions affecting land use comply with Oregon’s Statewide Planning Goals and are compatible with acknowledged county comprehensive plans as required by ORS 197.180. The Build Alternative proposals comply with the agreement in the following ways:

- ODOT involved affected cities, counties, state agencies, special districts, and other interested parties in the development of the plans for these projects. Elected and planning officials of Willamina, Polk and Yamhill Counties, and the Confederated Tribes of the Grand Ronde sit on steering and technical committees.
- This assessment addresses consistency with the comprehensive plans of Polk and Yamhill Counties.
- Before proceeding to project design and construction, ODOT will adopt findings of plan compatibility and notify interested parties of its decision.
- ODOT will obtain any ministerial planning permits required from local governments.

The No Build Alternative does not promote the State Agency Coordination Agreement, December 1990.

Oregon Forest Practices Act, 1971 [ORS 527.610-770]

The *Oregon Forest Practices Act*, ORS 527.755 designates ORE 18 and 22 as scenic highways. The purpose of scenic highways is to maintain roadside trees for the enjoyment of the motoring public while traveling through forestland. The act also applies to project activities outside the 46.2-meter (150-foot) buffer along each side of the highways created by the scenic designation. ODOT will work with the Oregon Department of Forestry to assure compliance during development of individual projects.

The No Build Alternative is not within the scope of this act.

Conformance with Federal Regulations

The proposals contained in the Build Alternative will comply with the regulations of the following federal agencies or contained in the following federal acts and permit requirements:

- *Clean Water Act, Sec. 404*
- *Endangered Species Act of 1973, as amended (16 USC 1531 et. seq.)*
- *Executive Order (EO 13112) Invasive Species, February 3, 1999*
- *Executive Order (EO 12898) Environmental Justice*
- *Farm Land Protection Policy Act of 1981*
- *National Marine Fisheries Service*
- *National Pollution Discharge Elimination System (NPDES)*
- *Residential Lead-Based paint hazard Reduction Act of 1992 (also known as Title X)*
- *Uniform Relocation Assistance and Real Property Acquisition Act of 1970 as amended*
- *United States Fish and Wildlife Service National Wetland Inventory*
- *United States Army Corps of Engineers, Section 404/Removal and Fill Permit*

Natural Resource Impacts

This section contains the analysis of wetlands, water quality, fish and wildlife habitat, proposed, threatened and endangered species, noxious weeds and non-native species, ecologically and scientifically significant natural areas, wilderness areas, trails, and wild and scenic rivers.

Wetlands

The Oregon Department of Transportation conducted an onsite wetland determination for the project according to the guidelines of the *Army Corps of Engineers Wetland Delineation Manual* (US Army Waterway Experiment Station, 1987). The project area was visited during July to October 1999 and again during April and May 2000. Aerial photographs, *National Wetland Inventory* maps, and the *Polk County Soil Survey* were used to identify and map numerous rivers, creeks, ponds and palustrine wetlands.

Because the scope of work for the project does not warrant the establishment of sample points, the wetland report is considered a determination rather than a delineation. The wetland study includes margins along the highway as well as lands extending 50 meters (164 feet) from the highway and local service roads.

Wetlands found within the proposed project area are described using the *Classification of Wetlands and Deep Water Habitats of the United States* (Cowardin, USFWS, 1979). The classifications are:

- Palustrine open water (POW)
- Palustrine emergent (PEM)
- Palustrine scrub/shrub (PSS)
- Palustrine forest (PFO)

Palustrine wetlands are marshes, bogs, fens, swamps, prairies and intermittently flooded areas.

Existing Conditions of Wetlands

Extensive agricultural wetlands and smaller pockets of other wetlands are found throughout the project corridor. These jurisdictional areas are subject to regulation by the Oregon Division of State Lands and U.S. Army Corps of Engineers. The majority of the agricultural wetland areas are found on the eastern half of the project corridor. Wet prairies, forested wetlands, hillside seeps and scrub/shrub wetlands are found through the remainder of the study area. Ditches adjacent to wetlands and creeks are considered jurisdictional since they meet wetland criteria and perform wetland functions. Overall, 12.72% of the 332.61-hectare (821.88-acre) study area was found to contain wetland areas. Wetland types and sizes are shown in Table 14. These figures and therefore the jurisdictional area may change when the project moves to the design stage.

TABLE 14
Wetland Types and Areas Within the Defined Study Area

Wetland Type	Wetland Size (ha/ac)*
PEM (includes both agricultural and non-agricultural wetlands)	35.87 / 88.63
POW/PEM	0.20 / 0.50
PSS	1.18 / 2.92
PFO	5.10 / 12.60
TOTAL =	42.35 / 104.65

*ha=hectare/ac=acre, 1 ha=2.471 ac

More than one wetland type was found within certain areas; these areas are considered to be wetland complexes. Within a woodland section located west of Grand Ronde, wetland and upland conditions are found so intermixed that mapping of each area separately was difficult. In this case, the area was considered to be a mosaic comprising 60% forested wetland and 40% forested upland. The following paragraphs describe some general characteristics of the wetlands found within the Van Duzer to Steel Bridge Road corridor project. See Figures 24-1 and 24-2 for location of wetlands.

Palustrine Emergent (PEM) (agricultural wetlands)

These wetlands consist of extensive cultivated lands located mostly at the eastern end of the project corridor. They are characteristic of lands used for grass seed production and permanent pastures. Grasses typically found in the fields include tall fescue and cultivated ryegrass. Within the agricultural fields, “wet signature” features form consistent patterns.

Palustrine Emergent (PEM) (non-agricultural wetlands)

As many as 25 areas of non-agricultural PEM wetlands are located throughout the project corridor. They are dominated by native vegetation and species characteristic of abandoned or disturbed ground. Native grasses such as sedges, rushes, and herbs are found in various natural wetlands while invasive species such as reed canarygrass are found in more disturbed sites.

Palustrine Open Water/Palustrine Emergent (POW/PEM)

These open water/emergent wetland complexes consist of small wetlands located on the south side of ORE 18 and within the numerous lumber mill sites. The wetlands are in low depressions that seasonally flood until late summer. Grass and other emergent species typically are found adjacent to the small pockets of open water.

Palustrine Scrub/Shrub (PSS)

These scrub/shrub wetlands are a series of linear areas located near the state routes, railroad tracks and county roads. They consist of ditches, abandoned depressions and natural settings generally dominated by willows.

Figure 24-1
Location of Wetlands, West
COLOR
11" x 17"
Front

Figure 24-1
Location of Wetlands, West
COLOR
11" x 17"
Back

Figure 24-2
Location of Wetlands, East
color
11" x 17"
Front

Figure 24-2
Location of Wetlands, East
color
11" x 17"
Back

Palustrine Emergent/Palustrine Emergent Forest (PEM/PFO)

(wetland types within this emergent/forest complex were calculated separately)

These wetland complexes include three separate areas located between a railroad grade and the north side of ORE 18 at the eastern end of the project corridor. Oregon ash, willows, plus a diverse community of emergent vegetation such as sedges and spikerush dominate the linear wetlands.

Palustrine Forest (PFO)

The majority of the forest wetlands found within the project corridor occur within the wetland/upland mosaic located on the south side of ORE 18 and west of Grand Ronde. They are dominated by an overstory of Oregon ash with a diverse community of shrubs such as Pacific ninebark and herbaceous species.

Impacts of the Build Alternative on Wetlands

The Build Alternative would impact approximately 3-4 hectares (9-10 acres) of wetlands. The wetlands described above provide important physical (e.g., nutrient transformation, flood control) and biological (e.g., habitat for fish, wildlife and plants) functions, including suitable habitat for proposed, threatened and endangered species. Potential impacts by wetland type are shown in Table 15. These numbers may change when formal delineation is made based on actual design.

TABLE 15
Wetland Types and Area of Potential Impacts

Wetland Type	Wetland Impact (ha/ac)*
PEM (including agricultural and non-agricultural wetlands)	3.0 / 7.4
POW/PEM	<0.1 / <0.1
PSS	0.2 / 0.4
PFO	0.6 / 1.5
TOTAL =	3.7 / 9.2

*ha=hectare/ac=acre, 1 ha=2.471 ac

The Build Alternative contains several proposals to improve ORE 18 and improve or construct local service roads. Listed below are the main design options and their general purpose and potential for impacting wetlands within the study area.

Four-lane non-traversable median highway from H.B. Van Duzer Forest Corridor to Steel Bridge Road

Palustrine open water, emergent, scrub/shrub and forest wetlands are found on both sides of the highway. Widening the highway will unavoidably impact a portion of these wetland areas. Avoidance of wetland impacts is not likely since these areas occur next to an existing transportation system. This design option accounts for the majority of the impacts to the PEM wetlands.

Grande Ronde Road Interchange

Palustrine forest, scrub/shrub and emergent wetlands are located on the south side of ORE 18. The proposed interchange will likely impact only a small amount of emergent wetland by designing the local service roads on the opposite sides of the wetlands.

Casino/Valley Junction Interchange

While the design for the new interchange could potentially avoid wetland impacts, construction of the road that connects with the loops will likely fill portions of palustrine scrub/shrub and emergent wetlands on the north side of the state highway. Connection of the intersection to the southern local service roads at the Casino would unavoidably impact emergent wetlands in an uncultivated agricultural field adjacent to the Casino parking lot.

Intersection at Fort Hill

Small areas of palustrine emergent and scrub/shrub wetlands are located in the vicinity of the existing intersection. Wetland impacts could potentially be avoided by careful design. Connection of local service roads north of the intersection could impact a small amount of agricultural wetland in the adjacent farm field.

Local Service Roads

Extensive areas of palustrine emergent agricultural wetlands, as well as palustrine forest, palustrine scrub/shrub, and palustrine emergent wetlands are found on the eastern end of the highway corridor. The Build Alternative places the local service road away from the large areas of wetlands onto the northern hillside to minimize impacts.

Impacts of the No Build Alternative on Wetlands

Implementing the No Build Alternative would not impact the wetlands in the project area.

Mitigation for Wetlands

The Division of State Lands (DSL) and the U.S. Army Corps of Engineers (USACOE) will regulate most, if not all of these wetlands. ODOT has consulted informally with the DSL and will initiate formal consultation with the DSL and the USACOE when individual projects reach design stage. The USACOE will receive this draft environmental assessment, and have the opportunity to comment prior to release of the revised environmental assessment.

The regulatory agencies will require compensatory mitigation for the unavoidable wetland impacts. Replacement of lost wetland functions and values will require the development of wetlands within the project corridor with functional values similar to those wetlands that are impacted. Potential mitigation options include wetland restoration within drained agricultural wetlands and filled lands adjacent to log mill sites primarily located at the eastern end of the project corridor. Wetland creation opportunities are also present at an old log mill site located in the western half of the project corridor.

In the agricultural lands, restoration of lowered wetland hydrology could be conducted by severing ditch connections or removing drainage tiles. Culverts may be raised to increase the amount of wetland hydrology in a particular area. On the old mill sites, fill material could be removed to pre-fill elevations. This would restore effectively filled areas by

intercepting natural occurring high water table levels. Native plant communities would be planted to re-establish historic Oregon ash bottomland, emergent marshes and wet meadows. New wetlands can be created from uplands by lowering surface elevations to expand pre-existing wetlands. By developing suitable hydrology sources (e.g. ditch diversion), new wetlands could also be created. Hydrophytic plants in the pre-existing wetland areas could colonize into the new, created wetlands.

ODOT will complete a detailed compensatory mitigation plan once the project alternatives and design options become funded and finalized. ODOT will coordinate mitigation concepts and performance standards with federal, state and local resource agencies. Prior to commencing with the project, a Section 404/Removal-Fill permit will be obtained from the U.S. Army Corps of Engineers and Oregon Division of State Lands. ODOT will develop compensatory mitigation plans to adequately replace impacted wetlands functions and values, and to ensure that no loss of the wetlands functions and values, or area, will occur as the result of this highway corridor project.

The compensatory mitigation plan will include an annual monitoring program by ODOT Environmental Services for a period of 5 years to document the development of wetland conditions and success of performance standards. The monitoring plan will involve the establishment of sampling plots to track hydrologic development and plant survival, composition and density over time. Photographic monitoring will be conducted to provide a visual record of the mitigation effort. Established photograph points will document plant community type development and coverage. Annual reports detailing monitoring results will be submitted to Division of State Lands and Corps of Engineers by December of each year of the required five-year period. The monitoring report will identify any gains and deficiencies in the progress of the mitigation sites.

As part of the annual monitoring reports, contingency measures will be included to discuss potential corrective actions if performance goals are not being met. Contingency measures may include corrective grading work to improve hydrologic conditions or replacement plantings to increase low plant survivorship. Modifications to the planting plan may also be made if the monitoring reveals that high plant mortality is due to an inappropriate hydrologic regime.

Water Quality

Highway projects can adversely affect water quality by their design and location, during construction, and by the operation of the highway. By their design and placement, highways can result in loss of riparian vegetation, leading to increased water temperatures, loss of wetlands with their multiple water quality benefits, and increased hydrologic flashiness. Construction activities can lead to increased erosion and consequent sediment problems as well as increasing the chance of toxic chemical spills. During the operation of the highway, pollutants carried by highway runoff can cause or worsen water quality problems in the receiving waters.

Hydrologic flashiness refers to rapidly fluctuating water flows in streams and rivers. Flashiness often results when storm water runs off impervious surfaces, such as paved roadways. Wetlands can reduce flashiness by storing and releasing storm and runoff waters more gradually into the nearby waterways.

The decline of water quality can adversely affect aquatic wildlife species. Elevated temperatures or toxin levels can induce stress that may result in increased mortality and a reduction in reproduction. Increases in these levels may also render areas less suitable or uninhabitable for some plant species. Hydrologic flashiness and sedimentation can also induce stress in animal species, as well as decrease juvenile survival rates and egg viability. Flashiness and sedimentation may also temporarily or permanently remove or cover areas suitable for some plant species. Impacts of water quality on wildlife species are addressed in the following sections concerning proposed, threatened and endangered species.

Existing Conditions of Water Quality

The project area is located in a valley drained by the South Yamhill River. The South Yamhill River flows northeast and joins the North Yamhill near McMinnville and then flows to the Willamette River, on to the Columbia River, and to the Pacific Ocean. Thirteen creeks and 12 unnamed perennial or intermittent streams flow into the South Yamhill in the corridor area. ORE 18 and 22 and Grand Ronde Road cross the South Yamhill River five times and the various creeks and ditches 15 times. The named creeks are: Jackass, Elmer, Gold, Agency, Little Rogue River, Lady, Cosper, Rock, Doane, Klees, Rowell, Crooked, and Cockerham.

Annual precipitation is approximately 1,000 millimeters (61.2 inches). Most precipitation falls as rain between November and May; flow in the basin begins to increase rapidly in October, peaks in January, and is lowest in August (*Draft Willamina-Grand Ronde Corridor Refinement Plan*, 1999). No major dams exist in the area.

Flood-prone areas, identified by Flood Insurance Rate Maps, exist along the South Yamhill and Little Rogue Rivers and Rock, Rowell, Gold, and Cosper Creeks. A floodway is mapped along the South Yamhill River. See Figure 25, 100-Year Floodplain Map.

Most of the Yamhill sub basin is in private ownership (95%). Water shortages occur in summer when flow is low and demand for irrigation is high. A majority of water permits are allocated for agriculture.

The Oregon Department of Fish and Wildlife has identified the South Yamhill River and most of its tributaries as candidate streams for in-stream water rights to protect fish populations and habitat. Many of the streams in the project area have been channeled and most riparian areas (defined as transitional zones located between surface water and upland areas) are relatively narrow and have few bends and curves. The riparian habitat provides food, water, cover and transportation corridor for a wide variety of fish, reptiles, amphibians, birds, small mammals, and upland species, including species federally and state listed as threatened and endangered (chinook salmon, steelhead, and possibly other species).

Riparian areas listed as Goal 5 resources on the Polk County Significant Resources Map include the South Yamhill and Little Rogue Rivers and Jackass, Joe Day, Rock, Rowell, Gold, Lady, Doane, Klees, Cosper, and Agency Creeks. Polk County recognizes stream flow regulation, bank and channel stabilization, sediment removal and storage, pollution removal, water temperature modification, and recreational benefits for riparian resources. Riparian Policy 3.3 of the *Comprehensive Plan* and Chapter 182 of *Polk County Zoning Ordinances* state riparian resources will be managed to balance development and conservation needs.

Figure 25
100-Year Floodplain Map of Willamina-Grand Ronde Corridor Area
color
11" x 17"
Front

Figure 25
100-Year Floodplain Map of Willamina-Grand Ronde Corridor Area
color
11" x 17"
Back

Riparian zones have setback areas where disturbance and development is prohibited; these range from 7.62 to 30.48 meters (25 to 100 feet). Some uses, such as bridges, are exempt from the setback requirements; however, adverse impacts must be mitigated as recommended by Oregon Department of Fish and Wildlife. See the discussion in the fish and wildlife habitat section about impacts to riparian habitat and mitigation measures.

Groundwater resources are located in the alluvial deposits and marine sedimentary rocks and basalts. The aquifers in younger alluvial deposits are hydraulically connected to the river and can yield abundant water supplies. Aquifers in the marine sedimentary and basalt are lower yielding and often brackish (*Draft Willamina-Grand Ronde Refinement Plan, 1999*).

The South Yamhill River is included in the Oregon State Department of Environmental Quality 303(d) list for 1998 and 2000. This list, named for the section of the Clean Water Act that makes the requirement, names streams (or stream segments), rivers, lakes and estuaries that do not meet water quality standards. Here the phrase “water quality limited” refers to water that does not meet DEQ instream water quality standards during the entire year or for a defined season. The South Yamhill is listed as water quality limited for bacteria in the fall, winter and spring and for temperature in the summer. It has a total minimum daily load (TMDL) set for phosphorus as well. None of the South Yamhill River tributaries in the project area are listed as water quality limited, but this may be due to lack of data.

Impacts of the Build Alternative on Water Quality

Impacts of the projects proposed in the Build Alternative on water quality can occur because of design and location, construction, and operations.

Design and Location Impacts

The alignment of the highway and associated local roads will determine the impacts to wetlands and riparian vegetation, and thereby to water quality, hydrology and stream temperature.

Riparian impacts will occur mostly at river and creek crossings. Because the South Yamhill is listed as not meeting water quality standards for temperature, any loss of shading would be considered important. Riparian vegetation provides other functions beyond shading, so the shadows cast by wider bridges are not considered mitigation.

The proposed project will likely result in the permanent loss of close to 4 hectares (9 to 10 acres) of wetlands. Preliminary estimates are that about 3.7 ha (9.2 acres) of wetlands will be filled. While any impact will require compensatory mitigation, the secondary effects on water quality may linger for a shorter or longer period, depending on how quickly the mitigation wetlands mature and become functional. Specifically, wetlands can trap toxins and sediments, transform nutrients, and moderate the hydrology of associated streams. The magnitude of the loss of these functions on the South Yamhill and tributaries is likely to be small, but would add to the cumulative impacts to the system. However, wetlands mitigation could over the long haul result in small improvements to water quality because the mitigation ratios will require replacement of more acres than those removed.

The project will more than double the existing impervious surface area, that is the amount of pavement or non-permeable gravel, of the project highway and local roads. Increased

impervious surface leads to increased flashiness of the receiving waters. Because the drainage basin of the South Yamhill is very large in comparison to that of the project, and it is not heavily developed, the effect of the project on the river's hydrology will be negligible.

Construction Impacts

Construction for widening the highway will expose a great deal of soil to erosion, presenting potential sediment problems. Without properly installed and maintained erosion and sediment control, large amounts of sediment could be carried into the South Yamhill and its tributaries. Bridge sites pose a greater problem and risk than most other locations on a project. In-water work associated with bridge construction will likely cause temporary increases in turbidity. These impacts are limited in duration and magnitude, and timing restrictions ensure that they occur during the period when the effects of increased turbidity are minimized.

Spills of hazardous construction chemicals can have severe impacts on the aquatic biota. Properly followed, restrictions on chemical and fuel storage, staging and fueling areas, and the condition of equipment working in or near the water should eliminate the danger of spills affecting the receiving waters.

Operations Impacts

Once highway widening is completed, runoff will increase and along with it associated pollutants and the possibility of temperature change. Highway runoff includes a suite of pollutants picked up from deposits on the roadway surface. Many or most of these come from vehicles that use the highway, but pollutants also include deposits of materials originating in industrial, agricultural and other activities off of the highway. The primary pollutants are: nutrients, including phosphorus; oil and grease; chemical and biological oxygen demand; bacteria; sediments; and heavy metals. Because of the below standard water quality status of the South Yamhill River, phosphorus and bacteria are of special concern. The metals, because they are the prime toxic constituents in runoff and could directly affect fish, are also important.

Oxygen demand:

The depletion of dissolved oxygen in the water by organisms or chemical processes.

Phosphorus. Without treatment, the runoff from the project roads may, on occasion, contribute to the total minimum daily load for phosphorus. The dilution factor in the river is very large (on the order of 200:1), so most of the time the overall contribution of highway runoff to the total load will be small. Still, there is the chance that a combination of conditions will result in highway runoff becoming a substantial part of the total discharge.

Metals. Concentrations in the South Yamhill will remain well below toxic levels, even with increased amounts from untreated highway runoff. For heavy metals, the concentration of copper is used to determine the potential for adverse impacts. While the proposed project will increase the amount of copper (and other metals) discharged to the South Yamhill system, the concentrations will be well below EPA acute toxicity criteria for both total and dissolved fractions.

Bacteria. Highway runoff may increase the concentration of bacteria in the South Yamhill. However, highways are not major sources (like septic systems or confined animal feeding operations) of pathogens and are not considered a major concern.

Temperature. The effect of the highway on stream temperature is directly related to removal of riparian vegetation where the road alignment is very close to the stream. Highway runoff in western Oregon does not contribute to high stream temperatures because it rarely rains during the hot summer months.

Other Chemical Pollutants. Maintenance activities that may contribute to chemical pollution of receiving waters include the application of anti-icing chemicals, and the use of herbicides to control roadside vegetation. A study recently completed by the United States Geological Survey (USGS) for ODOT (USGS 2000) determined that at the application rates used for the de-icing agent, calcium magnesium acetate (CMA), the chemical and its effect on dissolved oxygen is undetectable even in small streams. The only area where CMA remains a concern is where there are small ponds where CMA could accumulate and noticeably deplete oxygen. The migration of roadside herbicides from highway side slopes and ditches is still under investigation. ODOT follows guidelines to prevent herbicides from reaching open water.

Impacts of the No Build Alternative on Water Quality

Water quality impacts from the No Build Alternative would not be substantially different than for existing conditions of use and maintenance of ORE 18/22.

Mitigation for Water Quality

During the design phase of the project, the designers will work with environmental staff to incorporate avoidance and minimization of impacts to wetlands and riparian areas as much as possible. Unavoidable impacts will result in compensatory mitigation focused on replacing lost functions. Erosion and sediment control plans and pollution control plans will be developed for the Build Alternative before and implemented during construction. This is in accordance with the conditions of the NPDES (National Pollution Discharge Elimination System) 1200-CA permit and ODOT policy.

Treatment of highway runoff for phosphorus removal is required for the Build Alternative. Treatment of highway runoff will be incorporated into the design of the project. The primary target of treatment will be phosphorus, but it will also remove other pollutants, including sediment and metals. The target removal rate for phosphorus will be based on management plans for the South Yamhill River. Mitigation measures likely to achieve these ends on individual projects will likely consist of flat bottomed roadside filter strips and/or bioswales designed to treat 140% of the new impervious surface area.

With well-designed, implemented and maintained treatment facilities, the project should have little adverse impact on water quality. Stormwater treatment should be able to prevent any increase in overall pollutant increases as a result of the project. Mitigation of wetland and riparian impacts will take time to become fully effective, so there might be some short-term loss of water quality.

Fish and Wildlife Habitat

Existing Conditions

Fish

The South Yamhill River and its tributaries support runs of naturally spawning winter steelhead, spring chinook, and coho salmon (Polk County Community Development Department 1989, cited in *Draft Biological Assessment*). Cutthroat trout reside in all local watersheds in the project area. Sculpin, dace, whitefish, lamprey and other resident species inhabit the river as well. Polk County documents mention that steelhead and chinook spawn and rear in Agency Creek and the South Yamhill River within the project area. Steelhead have been found in the West Fork, North Fork and Main Stem Agency Creek and also in Coper, Gold, Rowell and Rock Creeks within the project area. Willamina Creek and South Yamhill River are designated “essential indigenous anadromous salmonid habitat” (OAR 141-102-0000). Essential habitat is that necessary to prevent the depletion of indigenous and anadromous salmonid species during their life history stages.

Wildlife

Big game such as black bear, black-tailed deer, Roosevelt elk, and cougar live in the project area. Deer and elk winter range lies in the valley bottom with peripheral winter range in the foothills adjacent to the bottomlands and in the riparian areas of the South Yamhill River. Game birds such as ruffed grouse, blue grouse, and mountain quail inhabit the mountainous portions of the corridor; ring-necked pheasants and valley quail reside in brushy areas and doves and band-tailed pigeons are seasonal residents.

Non-game wildlife includes small mammals, birds, reptiles and amphibians. Small mammals that may inhabit the area include bats, mice, voles, shrews, rabbits, skunks muskrats, nutria, minks, beavers, opossums, raccoons, and coyotes, among others. Birds in the area include neotropical migrants, passerine residents, raptors, waterfowl, and shore birds. Reptiles and amphibians may include snakes, lizards, turtles, frogs, toads, and salamanders.

Habitat

Fish and wildlife habitat surveys were conducted for this project. In addition, an assessment of state and federally proposed, threatened, endangered and sensitive species (PTES) known or expected to occur within the study area was prepared.

Eight fish and wildlife habitat types were identified using aerial photographs, U.S. Geological Survey topographic quadrangles and U.S. Fish and Wildlife Service *National Wetland Inventory* maps. On-the-ground surveys were conducted March 27 and 28, 2000. The area studied includes 50 meters (164 feet) from the proposed project. The 8 habitat types are shown in Table 16, which lists the hectares and percent of existing habitat in the project area and the hectares and percent that would be impacted by the proposed Build Alternative.

TABLE 16

Approximate Area of and Expected Impact to Each of Eight Habitat Types Occurring in the H. B. Van Duzer Forest Corridor to the Steel Bridge Road Project Area

Habitat Type	Existing In Study Area		Impacted By the Build Alternative	
	Hectares	Percent	Hectares	Percent
Disturbed	82.6	25.3%	34.0	10.4%
Agricultural (excluding wetlands)	58.8	18.0%	7.5	2.3%
Old-field/scrub/shrub	95.0	29.1%	12.0	3.7%
Forest	39.3	12.0%	4.3	1.3%
Riparian	7.3	2.3%	0.4	0.1%
Forested wetlands	3.6	1.2%	0.5	0.1%
Scrub/shrub wetlands	1.2	0.4%	0.2	0.1%
Emergent wetlands	38.5	11.8%	3.0	0.9%
Total	326.6	100%	61.8	18.9%

Disturbed Habitat

Disturbed habitat covers approximately 82.61 hectares (206.53 acres) of the study area. It consists of businesses, dwellings, yards, grounds, driveways and roads with sparse or no vegetation. It contains both native and non-native plants. Wildlife present includes a mix of native and non-native species closely associated with human activity. Common species expected to be present include the European starling, house sparrow, American robin, American crow, house finch, barn swallow, house mouse, Norway rat, and Virginia opossum, among others.

Agricultural Habitat

Agricultural areas comprise approximately 58.83 hectares (145.08 acres) of the study area. Agricultural areas are generally planted in grasses, used as pasture, or used for a variety of orchard or row crops. Overall wildlife habitat value is low. Species present would include numerous small mammals, raptors, some ground nesting, granivorous and insectivorous birds, birds that tolerate human presence, and medium and large mammals that adapt to human presence. Use by many wildlife species will depend upon the availability of suitable cover nearby.

Old-field/Scrub/Shrub Habitat

Old-field/scrub/shrub areas comprise approximately 94.96 hectares (237.40 acres) of the study area. Old-field/scrub/shrub areas are generally old fields that have been abandoned and colonized by non-native shrubs and weedy species or small unmanaged, upland areas of native scrub/shrub. Common plants include Scotch broom, Himalayan blackberry, Douglas hawthorn, red alder, and various other native and non-native plants that afford cover for numerous neotropical migrants and resident bird species. Common mammals are the deer mouse, brush rabbit, striped skunk, coyote and black-tailed deer, among others.

Forest Habitat

Mixed coniferous-deciduous forest covers approximately 39.33 hectares (98.33 acres) of the study area. Mixed coniferous-deciduous forest overstory generally consists of Douglas-fir, bigleaf maple, and Oregon white oak. The understory contains weedy and native shrubs, grasses, and forbs. A wide variety of wildlife is associated with mixed forest habitat in western Oregon. Common species expected include neotropical migrant and resident passerine birds, woodpeckers, ruffed grouse, raptors and black-tailed deer.

Riparian Habitat

Approximately 7.34 hectares (18.35 acres) of riparian habitat occur within the study area. For this report, riparian habitat type is defined as the area between the banks of streams, including open water and associated vegetation. Black cottonwood, bigleaf maple, Oregon ash, red alder and occasional western redcedar make up the dominant overstory vegetation. Dominant understory trees and shrubs are willow, red-osier dogwood, vine maple, snowberry, Oregon grape, sword fern, Indian plum, Pacific ninebark, and Himalayan blackberry. Common riparian and aquatic-associated species include various reptiles and amphibians, neotropical migrant and resident passerine birds, waterfowl and shorebirds, osprey, muskrat, mink, beaver, Virginia opossum, raccoon, and numerous small mammals as well as numerous upland species and multi-cover users.

Forested Wetlands Habitat

Approximately 3.85 hectares (9.63 acres) of forested wetlands occur within the study area. A substantial tree canopy (mainly Oregon ash and black cottonwood) characterizes forested wetlands, though elements of other wetland types (e.g., scrub/shrub and emergent) may occur in the lower strata. Wildlife expected to occur in forested wetlands is similar to that described for riparian habitat.

Scrub/shrub Wetlands Habitat

Approximately 1.18 hectares (2.95 acres) of scrub/shrub wetlands occur within the study area. Scrub/shrub wetlands have a substantial shrub layer as the most upper stratum. Such wetlands, may, however, be underlain with emergent wetlands or, in some cases, open water. Wildlife commonly found in scrub-shrub wetlands of the Willamette Valley include American goldfinch, willow flycatcher, song sparrow, Bewick's wren, yellow warbler, yellow-breasted chat, vagrant shrew, Townsend's vole, beaver, and numerous other wetland and upland species that prefer shrub cover.

Emergent Wetlands Habitat

Approximately 38.47 hectares (96.18 acres) of emergent wetlands occur within the study area. Emergent wetlands are those having only aquatic, semi-aquatic, and/or grasses and forbs as vegetative cover. Common emergent wetland-associated species include the Pacific tree frog, red-legged frog, red-winged blackbird, common yellowthroat, savannah sparrow, marsh wren, common snipe, great blue heron, northern harrier, Townsend's vole, vagrant shrew, nutria and muskrat, among others. When adjacent shrub and tree cover is nearby, many other wetland and upland species use emergent wetlands for foraging and other activities.

Impacts of the Build Alternative on Wildlife Habitat

Fish and wildlife that use the study area will be subjected to temporary and permanent impacts as a result of the proposed project on ORE 18. The degree of impact to individual species will depend on the distribution, abundance, mobility, habitat requirements, and sensitivity of that species to disturbance. Impacts can be categorized as those associated with direct mortality, habitat loss and alteration, and human-related disturbance. Direct mortality to fish and wildlife could take place during land clearing and earthwork and from vehicles hitting wildlife on the roads both during and after construction. Species and individuals with a reduced capacity to flee land-clearing activities (e.g., most amphibians and reptiles, small mammals, young of many species) would be most susceptible to injury or mortality. Others driven from the security of cover could face an increased risk of predation.

Implementing the Build Alternative would impact wildlife crossing the highway. Widening approximately 9.4 miles the highway to 4 lanes would increase the amount of pavement and travel lanes wildlife must negotiate to cross the highway. Constructing non-traversable medians that may contain barriers would slow or stop some wildlife species. This could result in limiting or stopping wildlife movement of some species and increasing the number of roadkills of individual members of some species. Slow-movers such as salamanders and turtles are at high risk for being killed, as are wide-ranging species such as deer, elk and large carnivores. In addition, humans are threatened by vehicle collisions with wildlife.

Roads can also isolate wildlife populations genetically. This phenomenon is especially dangerous for threatened or endangered species in relatively remote areas. The habitat fragmentation can cause inbreeding depression and hasten extinction.

Permanent habitat loss will occur to all eight cover types in the study area (Table 16, above). Habitat loss could be locally severe for individuals of species that breed or reside in habitats within the construction area. Nonetheless, the loss of disturbed, agricultural and old field habitats is considered a minor impact to wildlife because of their degraded and compromised condition and because the majority of species using these habitats are relatively common and include large numbers of non-native species. Higher value habitats for wildlife include the various wetland habitats and associated riparian and forested areas. Displaced wildlife will move into adjacent habitats and compete for breeding and feeding territories with other resident animals. Where adjacent habitat is already at a saturation level, survival of displaced individuals will likely be poor. Wildlife displaced into unfamiliar surroundings will be subjected to increased stress and likelihood of mortality. Habitat loss or alteration will likely cause some bird species to abandon the area and temporarily become transient non-breeders. Loss of wetland habitats may impact terrestrial wildlife species that utilize the wetlands for food, water, and cover. However, there are other accessible wetlands in close proximity to wetlands proposed for removal that could meet these needs.

Construction activities will result in increased levels of noise and human presence along much of the construction corridor. Wildlife susceptible to disturbance from increased noise or human presence (e.g., raptors) may be adversely affected during the construction period. Noise and human presence may temporarily interfere with normal patterns of animal behavior, such as resting, foraging, or breeding behaviors. Noise and human presence may result in the temporary displacement of sensitive wildlife from areas near the disturbance. These disturbance impacts could result in a temporary short-term decline in reproductive

success and an increase in mortality for sensitive wildlife. Some wildlife become accustomed to noise, human presence, and other disturbances and may return to areas after an initial period of avoidance. In general, these temporary short-term disturbance impacts to wildlife from noise and human presence are not expected to permanently impact most wildlife populations.

Disturbed Habitat

Approximately 34.0 hectares (84.1 acres) of disturbed area will be impacted by the proposed project. Loss of disturbed habitat could include the loss of structures in which some wildlife species (e.g., barn owl, barn swallow, house mouse, big brown bat) may reside, as well as the loss of landscaped or modified habitat used by species closely associated with human activity. The importance of the loss of disturbed habitat is low, and therefore not significant, due to the marginal value this habitat provides wildlife. Wildlife using disturbed habitat is typically very common and often non-native. Thus, the likelihood of proposed, threatened, and endangered species being present is low.

Agricultural Habitat

Approximately 7.5 hectares (18.8 acres) of agricultural area will be impacted by the proposed project. Again, the importance of the loss of agricultural fields for fish and wildlife is low due to the marginal value this habitat provides wildlife and the abundance of agricultural fields in the project vicinity. Wildlife using this frequently disturbed habitat is typical of the area and often non-native. The likelihood of proposed, threatened, or endangered species using agricultural habitat is very low due to the level of repeat disturbance.

Old-Field/Scrub/Shrub Habitat

Approximately 12.0 hectares (30.1 acres) of old field/scrub/shrub habitat area will be impacted by the proposed project. The value of the permanently lost old-field habitat is considered low to moderate due to the disturbed early seral conditions present and the preponderance of introduced weedy species (e.g., Scotch broom, Himalayan blackberry). Wildlife at greatest risk of impact includes birds which nest and forage in open shrub cover, and small and medium-sized mammals that utilize patchy shrub and meadow habitat. These impacts are considered relatively minor due to the abundance of old field habitat both locally and regionally. This cover type may serve as habitat for proposed, threatened, and endangered plant species.

Forest Habitat

Approximately 4.3 hectares (10.8 acres) of forest habitat will be impacted by the proposed project. The value of the permanently lost forest habitat is moderate to high due to the structural diversity (e.g., canopy layering) and key habitat elements (e.g., snags, logs) present in the forests, and the time and resources involved in forest growth. A wide variety of relatively common forest-associated wildlife will be affected by the loss of this habitat. Likelihood of use by proposed, threatened, and endangered wildlife is low, but the edges of this cover type may serve as habitat for proposed, threatened, and endangered plant species.

Riparian Habitat

Approximately 0.4 hectares (0.9 acres) of riparian habitat will be impacted by the proposed project. The value of the permanently lost riparian habitat is high due to the importance of this habitat to fish and wildlife, including proposed, threatened, and endangered species (chinook salmon, steelhead, red-legged frog, and northwestern pond turtle). Riparian habitat provides food, water, and cover for a wide variety of upland and aquatic-associated species and often serves as a corridor for movement by wildlife between habitat patches.

Forested Wetlands Habitat

Approximately 0.5 hectares (1.2 acres) of forested wetland habitat will be impacted by the proposed project. The value of the permanently lost forested wetland habitat is moderate to high due to its potential to provide important physical (e.g., nutrient transformation, flood control) and biological (e.g., habitat for fish, wildlife, and plants) functions, including habitat for proposed, threatened, and endangered species (e.g., red-legged frog, salmonids). Values for impacted wetlands may vary depending on current or potential quality.

Scrub/Shrub Wetlands Habitat

Approximately 0.2 hectares (0.4 acres) of scrub/shrub wetland habitat will be impacted by the proposed project. The value of the permanently lost scrub/shrub wetland habitat is moderate to high due to its potential to provide important physical (e.g., nutrient transformation, flood control) and biological (e.g., habitat for fish, wildlife, and plants) functions, including habitat for proposed, threatened, and endangered species (e.g., red-legged frog).

Emergent Wetlands Habitat

Approximately 2.99 hectares (7.48 acres) of emergent wetland habitat will be impacted by the proposed project. The value of the permanently lost emergent wetland habitat is moderate to high due to its potential to provide important physical (e.g., nutrient transformation, flood control) and biological (e.g., habitat for fish, wildlife, and plants) functions, including habitat for proposed, threatened, and endangered species (e.g., red-legged frog).

Impacts of the No Build Alternative on Wildlife Habitat

No impacts to wildlife habitat would result from the No Build Alternative other than those that now exist from use and maintenance of the segment of ORE 18 and ORE 22 within the study area.

Mitigation for Wildlife Habitat

Both the Oregon Division of State Lands (DSL) and the U.S. Army Corps of Engineers (USACE) will regulate most, if not all, of the wetlands. All in-water work will be conducted during agency-prescribed work periods and localized in space and time, thereby reducing the potential for detrimental effects to aquatic species. ODOT has consulted informally with the Department of State Lands and will initiate formal consultation with the Department of State Lands and the Army Corps when projects reach design stage.

Impacts to riparian habitats will require mitigation consultation with the National Marine Fisheries Service. ODOT has initiated formal consultation with the National Marine Fisheries Service.

ODOT will follow Best Management Practices (BMPs) during construction to avoid causing impacts to wildlife habitat. Best Management Practices are techniques, procedures, schedules of activities, prohibitions of practices, and other management tools aimed at reducing impacts and protecting and preserving resources.

To minimize impacts on wildlife attempting to cross the highway, ODOT will consider the following actions for incorporation into the final construction plan for each segment of the project to facilitate wildlife movement across or under the highway and to reduce the number of animals killed on the highway:

- When replacing culverts, insure that the culvert is not perched to allow for more effective fish and amphibian access. A large diameter culvert should also be considered to allow for small mammal use.
- Consider building ramps to existing perched culverts to improve access for amphibians. This action would be particularly effective when wetlands or forested areas are present on both sides of the highway.
- Consider bridges or other options to improve fish passage for Jackass Creek and other fish bearing streams where less effective structures currently exist.
- Reduce impacts to raptors by minimizing impacts to existing riparian areas and reestablishing trees outside the project clear zone.

Proposed, Threatened and Endangered Species

Table 17 shows the listed and proposed threatened and endangered species known or suspected to occur in the project area.

TABLE 17
Proposed, Threatened and Endangered Species

Listed Species	Status	Federal or State Listing
Chinook salmon (<i>Oncorhynchus tshawytscha</i>)	Threatened	Federal
Steelhead trout (<i>Oncorhynchus mykiss</i>)	Threatened Sensitive, Critical	Federal State
Oregon Coast coho salmon <i>Oncorhynchus kisutch</i>	Threatened Sensitive, Critical	Federal State
Oregon chub (<i>Oregonichthys crameri</i>)	Endangered Sensitive, Critical	Federal State
Northern red-legged frog (<i>Rana aurora aurora</i>)	Species of Concern Sensitive, Undetermined	Federal State

TABLE 17
Proposed, Threatened and Endangered Species

Listed Species	Status	Federal or State Listing
Northwestern pond turtle (<i>Clemmys marmorata marmorata</i>)	Species of Concern Sensitive, Critical	Federal State
Fender's Blue Butterfly (<i>Icaricia icarioides fenderi</i>)	Endangered	Federal
Nelson's Checker-Mallow (<i>Sidalcea nelsoniana</i>)	Threatened Threatened	Federal State
Bradshaw's Lomatium (<i>Lomatium bradshawii</i>)	Endangered Endangered	Federal State
Howellia (<i>Howellia aquatilis</i>)	Threatened	Federal
Willamette Valley Daisy (<i>Erigeron decumbens var decumbens</i>)	Endangered Endangered	Federal State
Kincaid's lupine (<i>Lupinus sulphureus var. Kincaidii</i>)	Threatened Threatened	Federal State
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Threatened	State
Marbled murrelet (<i>Brachyramphus marmoratus</i>)	Threatened Threatened	Federal State
Northern spotted owl (<i>Strix occidentalis caurina</i>)	Threatened Threatened	Federal State

Endangered: a species in danger of becoming extinct in the foreseeable future

Threatened: a species is likely to become endangered unless steps are taken to halt its decline

Sensitive Critical: a species for which listing as threatened or endangered is pending, or some species at risk throughout their range, and some distinct populations

Sensitive Undetermined: a species whose status is unclear, may be susceptible to population decline, and requires more study

Species of Concern: a species whose conservation is of concern, but more information is needed for listing

Existing Conditions for the Proposed, Threatened and Endangered Bird Species: Bald Eagle, Marbled Murrelet and Northern Spotted Owl

Bald eagle: (*Haliaeetus leucocephalus*)

Status: Federally Threatened; State Threatened

Bald eagles are not addressed in this environmental assessment because there are no known occurrences in the vicinity of the project. The quality of habitat is marginal due to high levels of human activity and poor nesting, roosting, and foraging opportunities.

Marbled Murrelet: (*Brachyramphus marmoratus*)

Status: Federally Threatened (USFWS); State Threatened

The marbled murrelet is a small seabird that inhabits coastal areas from Alaska to south central California. Murrelets spend most of their lives in the marine environment where they feed primarily on small fish and invertebrates in near-shore marine waters. They typically nest within remaining older forest stands that are close enough to the coast to allow them to fly back and forth. In Oregon, marbled murrelets occur along the central coast from Cape Mears south to Coos Bay. Distribution is patchy or clumped and appears to be associated with the distribution of inland old-growth forests and coastal rivers along the shoreline.

In the Pacific Northwest, murrelets nest in low-elevation old-growth and mature conifer forests which contain multilayered canopies. Canopy cover is believed to provide protection from predators and weather. Nesting marbled murrelets have been found in forest stands as far as 84 kilometers (52 miles) inland in Washington. The farthest known inland occurrence of nesting marbled murrelets in Oregon is 61 kilometers (38 miles). Predators include the common raven, Stellar's jays, and great horned owls, among others.

Murrelet nesting occurs over an extended period from late March to late September.

No marbled murrelet nesting habitat exists in the study area. Although some trees suitable for nesting may be located in the H. B. Van Duzer Forest Corridor adjacent to the west end of the project, no known areas of activity are documented in or within 1 mile of the project area.

Northern Spotted Owl: (*Strix occidentalis caurina*)

Status: Federally Threatened (USFWS); State Threatened

The northern spotted owl is a forest dwelling owl that prefers mature old-growth, mixed conifer forest habitats. Spotted owls will occupy second-growth forests if key components of old-growth forests are present. However, population density and reproductive success are usually lower than for owls inhabiting old-growth forests.

Spotted owls usually don't breed until their third year and have a life expectancy of up to 15 years in the wild. Reproduction rarely occurs every year, and survival of offspring varies annually and geographically. The nesting and fledging season is from late March to early September.

The estimated historic range of the northern spotted owl in Oregon included most forested areas below 4,500 feet elevation west of, and including, the Cascade Mountains. Although there are no known historic population estimates, regional populations were likely greater in the past when suitable habitat was more abundant or distributed differently.

The forested habitat in and around the study area is heavily fragmented, a consequence of prior land management actions (particularly agriculture) over the last 150 years. The forest stands in and around the project area meet the criteria used by the nearby Siuslaw National Forest for spotted owl dispersal habitat. The forest, forested wetland, and riparian cover types are primarily comprised of deciduous trees with patches of young conifers. This habitat is likely of low quality due to the proximity to high levels of human activity and a heavily traveled highway. Although the H. B. Van Duzer Forest Corridor (located adjacent to the west end of the study area) likely provides suitable habitat for spotted owl nesting, roosting, or foraging, no known site centers are located in or within 1 mile of the study area.

Impacts of the Build Alternative on Proposed, Threatened and Endangered Bird Species

Bald Eagle: There are no known occurrences in the vicinity of the project and therefore, no impact to this species are expected from project-related activities.

Marbled Murrelet: Since no marbled murrelet activity is documented in or within 1 mile of the study area and no suitable habitat for murrelet nesting exists within the project area, no impacts due to noise, habitat removal or changes in water quality are expected from the Build Alternative.

Northern Spotted Owl: The project, as proposed in the Build Alternative would permanently remove approximately 5.14 hectares (12.85 acres) of low quality spotted owl dispersal habitat (i.e., forest, forested wetland, and riparian cover types).

Impacts of the No Build Alternative on Proposed, Threatened and Endangered Bird Species

Impacts of the No Build Alternative on proposed, threatened and endangered bird species would not be different than the current conditions for use and maintenance of the highway in the proposed project area.

Mitigation for the Proposed, Threatened and Endangered Bird Species

ODOT has initiated consultation with the U. S. Fish and Wildlife Service to request concurrence with the finding of no effect to the bald eagle, marbled murrelet, and northern spotted owl. See Appendix C, Natural Resources Consultations.

Existing Conditions for Proposed, Threatened, and Endangered Fish Species: Upper Willamette River Evolutionarily Significant Units for Salmonids—Steelhead Trout and Chinook Salmon

Steelhead Trout (Upper Willamette River): (*Oncorhynchus mykiss*)

Status: Federally Threatened (NMFS); State Sensitive – Critical

Steelhead found in the South Yamhill River basin are part of the Upper Willamette River ESU (Evolutionary Significant Unit). This ESU was listed as threatened in March 1999 (64 FR 14517). Critical habitat for this ESU was designated on February 16, 2000 (65 FR 7764). The native steelhead in the Upper Willamette River ESU are late migrating winter run fish, entering freshwater in March and April (NMFS 1998).

Generally, steelhead in Oregon streams require cold, clean streams for migration, spawning, and rearing. Spawning gravel must be clean and from pea to grapefruit in size. The South Yamhill River and its tributaries support runs of naturally spawning winter steelhead that spawn and rear in Agency Creek and the South Yamhill River within the project area. Winter steelhead have been found in the Little Rogue River and Cosper, Gold, Rowell, and Rock Creeks within the project area.

Evolutionarily Significant Unit:

A group of vertebrates considered “distinct” for Endangered Species Act purposes (NMFS only). ESU boundaries are determined through the examination of genetic, life history, biogeographic, geologic, and other environmental information.

Chinook salmon (Upper Willamette River): (*Oncorhynchus tshawytscha*)

Status: Federally Threatened (NMFS); State No Special Status

Chinook salmon utilizing the South Yamhill River basin are part of the Upper Willamette River ESU. This ESU was listed as threatened on March 24, 1999 (64 FR 14308). Critical habitat for this ESU was designated on February 16, 2000 (65 FR 7764). Spring chinook from the Upper Willamette River ESU have an unusual life history that shares features of both ocean and stream-type fish.

Generally, chinook in Oregon streams require cold, clean streams for migration, spawning, and rearing. The preferred temperatures for chinook salmon are similar to that of steelhead. Spawning gravel must be clean and from pea to grapefruit in size. Historically, chinook salmon would use the South Yamhill watershed for spawning and rearing of parr. However, chinook have not been seen in recent years, and it is unknown to what extent they return to the South Yamhill basin (Beak, J. Baker, CTGR, personal communication).

Coho Salmon (Oregon Coast): (*Oncorhynchus kisutch*)

Status: Federally Threatened (NMFS), State Sensitive – Critical

Coho salmon utilizing the Little Nestucca River basin are part of the Oregon Coast ESU. This ESU was listed as threatened on August 10, 1998 (63 FR 42587). National Marine Fisheries Service commented that coho salmon from the Little Nestucca River may occur in the western end of the project area. Project activities will not occur within the boundaries of this ESU; therefore, no impacts are anticipated.

Oregon chub: (*Oregonichthys crameri*)

Status: Federally Endangered (USFWS); State Endangered

Historic habitats of the Oregon chub in the Willamette Valley were mainstem meanders and oxbows, stable backwater sloughs, marshes and beaver ponds (ODFW et al. 1992). Little or no Oregon chub habitat occurs along the South Yamhill River or its tributaries and there are no recorded occurrences for the area; therefore, no impacts are anticipated.

Impacts of the Build Alternative on Proposed, Threatened, and Endangered Fish Species

Impacts to the ESUs are based on the types of activities involved in implementing the proposed project: bridge structure repair or replacement; culvert extension, replacement, installation or enhancement; minor alignment changes within or adjacent to a riparian corridor; and road repair or improvement.

The proposed actions of the Build Alternative may affect, and are likely to adversely affect, the Upper Willamette River ESUs of steelhead trout and chinook salmon and their habitat. This determination is based on the National Marine Fisheries Service's dichotomous key for making Endangered Species Act determinations of affect and on the cumulative impacts of the series of construction projects associated with the proposal, each of which will likely have minor short- or long-term impacts to the environmental baseline. Anticipated general effects of project construction on steelhead trout and chinook salmon would likely include short-term or minor long-term degradation of sedimentation and turbidity, water

temperature, chemical contamination, substrate, large woody debris, pool quality, refugia, bank condition, road density and location, and disturbance history in the South Yamhill River basin.

Steelhead trout would be adversely effected by increases in sediment and toxin levels and by elevated water temperature. Elevated water temperatures may also improve the suitability for bass and other warm water species, which may prey on steelhead eggs and juveniles.

Wetland fill and removal of riparian vegetation would reduce the amount of area functioning to remove sediments and toxins from the water prior to entering the streams and would also contribute to elevated stream temperature. For the proposed project, unavoidable wetland impacts should be temporary because this habitat will be replaced through mitigation (i.e., creation, restoration, or enhancement of wetlands). When possible, riparian vegetation will be avoided or replaced through mitigation.

Although steelhead are not typically present in inland streams for long enough periods to absorb lethal amounts of toxins, elevated toxin levels, particularly phosphorus, could lead to algal blooms which cause large fluctuations in dissolved oxygen. This condition could cause stress in the fish, resulting in declining body condition and greater susceptibility to disease and infection.

All in-stream work is planned according to agency timing restrictions; therefore, sedimentation should not affect steelhead populations.

Hydrologic flashiness could alter stream structure by scouring the substrate and removing large woody debris, potentially degrading pool quality, refugia, and bank conditions. Large influxes of water during the spawning season could cause greater stress to adults migrating upstream and is likely to dislodge eggs, making them more susceptible to predation. Since the drainage basin of the South Yamhill River is not heavily developed and is very large in comparison to the project, the effect of the project on the river's hydrology will be negligible.

Because specific project designs for the individual improvements of the proposed Build Alternative have not been finalized, specific anticipated effects to the ESUs have not been evaluated. More detailed and site-specific analyses will be conducted during the project planning phase before construction of each segment.

Refugia in a fisheries context is habitat that functions as protection for a variety of activities including foraging, shelter from predation, over-wintering, and for functions such as flow and thermal extremes.

Impacts of the No Build Alternative on Proposed, Threatened, and Endangered Fish Species

The No Build Alternative would not impact the proposed, threatened and endangered fish species – chinook salmon and steelhead trout – more than the current use and maintenance of the highway segment in the study area.

Mitigation for Proposed, Threatened, and Endangered Fish Species

The Oregon Department of Transportation has initiated formal consultation with the U. S. Fish and Wildlife Service and the National Marine Fisheries Service. See Appendix C,

Natural Resources Consultations. ODOT would pursue the following (and possible other) avoidance, minimization, and mitigation measures in order to limit the effects of the proposed Build Alternative on the listed ESUs and their critical habitat in the project area.

Bridge Structure Repair or Replacement

The following avoidance, minimization, and mitigation measures will be applied to all activities involving bridge repair or replacement:

- Institute all Best Management Practices (BMPs). BMPs are techniques, procedures, schedules of activities, prohibitions of practices, and other management tools aimed at reducing impacts and protecting and preserving resources.
- Eliminate where feasible the intentional release of untreated drainage to waterways.
- Pursue mitigation at a 1.5:1 ratio for degraded or removed functional riparian vegetation within the affected watershed.
- Maintain channel area and length.
- Minimize rip-rap where appropriate.

Culvert Extension, Replacement, Installation, or Enhancement

The following avoidance, minimization, and mitigation measures will be applied to all activities involving culvert extension, replacement, installation, or enhancement:

- Maintain fish passage (as per ORS 498.268 and ORS 509.605).
- Institute all Best Management Practices.
- Meet the specifications described in the inter-agency Memorandum of Understanding (MOU) on stream crossings for any newly-installed culverts.⁵
- Incorporate high-flow discharge designs.
- Restore passage where possible.
- Review culverts that are barriers to fish passage and consider solutions.
- Pursue mitigation at a 1.5:1 ratio for degraded or removed functional riparian vegetation within the affected watershed to benefit aquatic systems.
- Maintain channel area and length.

Minor Alignment Changes Within or Adjacent to a Riparian Corridor

The following avoidance, minimization, and mitigation measures will be applied to all activities involving minor alignment changes within or adjacent to a riparian corridor:

- Institute all Best Management Practices.

⁵ *Memorandum of Understanding, Oregon Department of Transportation, Oregon Department of Fish and Wildlife, Oregon Department of Agriculture, Division of State Lands, Federal Highway Administration and Oregon Department of Forestry, January 27, 1997.*

- Pursue mitigation at a 1.5:1 ratio for degraded or removed functional riparian vegetation within the affected watershed to benefit aquatic systems.

Road Repair or Improvement

The following avoidance, minimization, and mitigation measures will be applied to all activities involving road repair or improvement:

- Institute all Best Management Practices.
- Use all applicable in-water work conservation measures.
- Pursue mitigation at a 1.5:1 ratio for degraded or removed functional riparian vegetation within the affected watershed to benefit aquatic systems.

General Minimization/Avoidance Measures (Best Management Practices)

The following minimization and avoidance measures, or BMPs will be used for the project activities described above as they apply to each specific situation:

- In-Water and Bank Work
 - Ensure passage of fish as per ORS 498.268 and ORS 509.605.
 - Complete all work within the active channel of all anadromous fish-bearing systems within Oregon Department of Fish and Wildlife’s in-water work period for the Yamhill River basin, July 1 to October 15. Any extensions will first be approved in writing by and coordinated with Oregon Department of Fish and Wildlife and National Marine Fisheries Service (and Department of State Lands if a Removal/Fill permit is required).
 - Remove mud from equipment prior to operation in the stream. Do not permit equipment with fluid leaks to operate in or near streams.
 - Minimize the impacts of riprap placement and the amount of riprap used. Use bioengineering in conjunction with riprap.
 - Use larger riprap preferentially in areas with riprap installation within the 2-year floodplain where this riprap would come into contact with actively flowing water and where it would not substantially constrict the channel, nor require substantially larger impacts to bank areas. Plant riprap areas with native willow stakes (and other riparian shrubs and trees) to increase shading and cover within the 10-year floodplain, where appropriate.
 - Minimize alteration or disturbance of stream banks and existing riparian vegetation.

Erosion Control

ODOT will prepare an Erosion Control Plan (ECP) for all construction projects with the potential to contribute sediment to aquatic resources. The Erosion Control Plan will outline how and to what specifications various erosion control devices will be installed and maintained to meet water quality standards, and will provide a specific inspection protocol and time response. The contractor may revise the Erosion Control Plan with the concurrence

of the ODOT engineer, providing that the revised Erosion Control Plan offers the same or superior protection. For precise specifications, see Specification 280 (ODOT 1996). See also *Biological Assessment, Effects on the upper Willamette River Steelhead and Chinook Salmon ESUs* prepared by Beak Consultants Incorporated.

Hazardous Materials (HazMat)

- The contractor (as ODOT's agent) will meet or exceed the Department of Environmental Quality requirements for the NPDES (National Pollution Discharge Elimination System) 1200-CA permit.
- The contractor will develop an adequate, site-specific Spill Prevention and Countermeasure or Pollution Control Plan (PCP) and is responsible for containment and removal of any toxicants released. The Pollution Control Plan specifies restrictions on chemical storage, refueling areas and other activities that have the potential to release pollutants.
- No toxicant (including petroleum products) will be stored within 50 meters (164 ft) of any stream.
- Hazardous material booms will be installed in all streams where certain conditions apply or where they could be useful.
- Mobile construction will not be allowed to operate within the five-year floodplain of any anadromous system if the vehicles show signs that they may contribute toxic materials into the waterway.
- No surface application of nitrogen fertilizer will be used within 15 meters (50 feet) of any stream.
- No treated timbers shall be used in waterways.

Riparian Impacts

- Boundaries of the clearing limits will be flagged (ODOT project inspector, assisted by an ODOT biologist). Ground beyond the flagged boundary will not be disturbed.
- Minimize alteration of native vegetation. No protection will be made for invasive exotic species (e.g. Himalayan blackberry).
- ODOT will require a contract grow period for all riparian mitigation plantings.

Water Quality Impacts

- Treat highway runoff for phosphorus. This is required. As management plans are developed for the South Yamhill River, mitigation goals will be better defined. The actual type of treatment will depend on site specific factors as well as pollutant removal goals.
- Remove other pollutants (while not the primary target of treatment).

Existing Conditions for Proposed, Threatened, and Endangered Wildlife Species

Northern red-legged frog: (*Rana aurora aurora*)

Status: Federal Species of Concern (USFWS); State Sensitive – Undetermined

The northern red-legged frog inhabits moist coniferous and deciduous forests, breeding in cool, well-shaded ponds, lake edges, beaver ponds and slow-moving streams. Stillwater portions of the Yamhill River, its tributaries, and other wetlands within the study area may serve as breeding and rearing habitat for red-legged frogs with riparian, forest and other nearby habitats likely to provide suitable terrestrial habitat. Extensive agricultural practices, off-channel aquatic habitat modification and other land management activities have compromised overall habitat suitability. In some areas, runoff from farmed lands containing agricultural chemicals may degrade breeding habitat suitability. However, red-legged frogs are likely utilizing portions of the project area where conditions are favorable.

Northwestern pond turtle: (*Clemmys marmorata marmorata*)

Status: Federal Species Of Concern (USFWS); State Sensitive – Critical

The northwestern pond turtle occupies aquatic habitats including marshes, sloughs, lakes, ponds, reservoirs, and slow-moving portions of creeks and rivers. Within the project area, habitat for pond turtles is generally restricted to the slow moving portions of the Yamhill River and its tributaries: oxbows, ponds, quiet, muddy water, and wetlands. Riparian areas and upland habitats adjacent to streams and wetlands may be used for nesting and overwintering. Extensive agricultural practices, alteration of off-channel aquatic habitat and other land management activities have compromised suitable habitat. Plowing fields may degrade habitat and destroy nests. Old-field/scrub/shrub areas may provide the best nesting habitat. Introduced bullfrogs and largemouth bass are known to prey upon hatchling and juvenile pond turtles and are believed to have contributed to the population declines of turtles in the Willamette Valley and adjacent areas. However, northwestern pond turtles are likely utilizing portions of the project area where conditions are favorable.

Fender's blue butterfly: (*Icaricia icarioides fenderi*)

Status: Federally Endangered (USFWS), State No Special Status

Fender's blue butterfly is found almost exclusively on the west side of the Willamette Valley within 33 kilometers (21 miles) of the Willamette River. Its habitat is typically native upland prairie dominated by fescue species (Federal Register 2000). This species is closely associated with Kincaid's lupine (see below) which appears to be the preferred food source for the larval stage. Kincaid's lupine also provides a substrate for egg laying and flowers for adult feeding. Neither the Fender's blue butterfly or its obligatory host the Kincaid's lupine have been found in the project area.

Impacts of the Build Alternative on Proposed, Threatened, and Endangered Wildlife Species

Red-Legged Frogs

Although overall suitability of the study area has been compromised by extensive agricultural practices, stillwater portions of the South Yamhill River, its tributaries and other

wetlands within the study area may serve as breeding and rearing habitat for red-legged frogs. Implementation of the proposed Build Alternative would primarily remove low quality terrestrial, wetland and aquatic habitat of red-legged frogs. Approximately 3.37 hectares (9.22 acres) of potential breeding habitat (wetlands) would be permanently lost. Removal of upland habitat adjacent to breeding habitat would likely represent a loss of habitat used by the frogs during the nonbreeding season. Construction activities may result in temporary short-term erosion, turbidity and sedimentation to breeding and rearing habitat downstream.

Western Pond Turtle

The proposed Build Alternative would remove potential pond turtle nesting and over wintering habitat represented by the agricultural, old-field, and forested habitats that lie near wetlands and streams. Quality of agricultural lands for nesting is expected to be low, especially where row crops are planted. However, little impact is expected to those aquatic and riparian habitats that provide the best foraging, rearing, protective and over wintering areas. Bridge construction may result in short-term erosion, turbidity and sedimentation to foraging, resting and protective habitat downstream.

Fender's Blue Butterfly

No occurrences of Fender's blue butterfly or Kincaid's lupine are documented within the project area. The nearest known lupine and butterfly colony is located near Mill Creek along ORE 22, approximately 3 kilometers (1.9 miles) southeast of the eastern end of the project area. Therefore, the Build Alternative is not expected to impact this butterfly population or habitat.

Impacts of the No Build Alternative on Proposed, Threatened, and Endangered Wildlife Species

The No Build Alternative would not impact the proposed, threatened and endangered wildlife species more than the current use and maintenance of the highway segment in the study area.

Mitigation for Proposed, Threatened, and Endangered Wildlife Species

ODOT has initiated formal consultation with the U. S. Fish and Wildlife Service. See Appendix D, Natural Resources Consultations.

Red-Legged Frogs

Best Management Practices would be in place to control erosion, protect aquatic habitats, and maintain water quality in areas impacted by construction. Nevertheless, short-term impacts to red-legged frogs may occur.

Western Pond Turtle

Best Management Practices would be in place to control erosion, protect aquatic habitats and maintain water quality. Opportunities exist to incorporate habitat features beneficial to pond turtles.

Fender's Blue Butterfly

No occurrences of Fender's blue butterfly or Kincaid's lupine are documented within the project area. Therefore, the Build Alternative is not expected to impact this butterfly population or habitat and no mitigation measures are proposed.

Existing Conditions for Proposed, Threatened, and Endangered Plant Species

Nelson's Checker-Mallow: (*Sidalcea nelsoniana*)

Status: Federally Threatened (USFWS); State Threatened

Oregon Department of Transportation conducted surveys in the project area during the 1999 flowering season and found six distinct populations of Nelson's checker-mallow. These occur in grassy areas along the highway and in areas of relatively undisturbed grassland adjacent to the highway. The plant grows in grasslands occupied by native species and numerous introduced species, such as Scotch broom that compete with Nelson's checker-mallow for habitat. This plant was once widespread in the Willamette Valley and the foothills of the Coast Range but is now limited to relatively few locations.

Bradshaw's Lomatium: (*Lomatium bradshawii*)

Status: Federally Endangered (USFWS); State Endangered

Although the project area does not contain high quality, native wet prairie habitat that supports this plant, seasonally flooded grasslands along the railroad tracks provide marginal conditions for it. This plant was likely once widespread across the Willamette Valley, but is now limited to relatively few locations in Lane, Marion and Benton Counties. A supplemental survey would be conducted for this plant if merited by the design of the proposed projects.

Howellia: (*Howellia aquatilis*)

Status: Federally Threatened (USFWS); State No Special Status

The project area contains only a small amount of open water habitat to which this species is closely allied; a few drainage swales and ephemeral aquatic features in the landscape may offer marginally suitable habitat for *H. aquatilis*. The likelihood of occupancy is considered low. *Howellia* is likely extinct in Oregon, but was once known in Multnomah County and may have once existed from California to Montana.

Willamette Valley Daisy: (*Erigeron decumbens* Nutt. var. *decumbens*)

Status: Federally Endangered (USFWS); State Endangered

Although the project area contains some grassland habitat where this species might occur, none were detected during a survey. Most grassland habitats observed in the project area are only marginally suitable for the Willamette Valley daisy because of brushy competition and previous disturbance. This daisy was likely common in the Willamette Valley but is now known from only a few populations in Polk, Marion, Linn, Benton, and Lane Counties. Reportedly, a population existed until recently in the Grand Ronde area. However, this site was surveyed and no plants were found.

Kincaid's lupine: (*Lupinus sulphureus* var. *kincaidii*)

Status: Federally Threatened (USFWS); State Threatened

Kincaid's lupine (*Fabaceae* — pea family) is a long-lived perennial herb found in native upland prairies. Kincaid's lupine was likely common in the Willamette Valley, but is now known from a few sites in the Willamette Valley and a population in Lewis County, Washington. Surveys did not detect this taxon within the project area.

Impacts of the Build Alternative on Proposed, Threatened, and Endangered Plant Species

These impacts are predicted on a worst-case scenario, that is, the most severe impacts that could occur from implementing the Build Alternative if no efforts were made to avoid plant populations.

Nelson's Checker-Mallow

Direct Impacts. Implementation of the Build Alternative may affect and would likely adversely affect Nelson's checker-mallow. Construction projects would directly impact ("take") individuals of *Nelson's checker-mallow*. The entire project would impact approximately 5,000 square meters (1.24 acres) of occupied *Nelson's checker-mallow* habitat containing about 15 to 20 plants. Removal of individual plants and modification of the habitat could negatively influence *Nelson's checker-mallow's* ability to successfully reproduce and reduce its local distribution. Habitat fragmentation could also interfere with its long-term survival and recovery. Direct impacts from the project are expected to reduce the quantity and quality of habitats currently occupied by *Nelson's checker-mallow*; however, the proposed project would not eliminate these habitats.

Indirect Impacts. Indirect impacts include increased pavement, runoff, road maintenance (e.g., spraying, ditching), and possible introduction of competing non-native plants and disturbance due to routine maintenance activities and truck traffic along the road.

Although "take" cannot be avoided with the current proposal, survival of Nelson's checker-mallow in the project corridor is expected. Consequently, ODOT has initiated formal consultation with USFWS under Section 7 of the Endangered Species Act.

Cumulative Impacts. Currently, no major transportation activities associated with habitats inhabited by *Nelson's checker-mallow* independent of this proposed action are known. It is assumed that ongoing commercial and/or industrial developments as sanctioned under Polk County's Comprehensive Plan will occur over the lifetime of this proposed action. The majority of land in the area of the proposed projects is zoned for agricultural or timber uses and is not likely to be developed.

ODOT routine maintenance activities along the corridor may yield some cumulative effects.

Bradshaw's Lomatium

No Bradshaw's lomatium was detected during June 1999 botanical surveys. The project area was surveyed again on May 15, 2001. No Bradshaw's lomatium was discovered during this second survey. Therefore, the proposed project is not expected to impact Bradshaw's lomatium populations.

Howellia

No *Howellia* was detected during June 1999 botanical surveys. The project area was surveyed again on May 15, 2001. No *Howellia* was discovered during this second survey. Therefore, the proposed project is not expected to impact *Howellia* populations.

Willamette Valley Daisy

No Willamette Valley daisy plants were found during the site survey. The nearest populations are approximately 16 km (9.94 miles) away in the Sheridan area. The U.S. Fish and Wildlife Service evaluated the effects of the project and found it would have adverse effects on the Willamette Valley daisy if any currently occur at a site historically occupied by this species. If this westerly-most population is still extant, the loss would be significant, but is not anticipated to jeopardize the survival of the species.

Kincaid's Lupine

No Kincaid's lupine populations are documented in the vicinity of the proposed project. The nearest known population is located on ORE 22 at Mill Creek, approximately 3 kilometers (1.9 miles) southeast of the eastern end of the project. Therefore, the proposed project is not expected to impact Kincaid's lupine populations.

Impacts of the No Build Alternative on Proposed, Threatened, and Endangered Plant Species

Implementing the No Build Alternative would not impact the proposed, threatened and endangered plant species more than the current use and maintenance of the highway.

Mitigation for Proposed, Threatened, and Endangered Plant Species

ODOT has initiated formal consultation with the U. S. Fish and Wildlife Service. See Appendix C, Natural Resources Consultations. The USFWS provided a biological opinion containing conservation recommendations such as special management areas (SMAs) for sensitive plants and habitat enhancement.

Nelson's Checker-Mallow

Conservation measures to ensure that inadvertent loss of plants or their habitats are avoided will be part of design criteria or contract provisions. Measures include: minimization of impacts by spatial or temporal means; in-situ preservation of the existing populations by vegetative buffers; habitat enhancement by controlling competing non-native species; fencing; monitoring; posting signs to alert maintenance staff; and following Best Management Practices. All conservation measures and BMPs are an integral part of the *Biological Assessment* prepared for this environmental assessment and will prevent additional impacts to Nelson's checker-mallow. Because these measures have influenced the conclusions drawn in this analysis, and because these conclusions are subject to subsequent review by the Endangered Species Office of the U. S. Fish and Wildlife Service to determine compliance with the Endangered Species Act, any substantial deviations from the conservation measures contained in the assessment will require the approval of that office.

Bradshaw's Lomatium

Additional surveys will be conducted along the railroad tracks as the project nears implementation.

Howellia

Another survey will be conducted before project construction begins.

Willamette Valley Daisy

ODOT would introduce the species into a Willamette Valley daisy enhancement area, perhaps near the site of an historical population near Grand Ronde.

Kincaid's Lupine

Another survey will be conducted before project construction begins.

Noxious Weeds and Non-Native Species

President Clinton signed Executive Order (EO) 13112 on Invasive Species on February 3, 1999. The EO is directed at controlling harmful, non-indigenous plants. It requires federal agencies to prevent the introduction of invasive species; detect and control populations of such species in a cost-effective and environmentally sound manner; monitor invasive species populations accurately and reliably; and provide for restoration of native species and habitat conditions in ecosystems that have been invaded.

Existing Conditions of Noxious Weeds and Non-Native Species

The Oregon State Department of Agriculture's Weed Board designated a "noxious weed" any weed that is injurious to public health, agriculture, recreation, wildlife, or any public or private property. ORS 570.505 declares noxious weeds to be a menace to public welfare, to be eradicated where possible. It further recognizes the responsibility for control rests not only on the private landowner and operator, but also on the county, state, and federal government.

The economic importance of a noxious weed is based on its detrimental effects, reproduction methods, difficulty of control, and distribution. Detrimental effects include causing or having the potential to cause severe production losses or increased control costs to the agricultural and/or horticultural industries of this state. In addition, it endangers native flora and fauna by its encroachment in forest and conservation areas, or has the potential of hampering the full utilization and enjoyment of recreational areas, or is poisonous, injurious, or otherwise harmful to humans and animals.

The Oregon State Department of Agriculture's Weed Board designated the following classifications and recommendations:

A List: A weed of known economic importance

These weeds occur in small enough infestations to make eradication/containment possible; or they are not known to occur, but their presence in neighboring states make future

occurrence in Oregon seem imminent. Recommended action: Intensive control when and where found. An example from the A list is kudzu (*Pueraria lobata*).

B List: A weed of economic importance that is regionally abundant, but that may have limited distribution in some counties

Where implementation of a fully integrated statewide management plan is infeasible, biological control shall be the main approach. Recommended Action: Limited to intensive control at the state or county level on a case-by-case basis. An example from the B list is Scotch broom (*Cytisus scoparius*).

T List: A priority species addressed by a statewide management plan

An example from the T list is tansy ragwort (*Senecio jacobaea*).

Impacts of the Build Alternative on Noxious Weeds and Non-Native Species

Implementation of the Build Alternative may afford the opportunity to decrease populations of noxious weeds and non-native plants, eradicate, or control them, depending on the type of plant and its method of propagation. For instance, Scotch broom and Himalayan blackberry may be destroyed during highway widening construction. Or, in the course of establishing an enhancement area for Nelson’s checker-mallow, Scotch broom may be cut by hand and the stumps painted with herbicide as a method of control.

Impacts of the No Build Alternative on Noxious Weeds and Non-Native Species

Implementing the No Build Alternative would not impact noxious weeds and non-native species more than does the current use and maintenance of the highway.

Mitigation for Noxious Weeds and Non-Native Species

To further meet the requirements of EO 13112, ODOT will require the following activities prior to construction:

- A botanist will conduct a survey of the right-of-way to identify plants listed in the Oregon Noxious Weed Policy and Classification System maintained by the Oregon Department of Agriculture (ODA). Based on the survey, the botanist will prepare a report identifying the species, location, approximate distribution, and approximate density of ODA listed weeds.
- Based on the results of the survey, ODOT will write construction contracts requiring the contractor to control identified weeds and to prevent the establishment of other ODA listed weeds. Measures to prevent the introduction of invasive species could include using “weed free” straw or the equivalent for erosion control and replanting disturbed areas with native species.
- A botanist will inspect the right-of-way following construction to assure ODA listed weeds identified during the initial survey have been effectively controlled and that no new ODA listed weeds have appeared in the areas affected by construction. If necessary, the contractor will be required to take additional steps to control ODA listed weeds.

- Herbicides will be used only when other methods would not be effective. Only herbicides certified for use near water will be used adjacent to wetlands and water. A botanist will survey areas that may contain sensitive species and will identify “no spray” areas before application of herbicides. Applicators will generally use spot application and will avoid applying herbicides on windy days. To the extent possible, applicators will apply herbicides when a weed is most vulnerable.

In conjunction with conservation measures to mitigate the impacts to Nelson’s checker-mallow, ODOT will remove individual Scotch broom plants where they are competing with Nelson’s checker-mallow.

Ecologically and Scientifically Significant Natural Areas

No designated ecologically or scientifically significant natural areas are located within the project area, although two are nearby. The Mt. Hebo Special Interest Area in the Siuslaw National Forest lies about 16 kilometers (10 miles) northwest of the north end of Grand Ronde Road. Erratic Park State Park, located east of the project area is designated a Unique Geologic Feature; it is a glacial erratic representing landforms of alpine glaciation (Oregon Natural Heritage Advisory Council, 1993). Special Interest Areas are created to protect, and where appropriate, foster public use of areas with scenic, historical, geological, botanical, zoological, paleontological or other special characteristics. These areas have unusual recreational and scientific values available for public study, use, and enjoyment.

Numerous ecologically and scientifically significant natural areas are located on the Oregon Coast and contribute to the high recreational travel use of the corridor.

Wilderness Areas, Trails, Wild and Scenic Rivers

There are no Wilderness Areas, Oregon Recreation Trails, Wild and Scenic Waterways, or National Wild and Scenic Rivers in the project area.

Cultural Resources and Recreational Areas

Parks

Existing Conditions

Two Oregon State Park system sites are located near the project area. These are the H. B. Van Duzer Forest Corridor and the undeveloped Fort Yamhill State Park site near Valley Junction. The H. B. Van Duzer Forest Corridor (206 hectares/508 acres) abuts the west boundary of the project at milepoint 18.79 on ORE 18.

Oregon Parks and Recreation Department acquired the proposed Fort Yamhill State Park site in 1988. In its feasibility study of 1991 the department recommended acquisition of additional land for development of support facilities, improvement of ORE 22 to provide safe access and exit from the proposed park, and relocation of transmission lines and other intrusions. The study also notes the potential for a future interpretive site in the Grand Ronde Agency area and the potential to use an abandoned railroad right-of-way as a trail for hikers, bicyclists, and horseback riders.

Impacts of the Build Alternative

Implementing the Build Alternative would not impact the H. B. Van Duzer Forest Corridor or the proposed Fort Yamhill State Park site. Indirectly, the Build Alternative would impact the proposed Fort Yamhill State Park site favorably by providing improved access from and to ORE 18 and ORE 22 at the proposed Valley Junction interchange.

Impacts of the No Build Alternative

Implementing the No Build Alternative would not impact the H. B. Van Duzer Forest Corridor or the proposed Fort Yamhill State Park site. In the future, when the Fort Yamhill site is developed, visitors would have to negotiate turns from and to ORE 18 without the benefit of an interchange at the Casino/Valley Junction area or a realigned intersection at Fort Hill.

Archaeological Resources

In November 1999 the State Museum of Anthropology submitted a report of the archaeological survey of the H. B. Van Duzer Forest Corridor to Steel Bridge Road project proposal area. It documented surveys of the project area conducted between September 28 and October 19, 1999. Because of fair to poor visibility along some corridor segments, and the distribution of documented sites and isolated artifacts, some localities where cultural remains were not documented were designated as high probability zones that merit further investigation.

Existing Conditions

The State Museum of Anthropology recorded three historic sites, one prehistoric site, and two isolated artifacts. Additionally, they designated four corridor segments high probability areas based on documented site distribution patterns and historic records.

Impacts of the Build Alternative

The Steering Committee made efforts to avoid archaeological sites while proposing and evaluating options.

The general location of the proposed projects does not impact any known sites. It is likely that project design adjustments and formally designated No Work Zones can ensure avoidance of the sites. Because of their proximity to the existing highway corridor some sites and high probability areas will require additional evaluation efforts. Further investigations will be conducted when highway improvements and local service road proposals move into the design stage.

Impacts of the No Build Alternative

The No Build Alternative would not impact archaeological sites more than does the current use and maintenance of the highway.

Mitigation

Additional investigations are strongly recommended to document the physical archaeological remains of the former tribal camps associated with the initial settlement of the reservation near Grand Ronde. Further efforts to document the history and importance of these tribal communities by literature research, the collection of oral histories, or other means may be warranted.

If archaeological resources are discovered during the construction of the project, appropriate mitigation measures will be followed to ensure their identification, evaluation, and disposition. Section 00170.50 of the Standard Specifications for Highway Construction (ODOT 1991) requires the contractor to cease work immediately at the site of a discovery and to avoid further damages to the resources at the site. Oregon Department of Transportation, the Federal Highway Administration (if federal funding is involved), the State Historic Preservation Office, and the Oregon State Museum of Anthropology will work together within a framework of an established procedure to determine what steps to take to recover the data.

Visual Resources

Existing Conditions

The existing visual environment in the proposed project vicinity is a combination of natural and culturally modified landscapes set in the Yamhill River basin. Cultural landscape patterns primarily conformed to the topography and followed the historical pattern of building near key transportation features. These include transportation systems and location of residences, businesses, and community facilities. The railroad and ORE 18 traverse the

Yamhill River valley fairly close to the course of the river, following the topography of the predominant landscape forms.

A variety of views exist within the project area. The distant views contain patterns of timber harvest and haul roads but otherwise are free from more substantial cultural modifications. Generally, the project vicinity does not contain unique or outstanding visual features, although Spirit Mountain and Saddleback Mountain can be seen in the distance. In the proposed South Street improvement and extension at Grand Ronde the buildings and vegetation provide close range views within the Grand Ronde Historic District. The Yamhill River provides the most visible presence of water within the project area. Views of the river are mostly at bridges and along small segments of the existing highway.

Additional landscape features are important in defining the communities of Grand Ronde, Valley Junction, and Fort Hill for residents and travelers alike. These features are primarily those associated with commercial and industrial operations. These facilities are historically and socially prominent in the life of the communities.

There is a pull-off west of Grand Ronde on the north side of ORE 18 with an historical marker. The marker contains information about the reservation history at Grand Ronde. See the Section 4(f) evaluation following the environmental assessment (Figure 2-6).

Impacts of the Build Alternative

Implementation of the Build Alternative would impact the visual resources of the area in several ways: views from residential areas, views from and of ORE 18, views of the South Yamhill River, or other views.

Changes to residential views would include those from South Street (Bunnsville) within the Grand Ronde Historic District, the Jahn Road residential views, and those between Fort Hill Road and the easterly end of the project north of ORE 18 where a new local service road is proposed.

Impacts to views from and of ORE 18 would vary depending upon the final design of the roadway. Current views from ORE 18 vary from farm and forestland to small community and commercial and industrial mixtures. The proposed project is not expected to measurably impact these views.

Views of the highway currently are dominant in the foreground at existing accesses to numerous residences and businesses. Proposed project road improvements would lead to a decreased number of access related views. However, the road widening will increase the near viewing depth of the highway, as well as creating a widened horizontal element in the mid to distant views.

Impacts to Yamhill River views will not be measurably changed by the proposed project. There are two areas where road widening may enhance river viewing. The proposed local service road from Fort Hill Road to Wallace Bridge, could, depending upon final design, create new viewing opportunities for mid-range to distant views of the Yamhill River. These new opportunities are likely to be relatively minor.

Two billboards would be displaced by the Build Alternative. In this section of ORE 18 there are currently a total of 24 billboards on both sides of the road. These structures visually

clutter the landscape in the fore to mid-ground, serving to divert attention away from other viewing opportunities. Proposed project widening will emphasize the negative character by placing the billboards prominently in the foreground view. Billboards are regulated by federal, state and local laws and planning ordinances. Agencies may choose to work together to reduce the visual impacts in this area.

Changes to views would occur at the communities of Grand Ronde, Valley Junction and Fort Hill. Impacts to the views of local travelers in Grand Ronde would be the greatest in the area of the Grand Ronde Historic District and the interchange structure. At Valley Junction the proposed interchange and realignment of ORE 22 would impact views. The central impacts to the views of local travelers in the Fort Hill community area would be from the road improvements and circulation changes proposed for South Yamhill River Road and Fort Hill Road along with their realigned intersection at ORE 18.

The proposed local service road between A. R. Ford Road and Fire Hall Road would be constructed through a stand of reforested timber. This will provide an opportunity to create the new roadway as a stretch of forest corridor to provide local drivers with surrounding dominant forest views.

The extension of Andy Riggs Road to Fire Hall Road would change the rural environment currently viewed by residents at the western edge of Andy Riggs Road by introducing a new roadway into the rural environment. It also will provide local drivers with a new stretch of forest corridor to view on the new roadway.

There are no designated viewpoints, waysides, or known pull-offs used as scenic vistas along ORE 18 within the limits of the project.

Impacts of the No Build Alternative

The No Build Alternative would not impact visual resources in the project area more than does the current use and maintenance of the highway.

Mitigation

Policy 5B of the *1999 Oregon Highway Plan* states that scenic resources management is an integral part of the process of creating and maintaining the state highway system. This policy calls for, among other things, minimization of impacts to scenic resources and enhancement of visual quality within the state highway right-of way when improving and maintaining the state highway system.

To offset unavoidable visual impacts associated with construction designers should consider using the following methods to reduce form, texture, and color contrast in cut and fill slopes:

- Stock and reapply topsoil from fill and cut slopes to reduce color contrast and promote revegetation of native plants;
- Round slopes and plant pockets of varied vegetation to help produce revegetated cut/fill slopes that have visual variety;

- Revegetate slopes with mixtures of native grasses, trees and plants, considering the size and placement limitations of the clear zone (the area adjacent to the highway needed for unobstructed views for driver's safety);
- Plant medians with native grasses, trees and plants (should not be undertaken without maintenance agreements with local jurisdictions).

Additionally, visual impacts associated with the building of interchange abutments, retaining walls and other structures, could be mitigated, to the extent feasible, by the following:

- Texture or pattern surfaces to incorporate local culture and history in coordination with local cultural leaders;
- Pigment, stain or paint surfaces to blend with native coloration;
- Use designs that present visually rounded surfaces;
- Plant native vegetation outside the clear zone to add vertical dimension apart from the structures to lessen their dominance in the landscape.

During final design, to the extent feasible, consider the following methods to mitigate the visual impacts associated with building new local service roads.

- Combine native vegetative plantings, earth mounding, or fences outside the clear zone, that screen impacts of headlights to residential areas;
- Establish a forest corridor similar in nature to H. B. Van Duzer Corridor along the proposed section between Fire Hall Road and A. R. Ford Road;
- Create wayside pull-off areas to interpret scenic, cultural and historic resources impacted by the project;
- Use minimum width standards for non-highway sections to preserve cultural, historic, or scenic view opportunities;
- Sign and make minor operational improvements on South Yamhill River Road so it may serve as a scenic route for travelers seeking river-viewing opportunities.

Removal of vegetation would be limited to the area needed to perform work. Where residents lose vegetation to the project, compensation in the form of vegetation buffer plantings would be provided where practical.

Work operations impacting the South Yamhill River or its tributaries will consider, to the extent feasible considering safety, lessening impacts by using native riparian plantings.

Historic Properties

Existing Conditions

A report on historic resources within the project area was prepared in July 1999. Fifteen potentially historic properties were identified. None of these resources is currently listed on

the National Register of Historic Places. Following field visits and archival research, ODOT in consultation with Oregon State Historic Preservation Office (SHPO) determined that none of the fifteen properties appear to be National Register-eligible.

In addition to the 15 properties, the Grand Ronde Historic District is within the project area.

The 15 historic properties evaluated are listed here, in order, from east to west (see Figure 26):

1. Hebo Road Grocery Store, 26555 ORE 18 (Salmon River Highway)
2. Large Gambrel Roof Barn, MP 23.20 ORE 18
3. "Zimbrick House", 27485 ORE 18
4. Auto Court Motel Complex, 26375 ORE 18
5. Buswell House, 26861 ORE 18
6. Schuerch-Werth Bungalow and Farm, 26345 Salmon River Highway
7. Lumber Shed "Karz Museum", MP 22.60
8. T. J. Werth Farm (Sunny Bank Farm), 27135 ORE 18
9. Grand Ronde Store, 8580 Grand Ronde Road
10. "The Ronde" Diner/Bonanza Restaurant, 28405 ORE 18
11. Grand Ronde Telephone Office, behind 28405 ORE 18
12. The Grand Theater/ Auto Repair Shop, 28410 ORE 18
13. Tipton-Talbot House, 28940 ORE 18
14. McMillian Shingle Mill, 29005 ORE 18
15. H. B. Van Duzer Forest Corridor, MP 15.79 to MP 18.79 ORE 18

Two of these, the T. J. Werth Farm and the H. B. Van Duzer Forest Corridor are included in the Polk County Inventory and only the Van Duzer Forest Corridor was considered significant. The four commercial buildings located at the intersection of ORE 18 and the Grand Ronde Road (numbers 9, 10, 11 and 12) are of local historic interest because of their association to the community's early development. However, each has been substantially altered from its historic design.

Since this first investigation, an additional area of Grand Ronde was added to the project. This is an area referred to as the Grand Ronde Historic District.

The Grand Ronde Historic District is comprised of a 3-block residential neighborhood now called Bunnsville, the Bank of Grand Ronde (now a library), the Willamina and Grand Ronde Railroad Depot, the Grand Ronde Hotel, and the United Methodist Church. ODOT considers these properties potentially eligible for the National Register of Historic Places and the State Historic Preservation Office concurs (see the Section 4(f) Evaluation following this environmental assessment ; Figure 1, Location of the Grand Ronde Historic District; Figures 2-1 to 2-6, photographs of the Grand Ronde historic properties and historic marker; and Figure 3, South Street Local Service Road Within the Grand Ronde Historic District). See Appendix D for correspondence between ODOT and SHPO.

Impacts of the Build Alternative

The Steering Committee members studied a variety of proposals and variations to avoid impacting potentially historic sites, including: limited improvements such as signals and left

Figure 26
Location of Historic Properties
B&W
8.5" x 11"
Front

Figure 26
Location of Historic Properties
B&W
8.5" x 11"
Back

turn lanes; two plans for total bypasses of the area; an interchange at A. R. Ford Road rather than at Grande Ronde; a possible north south collector road to be located east of Grand Ronde; and several interchange options at Grand Ronde, Casino/Valley Junction, and Fort Hill.

Improving and extending South Street in Grand Ronde will likely adversely effect the Grand Ronde Historic District. As stated above, ODOT considers these properties potentially eligible for the National Register of Historic Places and the State Historic Preservation Office concurs. The project would not change any buildings in the potential historic district nor would it damage or destroy any part of the district. However, paving and extending South Street to the west would likely increase the traffic through the residential area, change the character of the district's setting, and add visual, atmospheric, and audible elements that would diminish the integrity of the district (see the Section 4(f) discussion).

Impacts of the No Build Alternative

The No Build Alternative would not impact any historic properties known to be eligible or potentially eligible for the National Historic Register.

Mitigation

The improvement and extension of South Street as a local service road can be constructed without impacting any buildings in the Grand Ronde Historic District. When plans for this phase of the project come to the design stage, the areas will be reexamined and mitigation measures will be designed. Preliminary coordination with SHPO indicates that this is a Register eligible district. During the design stage, ODOT will prepare a determination of eligibility (DOE) and a Finding of Effect report and will prepare the appropriate Section 106 documentation. This will include appropriate mitigation if it is necessary.

Materials and Sources

Because this environmental assessment addresses the location of the projects along ORE 18 between Steel Bridge Road and the H. B. Van Duzer Forest Corridor, and is not yet at the design stage, estimates for amounts of materials are not available.

As of August 12, 2002, the Oregon Department of Geology and Mineral Industries lists the following aggregate sites with open permits in Polk County. Permittees include several companies and several individual owners. Companies include Valley Concrete and Gravel, Incorporated, Quality Sand and Gravel, Hampton Materials, and River Bend Sand and Gravel. Individuals holding aggregate permits include Voight, Davis, Fowler, Dalton, Kauffman, Braxling and Braxling, and Vander Have. In addition, Polk County holds an aggregate operating permit.

Materials and sources will be proposed, evaluated, and identified as designs are completed. The appropriate permitting agencies will be consulted.

Borrow and Waste Disposal

Possible borrow and waste disposal sites are also unknown at this time. Borrow and waste disposal will be proposed, evaluated, and identified as designs are completed. Biological and archaeological investigations may be conducted prior to removal (borrow) and disposal (waste) at the future construction sites. Disposal sites would be negotiated closer to the time of construction, during the design stage of the projects that comprise the Build Alternative.

Geology and Soils

Most of the highways and local roads in the project area are located on quaternary alluvium in bottomlands along the South Yamhill and Little Rogue Rivers and tributary streams. Alluvium is earth material of various sizes transported and deposited by running water. Bedrock underlies the foothills and mountains surrounding the valley. The soils underlying the project area are mainly poorly to moderately well drained silty clay loams and silt loams located on bottomlands and terraces. Soils on the low foothills are formed from the underlying weathered bedrock – basalt, siltstones, and sandstones.

Slope instability: No large landslide deposits are mapped in the project area, but three deposits are found north of Willamina. The soil surveys of Polk (USDA, 1982) and Yamhill (USDA, 1974) Counties indicate a slide hazard or tendency for roads located on Apt and McDuff soils.

Seismic hazards: Only a few known seismic events have occurred in Polk and Yamhill Counties (these were of magnitude 5 and less). However, the Scotts Mills and Klamath Falls quakes in 1993 and ongoing geoscientific research provide evidence that seismic hazards do exist in the area.

Flooding: Flood prone areas exist along the South Yamhill and Little Rogue Rivers, and Rock, Rowell, Gold, and Cospier Creeks. See Figure 25 for floodplain locations.

Impacts to soils and geology will be assessed and addressed as the projects are designed and the appropriate agencies will be consulted about mitigation measures. For more detailed information about geology and soils see the *Draft Willamina–Grand Ronde Corridor Refinement Plan 1999*, Appendix G.

Hazardous Materials

Existing Conditions

ODOT conducted a Hazardous Material-Phase One Study to identify properties in the vicinity of the proposed project where hazardous materials may be encountered that could affect the project design. The study also identified sites proposed for acquisition that might require costly and lengthy remediation.

After review of agency inventories, a research of historical records, and a site survey of the project, ODOT made an assessment of the potential properties with hazardous materials. Table 18 lists 33 sites in the project area that are handling hazardous materials or have been identified as having the potential to handle hazardous materials and, as a result, may have hazardous material contamination.

TABLE 18
Facilities in Project Area Potentially Containing Hazardous Materials

Facility	Address
Site 1: Coastal Fibre Inc.	ORE 18 & ORE 22
Site 2: Former lumber mill	Yamhill River Road at Gold Creek
Site 3: Royal Fiberglass	25245 Yamhill River Rd., Willamina
Site 4: OK Towing	25255 Yamhill River Rd., Willamina
Site 5: Warehouse/Machine Shop?	Salmon River Hwy, approx. MP 24.1
Site 6: Fort Hill Texaco Station	25715 Salmon River Highway
Site 7: Forth Hill Lumber Company	8885 Fort Hill Road
Site 8: Grim Bros. Environmental (Hofenbredl Timber)	25850 Salmon River Highway
Site 9: Warehouse—Auto repair	25980 Salmon River Highway
Site 10: Berry Creek Produce (former gas sta.)	Salmon River Hwy, approx. MP 23.47
Site 11: Littlejohn Logging	Salmon River Hwy, approx. MP 23.4
Site 12: Former garage (?)	Salmon River Hwy, approx. MP 23.4
Site 13: Former Rickert gas station	ORE 18 & ORE 22, Valley Junction
Site 14: Former lumber mill facility	ORE 18 & ORE 22, Valley Junction
Site 15: Former Valley Junction Service Station	26520 Salmon River Highway
Site 16: Former Anderson Station	ORE 18 & ORE 22, Valley Junction
Site 17: Pacific NW Gas	Hwy 18, Valley Junction
Site 18: The Strawberry Patch (former gas sta.)	26860 Salmon River Highway
Site 19: Former lumber mill site	Valley Junction
Site 20: Grand Ronde Sanitary District (sewage treatment lagoons)	8630 Grand Ronde Road
Site 21: Sprint Company	8650 Grand Ronde Road

TABLE 18
Facilities in Project Area Potentially Containing Hazardous Materials

Facility	Address
Site 22: Electric Substation	Grand Ronde Road
Site 23: Former Chevron Service Station	Grand Ronde Road and ORE 18
Site 24: Dom's Repair (abandoned)	28410 Salmon River Highway
Site 25: Hofenbredl Logging	Salmon River Highway
Site 26: Sea-Way Market Station	28600 Salmon River Highway
Site 27: ODOT Grand Ronde Maintenance Yard	28585 Salmon River Highway
Site 28: HR Jones Veneer	Salmon River Hwy, approx. MP 20.5
Site 29: Jim's Trade	29335 Salmon River Highway
Site 30: Erickson Hardwood Company	29695 Salmon River Highway
Site 31: Property with gas pump	Salmon River Highway
Site 32: Corridor Café	30520 Salmon River Highway
Site 33: Stimpson Lumber Company	Haller Road & Fire Hall Road

Ten sites correspond to existing or former facilities that have been reported to experience a release of hazardous materials. Four of those sites are included in Oregon Department of Environmental Quality's (DEQ) Environmental Cleanup Site Information (ECSI) system and eight on the underground storage tank (UST) cleanup list. Nine sites correspond to existing or former gas stations, and nine sites previously or currently perform maintenance of vehicles or equipment at their facilities. One is an electric substation, one is a spill, three are active and five are former lumber mill sites. There are also five facilities that conduct businesses suspected or reported to involve the use and storage of hazardous substances. There is one facility in the immediate vicinity of the proposed alignment registered with DEQ as a hazardous waste generator. This facility is not included in any other list.

No hazardous materials incidents in the vicinity of the proposed alignment were reported to the State Fire Marshal's Office between 1986 and December 1999. However, one of the ECSI sites corresponds to a vehicle accident that occurred on June 19, 1987, on ORE 18 at Valley Junction. The accident caused the spill of 70 gallons of a herbicide (2,4-D) that impacted soil.

Impacts of the Build Alternative

The proposed projects were found to impact only seven of the 33 sites surveyed. Following are descriptions of the potential hazardous materials sites that would be impacted by the Build Alternative:

Site 7: Fort Hill Lumber Company, 8885/8900 Fort Hill Road

Property Description

Sawmill and planing mill

DEQ Status

Environmental Cleanup Site Index Site ID No. 359. DEQ NOA (Nov. 84) reports,

Respondent intentionally discharged anti-stain solution...into a catch basin and from there, via a drainage ditch, into the South Yamhill River. DEQ inspectors noted in 8/84 that oil contamination of Kless Creek by wash water from the equipment shop wash area has been a problem since early 1981. Two notices of violation were issued in 9/81 and 9/82. The company installed a culvert for the creek but no sampling or cleanup was noted in the files. An expanded preliminary assessment was completed in 6/92. Contamination of surface soil by petroleum hydrocarbons was noted. Sampling indicated that surface waters near the site were being impacted by releases of petroleum hydrocarbons and other contaminants. In 1998, various reports were submitted to DEQ to demonstrate that the site should not be included in DEQ's Confirmed Release List and Inventory. The reports described modifications to operating practices put in place to prevent additional releases of hazardous substances, and investigations conducted to determine whether significant contamination was present in areas of the site identified by DEQ (the equipment wash down area, planer mill area, the west-side drainage ditch, and the east-west drainage ditch). On June 24, 1998, DEQ issued their decision not to list the property on the Confirmed Release List.

This facility reported to the Fire Marshal's Office the use of various chemicals: bar and chain oil, acetylene, end seal, hydraulic oil, motor oil, gasoline, diesel fuel, chemax 277, sodium hydroxide, argon, nitrogen and oxygen.

Property Acquisition

It appears that a small portion on the east-northeast boundary of this property would be acquired.

Hazmat Concern

Concerns are for soil contamination from lumber mill activities.

Site 11: Littlejohn Logging, ORE 18, approximately MP 23.4**Property Description**

Warehouse

DEQ Status

DEQ listed no information regarding this property. This facility reported to the Fire Marshal's Office the use of gasoline and diesel in their premises.

Property Acquisition

It appears that a small portion on the front of the property would be acquired.

Hazmat Concern

Concerns are potential spills and improper use or disposal of petroleum hydrocarbons.

Site 20: Grand Ronde Sanitary District, ORE 18 and Grand Ronde Road

Property Description

Sewage treatment facility

DEQ Status

DEQ listed no information regarding this property. This facility reported to the Fire Marshal's Office the use of chlorine in their premises.

Property Acquisition

A portion of this property would be impacted.

Hazmat Concern

Concerns are for storage and use of chlorine in this property.

Site 23: Former Chevron Service Station, Intersection of ORE 18 and Grand Ronde Road

Property Description

Abandoned structure with parking area

DEQ Status

DEQ listed no information regarding this property. Property ownership records show a Chevron station formerly at this location.

Property Acquisition

This property would be wholly acquired.

Hazmat Concern

Concerns are for residual soil and groundwater contamination from the former gas station.

Site 24: Dom's Repair, approximately MP 20.9, 28410 ORE 18

Property Description

Old structure (abandoned), automotive, fabrication, motorcycles

DEQ Status

DEQ listed no information regarding this property.

Property Acquisition

This property would possibly be acquired.

Hazmat Concern

Concerns are for potential past use, storage and disposal of hazardous materials.

Site 28: H. R. Jones Veneer, ORE 18, approximately MP 20.5

Property Description

Lumber mill facility

DEQ Status

DEQ lists no information regarding this property. This facility reported to the Fire Marshal's Office the use of the following chemicals in their premises: hydraulic fluid, methane, gasoline, diesel fuel, propane, degreasers, lubricating grease, used oil, antifreeze, kerosene, hydraulic fluid, oil, automatic transmission fluid, paint oil base, acetylene, nitrogen, oxygen, moisture detect ink and boiler treatment.

Property Acquisition

It appears that a small portion on the north boundary of the property would be acquired.

Hazmat Concern

Concerns are for soil contamination from lumber mill activities.

Site 30: Erickson Hardwood Company, 29695 ORE 18

Property Description

Inactive plywood mill facility

DEQ Status

Oregon Department of Environmental Quality Site ID No. 1085. In January 1989, DEQ identified asbestos waste at the site. In June 1990, DEQ ordered the responsible party to remove the asbestos. During asbestos removal activities, DEQ discovered PCBs leaking from capacitors on the site. In July 1990, the Environmental Protection Agency surveyed the site and confirmed the presence of PCBs (polychlorinated biphenyls). In addition, EPA found 35 fifty-five gallon drums containing unidentified wastes, two 15,000-gallon aboveground tanks containing petroleum products, and some smaller containers partially filled with petroleum products. In November 1990, Riedel Environmental Services removed all liquid wastes and sampled and removed all PCB-contaminated soils that were above the TSCA clean up standard (25 ppm). Cascade Earth Sciences was later hired to reassess the site and additional contamination was identified.

Some PCBs remain at the site above DEQ's SOCLEAN standards. Groundwater was not sampled, but may be contaminated with lead, TPH (total petroleum hydrocarbons), or VOCs (various other contaminants). Site Assessment recommended that the site owners entered the Voluntary Cleanup Program, and that a Preliminary Assessment equivalent be completed in order to determine any additional assessment/cleanup needs.

Property Acquisition

This property is proposed for partial acquisition.

Hazmat Concern

Concerns are for residual soil and groundwater contamination from former mill activities.

Impacts of the No Build Alternative

The No Build Alternative would not impact potential hazardous materials sites more than does the current use and maintenance of the highway.

Mitigation

Based on the identified hazardous materials sites and the extent of the proposed right-of-way, six of the sites would require additional work. Recommendations for further investigation are summarized in the table below.

TABLE 19
Hazardous Materials Sites Recommended for Further Study

Facility	Address	Recommendation
Site 7: Fort Hill Lumber Company	8885/8900 Fort Hill Rd.	Soil testing
Site 11: Littlejohn Logging	ORE 18, approx. MP 23.4	Visual inspection of the property, including structures
Site 23: Former Chevron Service Station	Grand Ronde Road and ORE 18	Soil testing
Site 24: Dom's Repair (abandoned)	28410 ORE 18	Visual inspection of the property, including structures
Site 28: H. R. Jones Veneer	ORE 18, approx. MP 20.5	Soil testing
Site 30: Erickson Hardwood Company	29695 ORE 18	Soil testing

No further investigation is deemed necessary for the Grand Ronde Sanitary District.

Mitigation for Hazardous Materials Discovered During Project Construction

The current owners of proposed right-of-way properties should have any substantial hazardous contamination contained or removed according to DEQ regulations before the state acquires the properties. However, materials contaminated with hazardous substances may be encountered during project construction. Both a health and safety plan and a contingency plan for emergency response and cleanup of hazardous materials are recommended for inclusion in the construction contract. Discovery of improper handling or disposal of hazardous substances would warrant the services of a qualified consultant to perform a site assessment. If hazardous materials are thought to be present, the contractor should stop work and immediately contact the construction project manager.

In addition, hazardous materials may be found during demolition or relocation of other structures in the project. Materials of concern and disposal measures are as follows:

PCBs (polychlorinated biphenyls)

(a) Fluorescent light fixtures in old commercial buildings. Some old commercial buildings may have old fluorescent light fixtures that use ballast containing polychlorinated biphenyl (PCB). Before any renovation or destruction of these structures, the contractor must be informed there is a possibility of encountering PCBs in the light ballast. The removal and disposal of any ballast with PCBs must be according to DEQ regulations (OAR 340-110 and ORS 466).

(b) Transformers on utility poles. A transformer removed from a power pole must be tested for PCBs. If the unit contains 50 ppm or more PCB, it can be placed in a temporary storage that has been designated for disposal. Within one year it must be transferred to a disposal facility. DEQ has specific requirements for the testing, storage, transport and disposal of transformers (40 CFR 761). EPA also has rules for used transformers with 50 ppm or more of PCB. The transformer is designated a PCB contaminated unit (50-499 ppm) or a PCB transformer (500 ppm or more) and must comply with storage and disposal regulations. The rules state that a transformer must be disposed of within one year of disconnection if it is not intended for reuse.

Asbestos

The construction of the project will require the removal of existing buildings within the project area. DEQ should be notified of any facility in the project to be renovated, relocated or demolished, even those buildings not containing asbestos. Prior to the removal of any building in the proposed right-of-way, the structures must be inspected by a DEQ approved person, such as an agency employee trained by DEQ or a consultant in asbestos identification. If asbestos is detected in buildings to be demolished or removed, the contractor and method of removing, handling, and disposing the materials must be approved by DEQ (ORS 468, OAR 340-25 and 340-33, 40 CFR 61.145).

Leaded Paint

Congress passed The Residential Lead-Based Paint Hazard Reduction Act of 1992, also known as Title X, to protect families from exposure to lead paint, dust and soil. According to Title X, it is not necessary to conduct a lead paint survey in structures that would be demolished. This is true as long as the life expectancy of those structures is short, less than 3 years and no children under 6 or pregnant women will occupy the dwelling before demolition. Following OSHA guidelines, workers doing the demolition might be required to wear proper dermal and respiratory protection. The demolition contractor should take safety precautions to limit human exposure to lead during demolition activities. Dust should be reduced as much as possible. This could be accomplished by keeping the debris wet to reduce airborne particulate. In addition, dust masks, gloves, and coveralls should limit exposure to dust.

If a structure such as a house built before 1978 is not demolished but sold to a third party, then a lead paint survey conducted by a state certified inspector is required. Structures that would be remodeled because of the project should also have a lead paint survey done. All leaded paint removed should be collected and properly disposed of per EPA/ODEQ requirements.

Air Quality

The Oregon Department of Environmental Quality (DEQ) monitors air quality, measuring amounts of carbon monoxide, ozone, and particulate levels. The Air Pollution Index, based on the monitoring information, is calculated for Portland, Eugene, Medford, and Bend. No data is available for the H. B. Van Duzer Forest Corridor- Steel Bridge Road area.

The Oregon State Air Quality Implementation Plan does not specify transportation control measures to attain air quality standards in the project area. Therefore, the Federal Transportation Conformity Rule (40 CFR 51 and 93) and State Conformity Rule (OAR 340-20-710 to 1070) are not applicable to this project. An Indirect Source Construction Permit would not be required for the Build Alternative.

Carbon monoxide (CO) is the pollutant of most concern for highway improvement projects. Motor vehicles account for the majority of CO emissions and CO impacts or hotspots are generally localized close to roadways. Air quality benefits usually result from decreased congestion, increased average speeds and reductions in trip lengths.

Reduction of dust particulate resulting from construction is discussed below in the "Construction Impacts and Staging" section.

Traffic Noise

Existing Conditions

Oregon Department of Transportation conducted a noise study in the project area. The goal of the study was to define areas where noise impacts may occur, estimate the number of those impacts, and define areas where a potential for noise mitigation may occur. This information can help local governments identify areas where potential conflicts between highway traffic noise and incompatible land use may occur.

Existing noise level was measured at 15 meters (50 feet) to 207 meters (679 feet) from the centerline of the roadway at 15 locations and was found to impact 59 existing residences, 18 businesses, and 1 school. The measured noise levels ranged from Leq 49 dBA to Leq 70 dBA. Noise levels varied depending upon the receiver's proximity to the roadway, shielding from the roadway by buildings or topography, traffic volume and speeds, and the presence of other noise sources, such as the planer mill at Fort Hill. If the outdoor activity area of a residence falls within the Leq 65 dBA contour distance, that residence is considered potentially noise impacted.

Leq refers to hourly equivalent sound pressure levels.

dB=decibel, a unit used to express relative difference in power or intensity, usually between two acoustic or electric signals.

dBA refers to decibels on the A scale.

A-scale is a rating system that closely represents the human hearing response.

Impacts of the Build Alternative

If the Build Alternative were implemented, traffic noise would impact 82 residences, 20 businesses, and 1 school.

The proposed local service road north of ORE 18 between Fort Hill and Wallace Bridge could result in additional traffic noise to residents, depending on the proximity of the new roadway and the presence of topographic shielding.

Noise levels are expected to increase by 1 to 4 decibels for some sections of the highway over time.

Impacts of the No Build Alternative

As with the existing conditions, the total number of traffic noise impacts that would occur if the No Build Alternative were implemented would be 59 existing residences, 18 businesses,

and 1 school. Noise levels are expected to increase 1 to 2 decibels in some sections, decrease by 1 to 2 decibels in other sections, and remain the same in one section.

Tables 20 and 21 show noise levels at specific sites for existing conditions as well as projections of noise levels for the No Build and Build Alternatives. The tables contain hard site and soft site measurements. Figures 27-1 to 27-5 show the locations of noise measurement sites for both alternatives.

Hard site conditions occur when the ground between the roadway and the receptor consists of asphalt, water, hard packed earth or rock, or similar hard material, or when the receptor is located high above the intervening ground. Such conditions result in more sound energy being transmitted to the receptor.

Soft site conditions occur when the ground between the roadway and the receptor consists of grass, plowed earth, low growing vegetation, or other absorptive material. Sound energy is absorbed by such conditions and the net effect is less sound energy being transmitted than occurs with hard site conditions.

Mitigation

Traffic noise mitigation measures such as truck prohibitions, grade changes, alignment changes, and speed restrictions were considered but rejected because ORE 18 is a principle corridor between the Willamette Valley and the coast. These restrictions would have an adverse effect on the motoring public and are contrary to the nature and design of this highway.

Mitigation in the form of noise barriers was also considered but rejected due to the number and location of driveway accesses widely scattered along the project. Breaks in a noise barrier make the barrier ineffective; noise barriers are typically not cost-effective in situations like this. A noise barrier was also considered ineffective for the trailer park near Fort Hill (13 trailers) because of its access directly onto South Yamhill River Road.

Local coordination can help mitigate traffic noise impacts by restricting the issuance of building permits for land use that would be incompatible with traffic noise, requiring developers to consider noise mitigation as part of their development plan. Planning agencies could promote development that is compatible with traffic noise. Copies of the *Noise Study Report* will be sent to Polk County and The Confederated Tribes of the Grand Ronde so those agencies can make use of the information and plan accordingly.

ODOT will conduct additional noise studies and propose appropriate mitigation measures as the projects approach design level of detail.

TABLE 20
Existing and No Build Noise Levels Based on Peak Truck Traffic

Section	Description	Year	Hard Site Noise Level at 15 m (50 ft)	Hard Site LEQ 65 DBA Contour Distance	Soft Site* Noise Level at 15 m (50 ft)	Soft Site LEQ 65 DBA Contour Distance
1	OR 18 MP 18.79-20.03	1998	74.18	124 m (407 ft.)	74.18	61 m (201 ft.)
1		2018	74.67	139 m (456 ft.)	74.67	66 m (217 ft.)
2	OR 18 MP 20.03 TO AR FORD	1998	74.18	124m (407 ft.)	74.18	61 m (201 ft.)
2		2018	74.67	139 m (456 ft.)	74.67	66 m (217 ft.)
3	AR FORD TO FIRE HALL	1998	74.37	130 m (426 ft.)	74.37	63 m (207 ft.)
3		2018	76.23	199 m (653 ft.)	76.23	84 m (276 ft.)
4	FIRE HALL-GRAND RONDE	1998	72.53	85 m (279 ft.)	72.53	48 m (156 ft.)
4		2018	74.39	130 m (428 ft.)	74.39	63 m (208 ft.)
5	GRAND RONDE-CASINO	1998	72.26	80 m (262 ft.)	72.26	46 m (150 ft.)
5		2018	71.40	66 m (215 ft.)	71.40	40 m (131 ft.)
6	CASINO-VALLEY JCT.	1998	73.21	99 m (326 ft.)	73.21	53 m (173 ft.)
6		2018	72.24	80 m (261 ft.)	72.24	46 m (150 ft.)
7	VALLEY JCT.-FT. HILL	1998	73.84	115 m (377 ft.)	73.84	58 m (191 ft.)
7		2018	72.19	79 m (257 ft.)	72.19	45 m (148 ft.)
8	FORT HILL-MP 24.63	1998	73.30	101 m (332 ft.)	73.30	54 m (176 ft.)
8		2018	72.10	77 m (252 ft.)	72.10	45 m (146 ft.)
9	MP 24.63-MP 26.77	1998	75.65	174 m (572 ft.)	75.65	77 m (252 ft.)
9		2018	76.60	217 m (711 ft.)	76.60	89 m (292 ft.)
10	MP 26.77-MP 26.86	1998	75.50	169 m (553 ft.)	75.50	75 m (247 ft.)
10		2018	76.15	195 m (641 ft.)	76.15	83 m (272 ft.)
11	OR 18 MP 26.86-MP 27.00	1998	72.46	84 m (274 ft.)	74.47	64 m (210 ft.)
11		2018	73.90	116 m (382 ft.)	73.90	59 m (193 ft.)
12	OR 18 MP 27.0-MP 27.17	1998	74.96	149 m (488 ft.)	74.96	69 m (227 ft.)
12		2018	76.40	207 m (679 ft.)	76.40	86 m (283 ft.)
13	OR 18 MP 27.17-MP STEEL	1998	73.73	112 m (367 ft.)	73.73	57 m (188 ft.)
13		2018	74.66	139 m (455 ft.)	74.66	66 m (217 ft.)
14	AR FORD RD SO. OF OR 18	1998	50.94	within roadway	50.94	within roadway
14		2018	43.16	within roadway	43.16	within roadway
15	AR FORD RD NO. OF OR 18	1998	49.11	within roadway	49.11	within roadway
15		2018	48.46	within roadway	48.46	within roadway
16	GRAND RONDE N. OR 18	1998	54.67	within roadway	54.67	within roadway
16		2018	57.33	within roadway	57.33	within roadway

TABLE 20
Existing and No Build Noise Levels Based on Peak Truck Traffic

Section	Description	Year	Hard Site Noise Level at 15 m (50 ft)	Hard Site LEQ 65 DBA Contour Distance	Soft Site* Noise Level at 15 m (50 ft)	Soft Site LEQ 65 DBA Contour Distance
17	GRAND RONDE S. OR 18	1998	40.83	within roadway	40.83	within roadway
17		2018	42.34	within roadway	42.34	within roadway
18	CASINO ACCESS N. OR 18	1998	62.31	within roadway	62.31	10 m (33 ft.)
18		2018	60.91	within roadway	60.91	8 m (26 ft.)
19	CASINO ACCESS S. OR 18	1998	61.13	within roadway	61.13	8 m (27 ft.)
19		2018	58.44	within roadway	58.44	5 m (18 ft.)
20	THREE RIVERS HWY. OR 22	1998	66.05	19 m (63 ft.)	66.05	18 m (58 ft.)
20		2018	63.84	within roadway	63.84	12 m (41 ft.)
21	FORT HILL ROAD	1998	54.19	within roadway	54.19	within roadway
21		2018	55.96	within roadway	55.96	within roadway
22	YAMHILL RIVER ROAD	1998	49.35	within roadway	49.35	within roadway
22		2018	52.36	within roadway	52.36	within roadway
23	OFF RAMP TO BUS. 18 E.B.	1998	64.69	within roadway	64.69	14 m (47 ft.)
23		2018	66.67	22 m (72 ft.)	66.67	20 m (64 ft.)
24	ON RAMP FROM BUS. 18 E.B.	1998	57.84	within roadway	57.84	within roadway
24		2018	57.84	within roadway	57.84	within roadway
25	OFF RAMP TO OR 22 E.B.	1998	70.66	55 m (181 ft.)	70.66	36 m (117 ft.)
25		2018	72.22	79 m (259 ft.)	72.22	45 m (149 ft.)
26	OFF RAMP TO BUS. 18 W.B.	1998	57.44	within roadway	57.44	within roadway
26		2018	58.16	within roadway	58.16	within roadway
27	ON RAMP FROM BUS. 18 W.B.	1998	69.68	44 m (144 ft.)	69.68	31 m (101 ft.)
27		2018	68.81	36 m (118 ft.)	68.81	27 m (88 ft.)

* Same as hard

TABLE 21
Build Alternative Noise Levels Based on Peak Truck Traffic

Section	Description	Year	Hard Site Noise Level at 15 m (50 ft.)	Hard site Leq 65 DBA Contour Dist.		Soft Site Noise Level at 15 m (50 ft.)	Soft Site Leq 65 DBA Contour (ft.)
1	OR 18 MP 18.79-20.03	2018	76	186 m (609 ft.)		76	80 m (263 ft.)
2	OR 18 MP 20.03 TO AR FORD	2018	76	186 m (609 ft.)		76	80 m (263 ft.)
3	AR FORD TO FIRE HALL	2018	76	199 m (653 ft.)		76	84 m (276 ft.)
4	FIRE HALL-GRAND RONDE	2018	74	130 m (428 ft.)		74	63 m (208 ft.)
5	GRAND RONDE-CASINO	2018	74	127 m (417 ft.)		74	62 m (205 ft.)
6	CASINO-VALLEY JCT.	2018	75	153 m (501 ft.)		75	70 m (231 ft.)
7	VALLEY JCT.-FT. HILL	2018	76	195 m (640 ft.)		76	83 m (272 ft.)
8	FORT HILL-MP 24.63	2018	76	173 m (567 ft.)	Pk. Hr. higher than Pk. Trk. Hr. (Pk. Trk; 75.50, 561)	76	76 m (249 ft.)
9	MP 24.63-MP 26.77	2018	77	252 m (827 ft.)	Pk. Hr. higher than Pk. Trk. Hr. (Pk. Trk: 77.17, 824)	77	98 m (322 ft.)
10	MP 26.77-MP 26.86	2018	77	231 m (759 ft.)		77	93 m (305 ft.)
11	OR 18 MP 26.86-MP 27.00	2018	74	116 m (382 ft.)		74	59 m (193 ft.)
12	OR 18 MP 27.0-MP 27.17	2018	76	207 m (679 ft.)		76	86 m (283 ft.)
13	OR 18 MP 27.17-MP STEEL	2918	75	163 m (534 ft.)		75	73 m (241 ft.)
14	AR FORD RD SO. OF OR 18	2018	43	within roadway		43	within roadway
15	AR FORD RD NO. OF OR 18	2018	57	within roadway		58	within roadway
16	GRAND RONDE N. OR 18	2018	64	12 m (41 ft.)		64	13 m (43 ft.)
17	GRAND RONDE S. OR 18	2018	53	within roadway		53	within roadway
18	CASINO ACCESS NO. OR 18	2018	62	within roadway		62	9 m (31 ft.)
19	CASINO ACCESS S. OR 18	2018	62	within roadway		62	9 m (29 ft.)
20	THREE RIVERS HWY. OR 22	2018	68	34 m (111 ft.)		69	26 m (85 ft.)
21	FORT HILL ROAD	2018	65	15 m (50 ft.)		65	15 m (50 ft.)
22	YAMHILL RIVER ROAD	2018	61	within roadway		61	9 m (28 ft.)
23	OFF RAMP TO BUS. 18 E.B.	2018	67	22 m (72 ft.)		67	20 m (64 ft.)

TABLE 21
Build Alternative Noise Levels Based on Peak Truck Traffic

Section	Description	Year	Hard Site Noise Level at 15 m (50 ft.)	Hard site Leq 65 DBA Contour Dist.	Soft Site Noise Level at 15 m (50 ft.)	Soft Site Leq 65 DBA Contour (ft.)
24	ON RAMP FROM BUS. 18 E.B.	2018	63	within roadway	63	11 m (35 ft.)
25	OFF RAMP TO OR 22 E.B.	2018	72	79 m (259 ft.)	72	45 m (149 ft.)
26	OFF RAMP TO BUS. 18 W.B.	2018	58	within roadway	58	within roadway
27	ON RAMP FROM BUS. 18 W.B.	2018	69	36 m (118 ft.)	69	27 m (88 ft.)
28	ROAD, CASINO TO 3 RIVERS	2018	59	within roadway	60	within roadway
29	ROAD, 3 RIVERS TO WEST-NOR	2018	45	within roadway	45	within roadway
30	ROAD, FORT HILL EAST TO INT	2018	45	within roadway	43	within roadway
31	ROAD, FORT HILL-WILLAMINA	2018	45	within roadway	43	within roadway
32	ROAD, CASINO-GRAND RONDE	2018	39	within roadway	42	within roadway

Figure 27-1
Location of Traffic Noise Impacts
B&W
11" x 17"
Front

Figure 27-1
Location of Traffic Noise Impacts
B&W
11" x 17"
Back

Figure 27-2
Location of Traffic Noise Impacts
B&W
11" x 17"
Front

Figure 27-2
Location of Traffic Noise Impacts
B&W
11" x 17"
Back

Figure 27-3
Location of Traffic Noise Impacts
B&W
11" x 17"
Front

Figure 27-3
Location of Traffic Noise Impacts
B&W
11" x 17"
Back

Figure 27-4
Location of Traffic Noise Impacts
B&W
11" x 17"
Front

Figure 27-4
Location of Traffic Noise Impacts
B&W
11" x 17"
Back

Figure 27-5
Location of Traffic Noise Impacts
B&W
11" x 17"
Front

Figure 27-5
Location of Traffic Noise Impacts
B&W
11" x 17"
Back

Construction Impacts and Staging

Impacts of the Build Alternative

Construction and staging impacts would be experienced in phases and along segments of the highway over a 20-year period. Implementing the Build Alternative would result in impacts to motorists, residents, and businesses due to dust, noise, and disruption of access during construction. Potential staging and storage areas in the project area are not yet determined. As the design progresses and funds become available to implement the projects, the impacts would be assessed and disclosed and mitigation measures would be proposed.

During the construction periods, highway-related businesses could be adversely affected due to changes in traffic volume, travel patterns, reduced access, increased noise, dust and increased congestion. The magnitude of these effects depends on factors such as construction site traffic management, traffic volumes, and alternate routing for local and non-local traffic, amount of customer inconvenience and project signage.

Impacts of the No Build Alternative

The No Build Alternative would not result in construction or staging impacts.

Mitigation

Impacts would be further assessed and mitigating measures would be included in the design phases of the various projects proposed. During construction and staging dust control measures, such as watering, would be used as needed. The following mitigation measures would be followed for minimizing construction noise:

- No construction shall be performed within 300 meters of an occupied dwelling unit on Sundays, legal holidays and between the hours of 10:00 p.m. and 6:00 a.m. on other days without the approval of the project manager.
- All equipment used shall have sound control devices no less effective than those provided on the original equipment. No equipment shall have unmuffled exhaust.
- All equipment shall comply with pertinent equipment noise standards of the U. S. Environmental Protection Agency.
- No pile driving or blasting operations shall be performed within 900 m (2,952 ft) of an occupied dwelling unit on Sundays, legal holidays and between the hours of 8:00 p.m. and 8:00 a.m. on other days, without the approval of the project manager.
- The noise from rock crushing or screening operations performed within 900 m (2,952 ft) of an occupied dwelling shall be mitigated by strategic placement of material stockpiles

between the operation and the affected dwelling or by other means approved by the project manager.

Should a specific noise impact complaint occur during the construction of the project, the contractor at his or her expense may be required to implement one or more of the following noise reduction measures as directed by the project manager:

- Locate stationary construction equipment as far from nearby noise sensitive properties as possible.
- Shut off idling equipment.
- Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.
- Notify nearby residences whenever extremely noisy work will be occurring.
- Install temporary or portable acoustic barriers around stationary construction noise sources.
- Operate electric-powered equipment using line voltage power.

Detours, temporary accesses, and signs will be used to mitigate temporary changes in access during construction.

Requirements for mitigation of construction noise impacts could change by the time projects are funded for construction. Mitigation measures proposed for particular projects will reflect requirements in place at the time of construction.

Public Involvement and Agency Coordination

This project was developed with an extensive public involvement effort. Public involvement began with the formation of the Steering Committee and the Technical Advisory Committee to develop the *Draft Willamina-Grand Ronde Corridor Refinement Plan* in 1998 (now called the *H. B. Van Duzer-Steel Bridge Road Corridor Refinement Plan*). The Steering Committee meetings were open to the public and often attended by members of the community. At the same time the Regional Problem Solving Committee, a group of citizens with technical support, considered land use changes in response to the establishment of the Spirit Mountain Casino and Resort. The Regional Problem Solving Committee received briefings on and provided input to this project. Members of the Steering Committee and the Technical Advisory Committee are listed below:

Steering Committee

Jim Allen	Polk County Planning
John deTar	Oregon Department of Transportation
Francis Eddy	Willamina Council Member
Mark Fancey	Polk County Planning
Bob Gille	Yamhill County Public Works
Don Jordan	Oregon Department of Transportation
Larry Ksionzyk	Department of Land Conservation and Development
Earl (Butch) Labonte	The Confederated Tribes of the Grand Ronde
Ted Lopuszynski	McMinnville Commissioner
John Mercier	Program Manager, The Confederated Tribes of the Grand Ronde
Mark Mercier	The Confederated Tribes of the Grand Ronde
Theresa Osborne	Regional Problem Solving Committee Member
Mike Propes	Polk County Commissioner
Nancy Reynolds	Oregon Department of Transportation
Wayne Rickert Jr.	Facilitator, Senior Planner, Mid Willamette Valley Council of Governments
Josette Steele	Regional Problem Solving Committee Member
Kathy Thole	Grand Ronde Business Owner
Dennis Werth	Regional Problem Solving Committee Member

Technical Advisory Committee

Jim Allen	Polk County Planning
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Jim Buettner	ODOT, Preliminary Design
Ed Cantrell	ODOT, Transportation Operations
John DeTar	ODOT, Team Leader, Planning Manager
Bill Gille	Yamhill County Public Works
Larry Ksionzyk	Department of Land Conservation and Development
John Mercier	Confederated Tribes of the Grand Ronde, Program Manager,
Tim Murphy	ODOT, Environmental Project Manager
Harlan Nale	ODOT, Transportation Analyst
Erik Havig	ODOT, Preliminary Design
Nancy Reynolds	ODOT, Senior Transportation Planner
Wayne Rickert Jr.	Mid Willamette Valley Council of Governments, Facilitator, Senior Planner
Roxann Rivord	ODOT, Senior Transportation Analyst

Open Houses

Several open houses, advertised in the *Sheridan Sun*, Smoke Signals and by newsletters, were held as follows:

Date	Place
May 18, 1998	Confederated Tribes of the Grand Ronde Community Center
November 9, 1998	Grand Ronde Elementary School
April 7, 1999	Grand Ronde Elementary School

Summary of Issues and Solutions Raised at Open Houses

May 18, 1998, Open House at the Confederated Tribes of the Grand Ronde Community Center

Thirty-three citizens attended the open house and 43 citizens mailed, phoned, or emailed comments.

Issues. Issues raised by the attending citizens included: dangerous turns at intersections of ORE 18 with Grand Ronde Road, ORE 22 at Valley Junction, Fort Hill Road, Willamina, and ORE 22 at Grand Ronde Agency; unsafe conditions east of Fort Hill; and worn road conditions and curves on ORE 22 between Valley Junction and Grand Ronde Agency. There were questions about bridge widening in the H. B. Van Duzer Forest Corridor and about how steering committees are formed. There were comments about the difficulties of building a frontage road behind the Grand Ronde store and information about a potential wetland and floodplain area northeast of the Valley Junction bridge.

The following issues were collected from the comment forms. Commenters responded to the question, “What are the biggest problems along the corridor?”

- Driver related issues included speeding, tailgating, drunk driving, and unsafe passing.

- Traffic volume issues included too much traffic congestion, especially on summer weekends, difficulty making left turns from connecting roads, and slow travel.
- Roadway issues included not enough lanes and lanes decreasing from 3 to 2 between Fort Hill and Wallace Bridge, causing a bottleneck and conditions for unsafe passing.
- Access issues included difficulty getting on or off ORE 18 from side roads.
- Traffic signal issues included the need to slow traffic at Grand Ronde, Valley Junction, and Fort Hill; signals may be needed.
- Enforcement issues included the lack of police presence and high speeds when enforcement is not around; on the other hand, a show of force occurs with the speed box and police visibility.
- Accident issues included too many accidents and deaths, worse since the Casino was built; the difficulty getting onto ORE 18 from ORE 22, and a notation of accidents at MP 17.5.

Responding to the question, “What are the most dangerous or congested areas?” commenters replied, in order of number of comments: Valley Junction, Fort Hill, Grand Ronde Road, Fort Hill to Wallace Bridge, and in general, locations from McMinnville to Lincoln City.

Issues raised by the Steering Committee included unpermitted new accesses, standing water and flooding on the highway, and rest stops.

Proposed Solutions. Citizens at the open house proposed the following solutions:

- Traffic signals at Grand Ronde and Fort Hill;
- Frontage roads using abandoned railroads as an access road or as part of a couplet or using access roads in combination with a signal at A. R. Ford Road.
- Additional lanes extended from Fort Hill beyond A. R. Ford Road or 4 lanes for the whole segment of highway and the addition of turn lanes between Fort Hill and the Van Duzer Corridor.

Other general suggestions included: adding median barriers west of Fort Hill; repainting the striping; adding grooves to alert drivers approaching intersections; adding signals or slow zone at Grand Ronde and ORE 18; using rail and reducing chip trucks on the highway; and improving local accesses to connect the north and south without having to use ORE 18.

Solutions suggested from commenters using the comment form were:

- Signs—need one for the Casino turn-off;
- Signals—need one at Grand Ronde or at all three intersections; signals will back up traffic; time signals to work together;
- General—need more patrolling, encourage rail use, limit speed to 45 mph from Grand Ronde to Thole’s; drive with lights on.

The Steering Committee suggested a light is needed at the McMinnville turn-off at the overpass. The Committee also suggested studying rail options, including an excursion train to the Casino.

November 9, 1998, Open House at the Grand Ronde Elementary School

Nearly 100 people attended this open house. They viewed and commented on various options that the Steering and Technical Advisory Committees had developed. They commented on the positive and negative aspects of proposals for options at Andy Riggs Road, A. R. Ford Road, a by-pass of ORE 18, the Casino area, Grand Ronde Road, Fort Hill Road, Jahn Road, Valley Junction, Wallace Bridge area, and miscellaneous subjects, as follows:

- Andy Riggs Road – commenters felt an extension and new bridge are not necessary, would impact the environment, and would cater to a certain group.
- R. Ford Road – residents in the areas were against an interchange at that location.
- By-pass – some commenters supported the idea of a by-pass south of the South Yamhill River that would avoid ORE 18 at Grand Ronde and between the Casino and Wallace Bridge.
- Casino area – residents were concerned about accesses, frontage roads, and out-of-direction travel.
- Grand Ronde Road – commenters expressed a variety of opinions about options. They were not in favor of a road parallel to Grand Ronde Road; wanted sidewalks and provisions for bicycles; liked the relocated 4-lane option and the couplet option and wanted to keep the interchange as far as possible from the school, churches, and library.
- Fort Hill Road – citizens preferred an overpass option and promoted access to the commercial area.
- Jahn Road – residents mentioned there are only 10 residences on the road, not high volume traffic.
- Valley Junction – commenters favored an overpass (ORE 22 over ORE 18) and thought a signal would bring traffic to a standstill.
- Wallace Bridge area – some suggested reducing the speed of the traffic coming from Salem and others said leave the area alone.
- General – Suggestions were made for painting new fog lines and the potential for carpooling. Some commenters thought the open house was helpful, others disagreed. Some felt the meetings should be held at neutral community sites and not in the tribal facilities.

The Steering and Technical Advisory Committee members gathered the public comments and addressed them as they worked on adding, subtracting, and refining various proposals and options.

April 7, 1999, Open House at the Grand Ronde Elementary School

This was a joint open house with the Regional Problem Solving Committee. Seventy-two citizens attended and 24 completed a survey about land use and the three possible interchange proposals for Grand Ronde, Valley Junction and Fort Hill. Attendees reviewed the proposals developed by the Steering and Technical Advisory Committees. These proposals reflected citizen's comments from the previous open houses and other communications.

An item of major interest was the proposal for a local service road between Fort Hill and the Wallace Bridge area. Residents expressed support for such a road.

Attendees expressed concern about loss of private approach roads to ORE 18.

Short Series of Meetings with Local Residents—Focus Groups

September 16, 1998, at the Arts Guild, Methodist Church

Approximately 12 people attended this informal meeting. Attendees suggested new alternatives and expressed concern about loss of business property at the Grand Ronde intersection.

September 20, 1998, at the Arts Guild, Methodist Church; evening meeting at Thole's Business

Ten citizens attended the afternoon meeting at the Methodist Church. They were concerned about alternatives that might increase traffic along Grand Ronde Road and might adversely impact businesses or historic sites or sites that might be eligible for the National Register of Historic Places.

The evening meeting was held at George and Kathy Thole's business. Attendees expressed dissatisfaction with any alternative that removed direct private approach roads to ORE 18 or that would cause removal of structures. They made suggestions for right-turn lanes on Grand Ronde Road that may help improve the local situation.

May 22, 2000, Coyote Joe's Café, Willamina

Approximately 20 citizens who live within the project area, especially neighbors near or on Fort Hill and South Yamhill River Roads, invited two ODOT staff to meet with them to explain the status of the project and discuss the proposals for the Fort Hill intersection and other items. The citizens expressed their opposition to the project unless an interchange with an overpass connecting Fort Hill Road to South Yamhill River Road was part of the plan. They also wanted the local access road between Fort Hill and Wallace Bridge to be built before or at the same time as the Fort Hill intersection project. Safety was a main issue. Crossing ORE 18 was considered dangerous. Along with safety, time was an issue for those with elderly or disabled family members who could need emergency medical attention.

For more information about public involvement, including meeting notes, letters and recorded comments, see the *Draft Willamina-Grand Ronde Corridor Refinement Plan, July 1999*, Appendix F.

Steering Committee Meetings

The Steering Committee met 15 times between May 1999 and October 2000.

The Steering Committee meetings focused on developing, reviewing and refining solutions and options. Citizens often attended the Steering Committee meetings and participated in the discussions. The committee members reviewed information presented to them by the Technical Advisory Committee and others who provided them with information such as traffic volume statistics and projections and highway standards. At the fifth Steering Committee meeting the members reviewed a summary of the local resident's and the Technical Advisory Committee meetings. They updated and discussed new options and alternatives, based on citizen and technical input. By the sixth meeting some options were dismissed from further consideration. At the eighth meeting members discussed the advantages and disadvantages of a by-pass.

At further meetings Steering Committee members discussed phasing of the proposed projects, reviewed a draft of the corridor plan, looked at a new Valley Junction interchange option, and discussed re-routing Fort Hill Road east of the mill. They discussed the alignment of the local service road between Fort Hill and Wallace Bridge. The alignment is aimed at reducing environmental impacts to wetlands. They also reviewed the impacts of access management rules should ORE 18 become an expressway (it did). Expressways call for specific access standards for distances between interchanges and other access points that may not be met for some of the proposed projects and would likely require major deviations.

At the fourteenth meeting the members agreed upon an at-grade realignment of the Fort Hill intersection and encouraged building the local access road between Fort Hill and Wallace Bridge concurrent with the intersection work and the addition of another east bound lane east of Fort Hill. The Casino/Valley Junction interchange was agreed upon based on its technical and engineering benefits, although property access was a concern. A local service road that extends South Street in Bunnsville toward the west was agreed to. During the fifteenth meeting the members reviewed the draft for the *H. B. Van Duzer Forest Corridor to Steel Bridge Road Corridor Refinement Plan*.

Agency Coordination

The following agencies were consulted during the development of this project:

The Confederated Tribes of the Grand Ronde (CTGR)

Federal

- National Marine Fisheries Service (NMFS)
- U. S. Army Corps of Engineers (USACE)
- U. S. Fish and Wildlife Service (USFWS)

State

- Department of Land Conservation and Development (DLCD)
- Oregon Department of Fish and Wildlife (ODFW)
- Oregon Department of Parks and Recreation (ODPR)
- Oregon Natural Heritage Program (ONHP)
- State Historic Preservation Office (SHPO)

County

- Polk County
- Yamhill County

Other Agencies and Businesses

- Grand Ronde Community Water Association
- Grand Ronde Sanitary District
- Sprint
- U. S. West Communications

Summary of Mitigation, Impact Minimization, and Conservation Measures

Right-of-Way

Acquisition and relocation assistance procedures are governed by the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 as amended, Federal Law 91.646, the Code of Federal Regulations (CFR 49, Part 24), and Oregon Revised Statutes (ORS) 281.045 to 281.105). Oregon Department of Transportation policy requires that displaced persons receive fair and humane treatment and not suffer unnecessarily as a result of a highway project.

Owners of properties that are needed to provide right-of-way in order to implement the Build Alternative or the No Build Alternative for the H. B. Van Duzer Forest Corridor-Steel Bridge Road project would be entitled to just compensation for land and improvements. Just compensation includes the estimated value of all land and improvements within the area needed for the project. If only a portion of the property is acquired, just compensation would include any legally compensable, measurable, loss in value to the remaining property due to the partial acquisition. In addition, an offer would be made to purchase any remaining property determined to have no remaining economic value to the owner.

Just compensation is based on valuation of the needed property by an experienced and qualified employee of the Oregon Department of Transportation or by an independent fee appraiser under contract with ODOT. Valuation is determined by comparison of similar properties that have recently sold, by knowledge and consideration of costs and depreciation for any improvements to be acquired, and when applicable, by the properties income potential. Any increase or decrease in the value of needed property brought about by public knowledge of the upcoming highway project is disregarded in the valuation process.

As of August 10, 2002, the *Sheridan Sun* listed three homes for sale in the area with prices ranging between \$74,000 to \$131,500. In addition, two manufactured homes, one farm acreage, and one lot are for sale; one lot, two apartments in Willamina, one apartment in Sheridan, one duplex in Willamina and three homes in the area are for rent.

Businesses, Communities, Facilities, Neighborhoods, and Residences

Social

Residential

- Provide compensation to property owners for eligible relocation costs, loss of land, buildings, and improvements at fair market value.

- Provide owner occupants or renters relocation planning, advisory assistance, reimbursement of qualifying moving and related expenses.
- During construction, provide alternate routes and appropriate signs for traffic. Evaluate means to phase and time construction activities at periods least disruptive to local residents.

Effects on General Social Groups

Encourage relocation or establishment of a grocery and convenience store in the Grand Ronde center to enable those groups who cannot drive (low income, elderly or disabled) to shop in their community for convenience items, some groceries and other necessities.

Community Cohesion

ODOT would assist in relocating facilities such as the Grand Ronde Post Office, Grand Ronde Substation of the Willamina Fire District, Grand Ronde Sanitary District, Grand Ronde Community Water Association office, and possibly the Sprint telephone switching office to a location central to the Grand Ronde Community. Community cohesiveness and identity would be further advanced if a convenience market and grocery were in the same area.

Community Facilities

In addition to assisting community facilities to relocate to a central community area, ODOT would coordinate with utility companies to assure the lines (water, sewer, electric, telephone, fiber optic, natural gas) are avoided or moved correctly and without damage.

Environmental Justice

Encourage the relocation or establishment of a grocery and convenience store in the Grand Ronde center to enable those groups who cannot drive (low income, elderly or disabled) to shop in their community for convenience items, some groceries and other necessities.

Economic

Highway Related Businesses and Business Areas

- Provide compensation to property owners for eligible relocation costs, loss of land, buildings, and improvements at fair market value.
- Provide signage to alert traffic to upcoming services and businesses.
- Work with individual businesses to redesign accesses as right-in and right-out.
- Work with Polk County to focus future development for businesses dependent on through traffic at major intersections or on local access roads serving interchanges.

Wetlands

Both the Department of State Lands and the U.S. Army Corps of Engineers will regulate most, if not all of these wetlands. ODOT has consulted informally with the Department of

State Lands and will initiate formal consultation with the Department of State Lands and the Army Corps when projects reach design stage. The Army Corps will review this draft environmental assessment, participate in the public hearing, and participate in decision-making between the draft and the revision of this assessment.

The regulatory agencies will require compensatory mitigation for the unavoidable wetland impacts. Replacement of lost wetland functions and values will require the development of wetlands within the project corridor with functional values similar to those wetlands that are impacted. Potential mitigation options include wetland restoration within drained agricultural wetlands and filled lands adjacent to log mill sites primarily located at the eastern end of the project corridor. Wetland creation opportunities are also present at an old log mill site located in the western half of the project corridor.

In the agricultural lands, restoration of lowered wetland hydrology could be conducted by severing ditch connections or removing drainage tiles. Culverts may be raised to increase the amount of wetland hydrology in a particular area. On the old mill sites, fill material could be removed to pre-fill elevations. This would restore effectively filled areas by intercepting natural occurring high water table levels. Native plant communities would be installed to re-establish historic Oregon ash bottomland, emergent marshes and wet meadows. New wetlands can be created from uplands by lowering surface elevations to expand pre-existing wetlands. By developing suitable hydrology sources (i.e. ditch diversion), new wetlands could also be created. Hydrophytic plants in the pre-existing wetland areas could colonize into the new, created wetlands.

ODOT will complete a detailed compensatory mitigation plan once the project alternatives and design options become funded and finalized. ODOT will coordinate mitigation concepts and performance standards with federal, state and local resource agencies. Prior to commencing with the project, a Section 404/Removal-Fill permit will be obtained from the U.S. Army Corps of Engineers and Oregon Division of State Lands. ODOT will develop compensatory mitigation plans to adequately replace impacted wetlands functions and values, and to ensure that no loss of the wetlands functions and values, or area, will occur as the result of this highway corridor project.

The compensatory mitigation plan will include an annual monitoring program by ODOT Environmental Services for a period of 5 years to document the development of wetland conditions and success of performance standards. The monitoring plan will involve the establishment of sampling plots to track hydrologic development and plant survival, composition and density over time. Photographic monitoring will be conducted to provide a visual record of the mitigation effort. Established photograph points will document plant community type development and coverage. Annual reports detailing monitoring results will be submitted to Division of State Lands and Corps of Engineers by December of each of the required five-year period. The monitoring report will identify any gains and deficiencies in the progress of the mitigation sites.

As part of the annual monitoring reports, contingency measures will be included to discuss potential corrective actions, if performance goals are not being met. Contingency measures may include corrective grading work to improve hydrologic conditions or replacement plantings to increase low plant survivorship. Modifications to the planting plan may also be

made if the monitoring reveals that high plant mortality is due to an inappropriate hydrologic regime.

Water Quality

During the design phase of the project the designers will work with environmental staff to incorporate avoidance and minimization of impacts to wetlands and riparian areas as much as possible. Unavoidable impacts will result in compensatory mitigation focused on replacing lost functions. Erosion and sediment control plans and pollution control plans will be developed for both the Build and the No Build Alternatives before and implemented during construction. This is in accordance with the conditions of the NPDES (National Pollution Discharge Elimination System) 1200-CA permit and ODOT policy.

Treatment of highway runoff for phosphorus removal is required for both the Build and the No Build Alternatives. Treatment of highway runoff will be incorporated into the design of the project. The primary target of treatment will be phosphorus, but it will also remove other pollutants, including sediment and metals. The target removal rate for phosphorus will be based on management plans for the South Yamhill River. Mitigation measures likely to achieve these ends on individual projects will likely consist of flat bottomed roadside filter strips and/or bioswales designed to treat 140% of the new impervious surface area.

With well-designed, implemented and maintained treatment facilities, the project should have little adverse impact on water quality. Stormwater treatment should be able to prevent any increase in overall pollutant increases as a result of the project. Mitigation of wetland and riparian impacts will take time to become fully effective, so there might be some short-term loss of water quality.

Wildlife Habitat

Both the Oregon Division of State Lands (DSL) and the U.S. Army Corps of Engineers (USACE) will regulate most, if not all, of the wetlands. All in-water work will be conducted during agency-prescribed work periods and localized in space and time, thereby reducing the potential for detrimental effects to aquatic species. ODOT has consulted informally with the Department of State Lands and will initiate formal consultation with the Department of State Lands and the Army Corps when projects reach design stage.

Impacts to riparian habitats will require mitigation consultation with the National Marine Fisheries Service. ODOT has initiated formal consultation with the National Marine Fisheries Service.

ODOT will follow Best Management Practices (BMPs) during construction to avoid causing impacts to wildlife habitat. Best Management Practices are techniques, procedures, schedules of activities, prohibitions of practices, and other management tools aimed at reducing impacts and protecting and preserving resources.

To minimize impacts on wildlife attempting to cross the highway, ODOT will consider the following actions for incorporation into the final construction plan for each segment of the

project to facilitate wildlife movement across or under the highway and to reduce the number of animals killed on the highway:

- When replacing culverts, insure that the culvert is not perched to allow for more effective fish and amphibian access. A large diameter culvert should also be considered to allow for small mammal use.
- Consider building ramps to existing perched culverts to improve access for amphibians. This action would be particularly effective when wetlands or forested areas are present on both sides of the highway.
- Consider bridges or other options to improve fish passage for Jackass Creek and other fish bearing streams where less effective structures currently exist.
- Reduce impacts to raptors by minimizing impacts to existing riparian areas and reestablishing trees outside the project clear zone.

Proposed, Threatened and Endangered Species

Subsequent deviations from the conservation measures will require the approval of the Endangered Species Office of the USFWS.

Mitigation for Proposed, Threatened, and Endangered Fish Species

The Oregon Department of Transportation has initiated formal consultation with the U. S. Fish and Wildlife Service and the National Marine Fisheries Service. NMFS will work with ODOT throughout the design stages of the various projects to provide technical assistance to minimize the impacts of the projects on steelhead and chinook salmon. See Appendix C, Natural Resources Consultations. ODOT would pursue the following (and possible other) avoidance, minimization, and mitigation measures in order to limit the effects of the proposed Build Alternative on the listed evolutionarily significant units and their critical habitat in the project area.

Bridge Structure Repair or Replacement

The following avoidance, minimization, and mitigation measures will be applied to all activities involving bridge repair or replacement:

- Institute all Best Management Practices (BMPs). BMPs are techniques, procedures, schedules of activities, prohibitions of practices, and other management tools aimed at reducing impacts and protecting and preserving resources. Examples of these types of BMPs are included in ODOT's Routine Road Maintenance Water Quality and Habitat Guide, Best Management Practices, July 1999.
- Eliminate where feasible the intentional release of untreated drainage to waterways.
- Pursue mitigation at a 1.5:1 ratio for degraded or removed functional riparian vegetation within the affected watershed.
- Maintain channel area and length.
- Minimize rip-rap where appropriate.

Culvert Extension, Replacement, Installation, or Enhancement

The following avoidance, minimization, and mitigation measures will be applied to all activities involving culvert extension, replacement, installation, or enhancement:

- Maintain fish passage.
- Institute all Best Management Practices.
- Meet the specifications described in the inter-agency Memorandum of Understanding (MOU) on stream crossings for any newly-installed culverts.
- Incorporate high-flow discharge designs.
- Restore passage where possible.
- Review culverts that are barriers to fish passage and consider solutions.
- Pursue mitigation at a 1.5:1 ratio for degraded or removed functional riparian vegetation within the affected watershed to benefit aquatic systems.
- Maintain channel area and length.

Minor Alignment Changes Within or Adjacent to a Riparian Corridor

The following avoidance, minimization, and mitigation measures will be applied to all activities involving minor alignment changes within or adjacent to a riparian corridor:

- Institute all Best Management Practices.
- Pursue mitigation at a 1.5:1 ratio for degraded or removed functional riparian vegetation within the affected watershed to benefit aquatic systems.

Road Repair or Improvement

The following avoidance, minimization, and mitigation measures will be applied to all activities involving road repair or improvement:

- Institute all Best Management Practices.
- Use all applicable in-water work conservation measures.
- Pursue mitigation at a 1.5:1 ratio for degraded or removed functional riparian vegetation within the affected watershed to benefit aquatic systems.

General Minimization/Avoidance Measures (Best Management Practices)

The following minimization and avoidance measures, or BMPs will be used for the project activities described above as they apply to each specific situation:

- In-Water and Bank Work
 - Ensure passage of fish as per ORS 498.268 and ORS 509.605.
 - Complete all work within the active channel of all anadromous fish-bearing systems within Oregon Department of Fish and Wildlife’s in-water work period for the

- Yamhill River basin, July 1 to October 15. Any extensions will first be approved in writing by and coordinated with Oregon Department of Fish and Wildlife and National Marine Fisheries Service (and Department of State Lands if a Removal/Fill permit is required).
- Remove mud from equipment prior to operation in the stream. Do not permit equipment with fluid leaks to operate in or near streams.
 - Minimize the impacts of riprap placement and the amount of riprap used. Use bioengineering in conjunction with riprap.
 - Use larger riprap preferentially in areas with riprap installation within the 2-year floodplain where this riprap would come into contact with actively flowing water and where it would not substantially constrict the channel, nor require substantially larger impacts to bank areas. Plant riprap areas with native willow stakes (and other riparian shrubs and trees) to increase shading and cover within the 10-year floodplain, where appropriate.
 - Minimize alteration or disturbance of stream banks and existing riparian vegetation.

Erosion Control

ODOT will prepare an Erosion Control Plan (ECP) for all construction projects with the potential to contribute sediment to aquatic resources. The Erosion Control Plan will outline how and to what specifications various erosion control devices will be installed and maintained to meet water quality standards, and will provide a specific inspection protocol and time response. The contractor may revise the Erosion Control Plan with the concurrence of the ODOT engineer, providing that the revised Erosion Control Plan offers the same or superior protection. For precise specifications, see Specification 280 (ODOT 2002). See also *Biological Assessment, Effects on the upper Willamette River Steelhead and Chinook Salmon ESUs* prepared by Beak Consultants Incorporated.

Hazardous Materials (HazMat)

- The contractor (as ODOT's agent) will meet or exceed the Department of Environmental Quality requirements for the NPDES (National Pollution Discharge Elimination System) 1200-CA permit.
- The contractor will develop an adequate, site-specific Spill Prevention and Countermeasure or Pollution Control Plan (PCP) and is responsible for containment and removal of any toxicants released. The Pollution Control Plan specifies restrictions on chemical storage, refueling areas and other activities that have the potential to release pollutants.
- No toxicant (including petroleum products) will be stored within 50 meters (164 ft) of any stream.
- Hazardous material booms will be installed in all streams where certain conditions apply or where they could be useful.

- Mobile construction will not be allowed to operate within the five-year floodplain of any anadromous system if the vehicles show signs that they may contribute toxic materials into the waterway.
- No surface application of nitrogen fertilizer will be used within 15 meters (50 feet) of any stream.
- No treated timbers shall be used in waterways.

Riparian Impacts

- Boundaries of the clearing limits will be flagged (ODOT project inspector, assisted by an ODOT biologist). Ground beyond the flagged boundary will not be disturbed.
- Minimize alteration of native vegetation. No protection will be made for invasive exotic species (e.g. Himalayan blackberry).
- ODOT will require a contract grow period for all riparian mitigation plantings.

Water Quality Impacts

- Treat highway runoff for phosphorus. This is required. As management plans are developed for the South Yamhill River, mitigation goals will be better defined. The actual type of treatment will depend on site specific factors as well as pollutant removal goals.
- Remove other pollutants (while not the primary target of treatment).

Mitigation for Proposed, Threatened, and Endangered Wildlife Species

ODOT has initiated formal consultation with the U. S. Fish and Wildlife Service. See Appendix C, Natural Resources Consultations.

Red-Legged Frogs

Best Management Practices would be in place to control erosion, protect aquatic habitats, and maintain water quality in areas impacted by construction. Nevertheless, short-term impacts to red-legged frogs may occur.

Western Pond Turtle

Best Management Practices described above would be in place to control erosion, protect aquatic habitats and maintain water quality. Opportunities exist to incorporate habitat features beneficial to pond turtles.

Fender's Blue Butterfly

No occurrences of Fender's blue butterfly or Kincaid's lupine are documented within the project area. Therefore, the Build Alternative is not expected to impact this butterfly population or habitat and no mitigation measures are proposed.

Mitigation for Proposed, Threatened, and Endangered Plant Species

ODOT has initiated formal consultation with the U. S. Fish and Wildlife Service. See Appendix C, Natural Resources Consultations. The USFWS provided a biological opinion containing conservation recommendations such as special management areas (SMAs) for sensitive plants.

Nelson's Checker-Mallow

Conservation measures to ensure that inadvertent loss of plants or their habitats are avoided will be part of design criteria or contract provisions. Measures include: minimization of impacts by spatial or temporal means; in-situ preservation of the existing populations by vegetative buffers; habitat enhancement by controlling competing non-native species; fencing; monitoring; posting signs to alert maintenance staff; and following Best Management Practices. All conservation measures and BMPs are an integral part of the *Biological Assessment* prepared for this environmental assessment and will prevent additional impacts to Nelson's checker-mallow. Because these measures have influenced the conclusions drawn in this analysis, and because these conclusions are subject to subsequent review by the Endangered Species Office of the U. S. Fish and Wildlife Service to determine compliance with the Endangered Species Act, any substantial deviations from the conservation measures contained in the assessment will require the approval of that office.

Bradshaw's Lomatium

Additional surveys will be conducted along the railroad tracks as projects near implementation. Project specific mitigation measures would be developed if surveys determine that *Bradshaw's Lomatium* is present.

Howellia

Another survey will be conducted before project construction begins. Project specific mitigation measures would be developed if surveys determine that *Howellia* is present.

Willamette Valley Daisy

The species will be introduced into an enhancement area, perhaps near the historical site of a population near Grand Ronde.

Kincaid's Lupine

Another survey will be conducted before project construction begins. Project specific mitigation measures would be developed if surveys determine that Kincaid's Lupine is present

Archaeological Resources

Additional investigations are strongly recommended to document the physical archaeological remains of the former tribal camps associated with the initial settlement of the reservation near Grand Ronde. Further efforts to document the history and importance of these tribal communities by document research, the collection or oral histories, or other means may be warranted.

If archaeological resources are discovered during the construction of the project, appropriate mitigation measures will be followed to ensure their identification, evaluation, and disposition. Section 00170.50 of the Standard Specifications for Highway Construction (ODOT 1991) requires the contractor to cease work immediately at the site of a discovery and to avoid further damages to the resources at the site. Oregon Department of Transportation, the Federal Highway Administration (if federal funding is involved), The State Historic Preservation Office, and the Oregon State Museum of Anthropology will work together within a framework of an established procedure to determine what steps to take to recover the data.

Visual Resources

To offset unavoidable substantial visual impacts associated with building, to the extent feasible, designers should consider using the following methods to reduce form, texture, and color contrast in cut and fill slopes:

- Stock and reapply topsoil from fill and cut slopes to reduce color contrast and promote revegetation of native plants;
- Round slopes and plant pockets of varied vegetation to help produce revegetated cut/fill slopes that have visual variety;
- Revegetate slopes with mixtures of native grasses, trees and plants, considering the size and placement limitations of the clear zone (the area adjacent to the highway needed for unobstructed views for driver's safety);
- Plant medians with native grasses, trees and plants (should not be undertaken without maintenance agreements with local jurisdictions).

Additionally, visual impacts associated with the building of interchange abutments, retaining walls and other structures, could be mitigated, to the extent feasible, by the following:

- Texture or pattern surfaces to incorporate local culture and history in coordination with local cultural leaders;
- Pigment, stain or paint surfaces to blend with native coloration;
- Use designs that present visually rounded surfaces;
- Plant native vegetation outside the clear zone to add vertical dimension apart from the structures to lessen their dominance in the landscape.

During final design, to the extent feasible, consider the following methods to mitigate the visual impacts associated with building new local service roads.

- Combine native vegetative plantings, earth mounding, or fences outside the clear zone, that screen impacts of headlights to residential areas;
- Establish a forest corridor similar in nature to H. B. Van Duzer Corridor along the proposed section between Fire Hall Road and A. R. Ford Road;

- Create wayside pull-off areas to interpret scenic, cultural and historic resources impacted by the project;
- Use minimum width standards for non-highway sections to preserve cultural, historic, or scenic view opportunities;
- Sign and make minor operational improvements on South Yamhill River Road so it may serve as a scenic route for travelers seeking river-viewing opportunities.

Removal of vegetation should be limited to the area needed to perform work, with compensation in the form of vegetation buffer plantings to screen residents that lose vegetation due to the project or are impacted by the proximity of the project to their residence or business.

Work operations impacting the South Yamhill River or its tributaries will consider, to the extent feasible considering safety, lessening impacts by using native riparian plantings.

Historic Resources

If the final design of the Build Alternative necessitates the removal of the Grand Ronde Store, the Ronde Diner, the Grand Theater, or the Tipton-Talbot House these structures would be documented with 4" x 5" archival photographs as a permanent record of their design prior to their loss.

The improvement and extension of South Street as a local service road can be constructed without impacting any buildings in the Grand Ronde Historic District. When plans for this phase of the project come to the design stage, the areas will be reexamined and mitigation measures will be designed. Mitigation may include providing a playground area for children who currently use South Street as an informal play area. During the design stage ODOT will prepare a determination of eligibility (DOE) and a Finding of Effect report and will prepare the appropriate Section 106 documentation.

Hazardous Materials

Based on the identified hazardous materials sites and the extent of the proposed right-of-way, six of the sites would require additional work. Recommendations for further investigation are summarized in Table 19 on page 199.

Further work would require the following:

- Fort Hill Lumber Company – Conduct testing to determine if lumber mill activities have contaminated the soil.
- Littlejohn Logging – Conduct a visual inspection of the property, including structures, to determine if additional investigation of the property is necessary.
- Former Chevron Station at Grand Ronde – Conduct testing to determine if there is residual soil and groundwater contamination from the former gas station.

- Dom's Repair – Conduct a visual inspection of the property, including structures to determine if additional investigation of the property is necessary.
- H. R. Jones Veneer – Conduct testing to determine if lumber mill activities have contaminated the soil.
- Erickson Hardwood Company – Conduct testing to determine if there is soil or groundwater contamination beneath the property to be acquired.
- Grand Ronde Sanitary District – No further investigation is deemed necessary.

Mitigation for Hazardous Materials Discovered During Project Construction

The current owners of proposed right-of-way properties should have any substantial hazardous contamination contained or removed according to DEQ regulations before the state acquires the properties. However, materials contaminated with hazardous substances may be encountered during project construction. Both a health and safety plan and a contingency plan for emergency response and cleanup of hazardous materials are recommended for inclusion in the construction contract. Discovery of improper handling or disposal of hazardous substances would warrant the services of a qualified consultant to perform a site assessment. If hazardous materials are thought to be present, the contractor should stop work and immediately contact the construction project manager.

In addition, hazardous materials may be found during demolition or relocation of other structures in the project. Materials of concern and disposal measures are as follows:

PCBs (polychlorinated biphenyls)

(a) Fluorescent light fixtures in old commercial buildings. Some old commercial buildings may have old fluorescent light fixtures that use ballast containing polychlorinated biphenyl (PCB). Before any renovation or destruction of these structures, the contractor must be informed there is a possibility of encountering PCBs in the light ballast. The removal and disposal of any ballast with PCBs must be according to DEQ regulations (OAR 340-110 and ORS 466).

(b) Transformers on utility poles. A transformer removed from a power pole must be tested for PCBs. If the unit contains 50 ppm or more PCB, it can be placed in a temporary storage that has been designated for disposal. Within one year it must be transferred to a disposal facility. DEQ has specific requirements for the testing, storage, transport and disposal of transformers (40 CFR 761). EPA also has rules for used transformers with 50 ppm or more of PCB. The transformer is designated a PCB contaminated unit (50-499 ppm) or a PCB transformer (500 ppm or more) and must comply with storage and disposal regulations. The rules state that a transformer must be disposed of within one year of disconnection if it is not intended for reuse.

Asbestos

The construction of the project will require the removal of existing buildings within the project area. DEQ should be notified of any facility in the project to be renovated, relocated or demolished, even those buildings not containing asbestos. Prior to the removal of any building in the proposed right-of-way, the structures must be inspected by a DEQ approved

person, such as an agency employee trained by DEQ or a consultant in asbestos identification. If asbestos is detected in buildings to be demolished or removed, the contractor and method of removing, handling, and disposing the materials must be approved by DEQ (ORS 468, OAR 340-25 and 340-33, 40 CFR 61.145).

Leaded Paint

Congress passed The Residential Lead-Based Paint Hazard Reduction Act of 1992, also known as Title X, to protect families from exposure to lead paint, dust and soil. According to Title X, it is not necessary to conduct a lead paint survey in structures that would be demolished. This is true as long as the life expectancy of those structures is short, less than 3 years and no children under 6 or pregnant women will occupy the dwelling before demolition. Following OSHA guidelines, workers doing the demolition might be required to wear proper dermal and respiratory protection. The demolition contractor should take safety precautions to limit human exposure to lead during demolition activities. Dust should be reduced as much as possible. This could be accomplished by keeping the debris wet to reduce airborne particulate. In addition, dust masks, gloves, and coveralls should limit exposure to dust.

If a structure such as a house built before 1978 is not demolished but sold to a third party, then a lead paint survey conducted by a state certified inspector is required. Structures that would be remodeled because of the project should also have a lead paint survey done. All leaded paint removed should be collected and properly disposed of per EPA/ODEQ requirements.

Materials and Sources

Materials and sources will be proposed, evaluated, and disclosed as designs are completed. The appropriate permitting agencies will be consulted.

Borrow and Waste Disposal

Biological and archaeological investigations will be conducted prior to removal (borrow) and disposal (waste) at the future construction sites. Disposal sites would be negotiated closer to the time of construction, during the design stage of the projects that comprise the Build Alternative.

Traffic Noise

Local coordination can help mitigate traffic noise impacts by restricting the issuance of building permits for land use that would be incompatible with traffic noise, requiring developers to consider noise mitigation as part of their development plan. Planning agencies could promote development that is compatible with traffic noise. Copies of the *Noise Study Report* will be sent to Polk County and The Confederated Tribes of the Grand Ronde so those agencies can make use of the information and plan accordingly.

ODOT will conduct additional noise studies and propose appropriate mitigation measures as the projects approach design level of detail.

Construction and Staging

Impacts would be further assessed and mitigating measures would be included in the design phases of the various projects proposed. During construction and staging dust control measures, such as watering, would be used as needed. The following mitigation measures would be followed for minimizing construction noise:

- No construction shall be performed within 300 meters of an occupied dwelling unit on Sundays, legal holidays and between the hours of 10:00 p.m. and 6:00 a.m. on other days without the approval of the project manager.
- All equipment used shall have sound control devices no less effective than those provided on the original equipment. No equipment shall have unmuffled exhaust.
- All equipment shall comply with pertinent equipment noise standards of the U. S. Environmental Protection Agency.
- No pile driving or blasting operations shall be performed within 900 m (2952 ft) of an occupied dwelling unit on Sundays, legal holidays and between the hours of 8:00 p.m. and 8:00 a.m. on other days, without the approval of the project manager.
- The noise from rock crushing or screening operations performed within 900 m (2,952 ft) of an occupied dwelling shall be mitigated by strategic placement of material stockpiles between the operation and the affected dwelling or by other means approved by the project manager.

Should a specific noise impact complaint occur during the construction of the project, the contractor at his or her expense may be required to implement one or more of the following noise reduction measures as directed by the project manager:

- Locate stationary construction equipment as far from nearby noise sensitive properties as possible.
- Shut off idling equipment.
- Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.
- Notify nearby residences whenever extremely noisy work will be occurring.
- Install temporary or portable acoustic barriers around stationary construction noise sources.
- Operate electric-powered equipment using line voltage power.

Noxious Weeds and Non-Native Species

To further meet the requirements of EO 13112, ODOT will require the following activities prior to construction:

- A botanist will conduct a survey of the right-of-way to identify plants listed in the Oregon Noxious Weed Policy and Classification System maintained by the Oregon

Department of Agriculture (ODA). Based on the survey, the botanist will prepare a report identifying the species, location, approximate areal distribution, and approximate density of ODA listed weeds.

- Based on the results of the survey, ODOT will write construction contracts requiring the contractor to control identified weeds and to prevent the establishment of other ODA listed weeds. Measures to prevent the introduction of invasive species could include using “seed free” straw or the equivalent for erosion control and replanting disturbed areas with native species.
- A botanist will inspect the right-of-way following construction to assure ODA listed weeds identified during the initial survey have been effectively controlled and that no new ODA listed weeds have appeared in the areas affected by construction. If necessary, the contractor will be required to take additional steps to control ODA listed weeds.
- Herbicides will be used only when other methods would not be effective. Only herbicides certified for use near water will be used adjacent to wetlands and water. A botanist will survey areas that may contain sensitive species and will identify “no spray” areas before application of herbicides. Applicators will generally use spot application and will avoid applying herbicides on windy days. To the extent possible, applicators will apply herbicides when a weed is most vulnerable.

In conjunction with conservation measures to mitigate the impacts to Nelson’s checker-mallow, ODOT recommends selective removal of individual Scotch broom plants where they are competing with Nelson’s checker-mallow.

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Technical Reports Prepared For This Document

Summaries of the following technical reports appear in this environmental assessment. The full reports are lengthier and more detailed than the representative sections found in this document. These reports are available upon request from:

Environmental Services
Oregon Department of Transportation
1158 Chemeketa St. N.E.
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Report	Author
Archaeological Report*	Thomas Connolly
Biological Assessment, Fish	Beak Consultants, Incorporated
Biological Assessment, Plants*	Nicholas Testa
Biological Assessment, Wetlands	Ronald Francis
Biological Report	Beak Consultants, Incorporated
Energy Analysis	Donald Crownover
Hazardous Materials Study	Luis Rivas
Historical Report	George Kramer, Rosalind Keeney
Land Use and Planning	Mid Willamette Valley Council of Governments
Noise Study	David Goodwin
Traffic Analysis	Harlan Nale, Roxann Rivord
Visual Resources	Lee Ann Hart-Chambers
Water Quality Analysis	William Fletcher

*Portions of these reports contain information that requires restricted distribution.

Acronyms

a/mvm	accidents per million vehicle miles
AASHTO	American Association of State Highway and Transportation Officials
ADA	American Disabilities Act
ADT	Average Daily Traffic
ATR	Automatic Traffic Recorder
BMS	Bridge Management System
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (commonly known as Superfund)
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CTGR	Confederated Tribes of the Grand Ronde
dba	Decibels on the A-scale in hourly equivalent pressure levels
DEQ	Department of Environmental Quality
DLCD	Department of Land Conservation and Development
DOGAMI	Department of Geology and Mineral Industries
DSL	Division of State Lands
ECSI	Environmental Cleanup Site Information
EFU	Exclusive Farm Use
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FHWA	Federal Highways Administration
FIRM	Flood Insurance Rate Map
FLH	Federal Lands Highways
FRA	Federal Railroad Administration
HPMS	Highway Performance Management System
IGA	Intergovernmental Agreement
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
LCDC	Land Conservation and Development Commission
Leq	Indicates an average noise level for a period of time
LID	Local Improvement District
MWACT	Mid Willamette Valley Area Committee on Transportation
MWVCOG	Mid Willamette Valley Council of Governments

NMFS	National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
NWI	National Wetlands Inventory
OAR	Oregon Administrative Rule
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
OHP	Oregon Highway Plan
OPRD	Oregon Parks and Recreation Department
ORE	Oregon Route
ORS	Oregon Revised Statutes
OSMA	Oregon State Museum of Anthropology
OTIB	Oregon Transportation Infrastructure Bank
OTP	Oregon Transportation Plan
PTES	Proposed, Threatened, and Endangered Species
PUC	Public Utility Commission
RCRA	Resource Conservation and Recovery Act
RPS	Regional Problem Solving
SDC	System Development Change
SFM	State Fire Marshall
SHPO	State Historic Preservation Office
SPIS	Safety Priority Index System
STIP	Statewide Transportation Improvement Plan
STP	Surface Transportation Program
T & E	Threatened and Endangered Species
TAC	Technical Advisory Committee
TDM	Travel Demand Management
TEA-21	Transportation Equity Act of the 21st Century
TPAU	Transportation Planning Analysis Unit
TPR	Transportation Planning Rule
TSP	Transportation System Plan
USACE	U. S. Army Corps of Engineers
USFWS	U. S. Fish and Wildlife Service
VPD	Vehicles Per Day

Glossary

A-scale – a rating system that closely represents the human hearing response.

Approach road -- a public or private roadway, or driveway connection intended to provide vehicular access to and from the highway and the adjoining property.

Best Management Practices – schedules of activities, prohibitions of practices, maintenance procedures and other management practices to prevent or reduce adverse impacts to the environment. BMPs can include treatment requirements, operating procedures and practices to control impacts.

Clear zone – the area adjacent to the highway needed for unobstructed views for driver’s safety.

Critical habitat – National Marine Fisheries Service and U.S. Fish and Wildlife Service designate specific critical habitat for each listed species. This habitat is the place where the species is known to, or has the potential to live. For fish, it is the stream and adjacent wetlands or riparian habitat.

dBA – decibels on the A scale.

dB=decibel – a unit used to express relative difference in power or intensity, usually between two acoustic or electric signals.

Evolutionarily Significant Unit (ESU) – a group of vertebrates considered “distinct” for Endangered Species Act purposes (National Marine Fisheries Service only). ESU boundaries are determined through the examination of genetic, life history, biogeographic, geologic, and other environmental information.

Hydrologic flashiness – rapidly fluctuating water flows in streams and rivers. Flashiness often results when storm water runs off impervious surfaces, such as paved roadways. Wetlands can reduce flashiness by storing and releasing storm and runoff waters more gradually into the nearby waterways.

Hydrophytic – adapted to grow in water.

Leq – hourly equivalent sound pressure levels.

Neotropical – of or designating the biogeographic region stretching southward from the Tropic of Cancer and including southern Mexico, Central and South America, and the West Indies.

Palustrine wetlands – marshes, bogs, fens, swamps, prairies and intermittently flooded areas.

Passerine – of or relating to birds of the order Passeriformes, which includes perching birds and songbirds such as jays, blackbirds, finches, warblers and swallows. From Latin *passerinus*, of sparrows, from *passer*, sparrow.

Oxygen demand—the depletion of dissolved oxygen in the water by organisms or chemical processes.

Refugia—habitat that functions as protection for a variety of activities including foraging, shelter from predation, over-wintering, and for functions such as flow, and thermal extremes.

Water Quality Limited—can mean one of the following categories (from DEQ):

- (a) a receiving stream which does not meet instream water quality standards during the entire year or defined season even after the implementation of standard technology;
- (b) a receiving stream which achieves and is expected to continue to achieve instream water quality standard but utilizes higher than standard technology to protect beneficial uses;
- (c) a receiving stream for which there is insufficient information to determine if water quality standards are being met with higher than standard treatment technology or where through professional judgement the receiving stream would not be expected to meet water quality standards during the entire year or defined season without higher than standard technology.

Water Quality Limited Streams 303(d) List—Oregon Department of Environmental Quality is required by the federal Clean Water Act to maintain a list of stream segments that do not meet water quality standards. This list is called the 303(d) list because of the section of the Clean Water Act that makes the requirement. The U. S. Environmental Protection Agency approves DEQ's 303(d) lists.

**DRAFT SECTION 4 (F) EVALUATION
Grand Ronde Historic District**

**H. B. Van Duzer Forest Corridor to Steel Bridge Road
Salmon River Highway
Polk County, Oregon**

Draft Section 4 (f) Evaluation Grand Ronde Historic District

H. B. Van Duzer Forest Corridor to Steel Bridge Road Salmon River Highway Polk County, Oregon

BASIS FOR SECTION 4 (F) STATEMENT

The proposed H. B. Van Duzer Forest Corridor - Steel Bridge Road project would affect a group of properties considered potentially eligible for the National Register of Historic Places. This group of buildings and property is referred to in this document as the Grand Ronde Historic District.

Highway projects that impact historic properties must fulfill the requirements of Title 23, U. S. C., Section 138, which states that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historical sites. Any program or project shall not be approved if it requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance as determined by the federal, state, or local jurisdiction, or any land from a national, state, or locally significant historic site unless there is no feasible and prudent alternative to the use of such park, recreational area, wildlife and waterfowl refuge, or historical site resulting from such use, and all planning to minimize impacts has been undertaken.

DESCRIPTION OF ACTION

The proposed improvements to ORE 18 (Salmon River Highway) between the H. B. Van Duzer Forest Corridor and the Steel Bridge Road include the following: widening the highway to four lanes with a non-traversable median with several breaks; constructing interchanges at Grand Ronde and Casino/Valley Junction; realigning an intersection at Fort Hill; closing and consolidating accesses; and constructing a number of local service roads. These improvement projects are scheduled to occur in phases over a 20-year period beginning in 2003.

The purpose of the improvements is to increase safety and decrease congestion. This section of highway between milepost 18.79 and 28.21 has a relatively high accident rate. The volume to capacity ratios show that several sections are already operating at or above capacity during peak hours. This section is perceived by local residents and through traffic travelers as congested and dangerous. It is part of a travel corridor connecting the metropolitan areas of Portland and Salem to Newport and the Oregon coast. Traffic is heavy, operating above the capacity of the roadway on summer weekends. Congestion often makes turns from and onto ORE 18 difficult. Drivers accepting short gaps in the traffic for turning may increase the potential for accidents. For more detailed project information see the Project Identification section.

DESCRIPTION OF THE SECTION 4(F) RESOURCE

The Grand Ronde Historic District is a resource potentially eligible to the National Register of Historic Places. It is comprised of a group of several related properties located at Grand Ronde near the junction of ORE 18 and Grand Ronde Road.

According to the Cultural Resources Report, the town of Grand Ronde began as “New Grand Ronde” in about 1908 when the first large groups of Indians were leaving the reservation and establishing their own farms and ranches under the Dawes Act. In 1921, International Harvester laid out a townsite. In 1922 the company built nine miles of track from Willamina to Grand Ronde, calling it the Willamina and Grand Ronde Railroad. The short railroad connected the area with the Southern Pacific railroad at Willamina. The railroad helped the timber industry to flourish and made it possible for lumber mills to grow and to dominate the economy of the area. Grand Ronde became the center of support services for mill workers and a train depot, store, hotel, movie theater, diner, gas station, bank, post office, church and a small residential area were built.

The Grand Ronde Historic District includes the following (see Figure 1, Figures 2-1 through 2-6, and Figure 3):

- A 3-block residential neighborhood called Bunnsville (currently a residential neighborhood)
 - Bank of Grand Ronde (currently the Grand Ronde Library)
 - Willamina and Grand Ronde Railroad Depot (currently owned by the Confederated Tribes of Grand Ronde)
 - Grand Ronde Hotel (currently a bed and breakfast)
 - United Methodist Church (currently used as a church)
- 1) Bunnsville - The residential area now called Bunnsville began as the residential area of “New Grand Ronde” and became a company town for Spaulding-Miami Lumber Company, which purchased the town in 1924. The town developed further when the Salmon River-Grand Ronde Highway, now ORE 18, was improved and paved in 1926.

In the mid 1950s Floyd Bunn purchased the 29 houses in the residential section of town including the streets, water, and sewerage system. Mr. Bunn imported additional dwellings that he bought at auction from the Army’s decommissioned Camp Adair, north of Corvallis. He moved these into the residential area. The three-block residential area remains on the same tax lot today and is commonly known by local residents as “Bunnsville” after the owner, although no formal plat or any other legal basis for the name could be located. The hotel, church, bank (now used as the community library), and depot are on separate tax lots. See Figures 2-1 through 2-6 for photographs and Figure 3 for locations.

- 2) Bank of Grand Ronde - The Bank of Grand Ronde, now used as a library, is dated as 1910 in the Polk County Inventory, but was actually developed in the 1920s along with the opening of the railroad and timber development. According to the *Oregon Journal*, April 22, 1922 (cited in the Cultural Resources Report), “Old Grand Ronde was never more than a trading post and Indian agency in a business way, but the new town,

located about two miles from the old town and on the Polk county side of the line, is already a thriving village with several stores, a motion picture theater, garage, dance hall and railway station. A new bank for the town was chartered this week.”

- 3) Willamina and Grand Ronde Railroad Depot - The Grand Ronde Depot was built in 1922 by International Harvester as part of New Grand Ronde. Although New Grand Ronde may have begun as early as 1908, when the first large groups of Indians were leaving the reservations, the majority of the historic development of New Grand Ronde stems from the construction of the Willamina and Grand Ronde Railroad. It began operation as a passenger line on January 1, 1922. The line was only nine miles long, running east from Grand Ronde and connecting to the Southern Pacific at Willamina.

The rail line was used for passengers and eastbound freight from Grand Ronde to Willamina. The depot also served passengers traveling west to Grand Ronde who then could go by stage to Hebo or to other points on the coast via the Boyer Toll Road along the Salmon River. Passenger service did not prove particularly successful and ended at an unknown date, probably in the late 1920s.

The Spaulding-Miami Lumber Company took over operation of the railroad line in 1924. It sold its holdings, including the railroad and the hotel, to Long Bell Lumber Company. Long Bell sold its holding to International Paper in the mid 1950s.

By 1976 the Grand Ronde Depot served as the offices of the International Paper Company. The freight line continued operation as late as 1987 when it served a single mill. Today the Confederated Tribes of the Grand Ronde own the building.

- 4) Grand Ronde Hotel - The Grand Ronde Hotel, now operated as a bed and breakfast, was built in 1921 by Willamina and Grand Ronde Railroad. The Spaulding-Miami Lumber Company sold it to Long Bell Lumber Company. Long Bell sold its holdings to International Paper in the mid 1950s.
- 5) United Methodist Church - The 1912 church is located at the corner of Grand Ronde Road and North Street, just north of Bunnsville. It is currently used as a church.

IMPACTS ON THE 4 (F) RESOURCE

The Build Alternative for the Van Duzer-Steel Bridge section of ORE 18 includes constructing a service road to provide local access north of ORE 18 and west of Grand Ronde. This road, almost two miles long, would extend from Grand Ronde Road west, follow South Street in Bunnsville, skirt the north edge of a lumber mill, cross a private road and A. R. Ford Road, and end with an access point for a residence and business close to milepost 19.58 on ORE 18.

Application of the criteria of adverse effect established in article 800.5 of Section 106 (36CFR 800) indicates that the proposed project would have an effect, possibly adverse, on the potential historic district. In October 2001, hose counts were taken on the existing South Street and traffic projections were made based upon proposed land uses in the vicinity of South Street. Hose counts showed that existing hourly traffic volumes on South Street in front of the historic district are approximately 10 vehicles per hour in each direction. Traffic projections show that the hourly counts in each direction would be 15 in the design year of 2018.

The project would not change any buildings in the potential historic district nor would it damage or destroy any part of the district as it exists at this time. The proposed local service road would be constructed on the existing roadbed of South Street. Given that the project would have no direct impacts and that the current existing low hourly traffic volumes would only increase by 5 vehicles per hour in each direction, the project would not have a constructive 4(f) impact to the historic district. See Appendix D for letters of consultation with the State Historic Preservation Office.

However, improving South Street would likely increase the traffic through the residential area and change the character of the district's setting and add visual, atmospheric, and audible elements that would diminish the integrity of the district. The project is scheduled for construction in approximately 2015.

Although "New Grand Ronde" and Bunnsville were discussed in the Cultural Report, no determinations of eligibility were prepared because they were not within the area of potential effect at that time. It is the opinion of ODOT that the above mentioned resources in Grand Ronde and the residential neighborhood of Bunnsville would be considered potentially eligible for the National Register as a historic district. The State Historic Preservation Office (SHPO) concurs that the Grand Ronde Historic District is potentially eligible. See Appendix D.

ALTERNATIVES THAT WOULD AVOID THE 4 (F) RESOURCE

Alternatives that would avoid the Section 4(f) resource (the Grand Ronde Historic District) include the No Build Alternative and other options for location of the local service road north of ORE 18 and west of Grand Ronde. Several options for the location of the local service road were proposed but not advanced. Some would avoid impact or have less impact on the Grand Ronde Historic District.

- 1) The No Build Alternative - No road widening, bridge building, or access and local service road construction would take place. The Grand Ronde Historic District would be avoided.

The No Build alternative was not considered feasible because it does not fully address the safety and congestion issues. Intersections, access points, and congested areas would not be improved and safety and congestion would continue to deteriorate.

- 2) No Local Service Road - If a local service road is not constructed, residents and businesses between Grand Ronde (milepost 21.18) and milepost 19.58 will continue to access ORE 18 directly. The many direct access points along ORE 18 add to the potential conflicts between those entering and exiting the highway and the through traffic. One of the main elements of the proposed project is to control access points by consolidating accesses or making them right-in and right-out only with closed medians, thus improving safety. The local service road would allow residents to access the community of Grand Ronde without having to travel on ORE 18 and it would provide access to ORE 18 at the proposed Grand Ronde interchange.

Figure 1
Location of Grand Ronde Historic District
color
8.5" x 11"
Front

Figure 1
Location of Grand Ronde Historic District
color
8.5" x 11"
Back

Figure 2-1
Photographs of the Grand Ronde Historic District Properties
B&W
8.5" x 11"
Front

Figure 2-1
Photographs of the Grand Ronde Historic District Properties
B&W
8.5" x 11"
Back

Figure 2-2
Photographs of the Grand Ronde Historic District Properties
B&W
8.5" x 11"
Front

Figure 2-2
Photographs of the Grand Ronde Historic District Properties
B&W
8.5" x 11"
Back

Figure 2-3
Photographs of the Grand Ronde Historic District Properties
B&W
8.5" x 11"
Front

Figure 2-3
Photographs of the Grand Ronde Historic District Properties
B&W
8.5" x 11"
Back

Figure 2-4
Photographs of the Grand Ronde Historic District Properties
B&W
8.5" x 11"
Front

Figure 2-4
Photographs of the Grand Ronde Historic District Properties
B&W
8.5" x 11"
Back

Figure 2-5
Photographs of the Grand Ronde Historic District Properties
B&W
8.5" x 11"
Front

Figure 2-5
Photographs of the Grand Ronde Historic District Properties
B&W
8.5" x 11"
Back

Figure 2-6
Photographs of the Grand Ronde Historic District Properties
B&W
8.5" x 11"
Front

Figure 2-6
Photographs of the Grand Ronde Historic District Properties
B&W
8.5" x 11"
Back

- 3) North Street Option - See Figure 4. An option for locating the local service road included using North Street of Bunnsville and extending in a similar fashion as the preferred South Street option with a more northern alignment. Again, as in the South Street option, no buildings would be impacted, but the construction of a local service road as an extension of North Street would likely increase the traffic through the residential area and change the character of the district's setting and add visual, atmospheric, and audible elements that would diminish the integrity of the district.

This option was not advanced for several reasons: the extended road would cross tribal lands and would possibly impact areas of traditional cultural importance to The Confederated Tribes of the Grand Ronde; the intersection of North Street and Grand Ronde Road is close to the historic United Methodist church; which may have proximity impacts and, locating the road here would direct more traffic in front of the Grand Ronde Elementary School.

- 4) Railroad Grade South of Bunnsville Option - See Figure 4. A route following the old railroad grade that parallels ORE 18 was considered but not advanced. Although this route would also avoid direct impacts to potentially historic buildings it would come close to the Willamina and Grand Ronde Railroad Depot located beside the old railroad tracks.

This route was considered infeasible because its intersection with Grand Ronde Road would not meet the Oregon Highway Plan's design criteria for spacing distances between intersections. It would be too close to the proposed Grand Ronde interchange loop. In its original version, as a Grand Ronde interchange option (as seen in Figure 4), its loop was too tight.

MEASURES TO MINIMIZE HARM

Due to the probability of impacting archaeological resources and proximity to the elementary school site, planners found it difficult to develop a proposal for the local service road that would avoid the Grand Ronde Historic District completely. In locating the Grand Ronde interchange and the road-widening segment of the Build Alternative for the corridor, an option was chosen that avoided several potentially historic buildings, including the Bank of Grand Ronde.

The local service road can be constructed without impacting any buildings in the Grand Ronde Historic District. The existing roadway may be paved, but will not change alignment. When plans for this phase of the project come to the design stage, the area will be reexamined and mitigation measures will be designed.

RECORD OF COORDINATION

The Oregon Department of Transportation and the Mid Willamette Valley Council of Governments developed this proposed project. The Steering Committee included representatives from Polk County, Willamina, and the Confederated Tribes of the Grand Ronde. Local residents and business owners were also represented (see the Public Involvement and Agency Coordination section of the environmental assessment). This Section 4(f) documentation will be included in the H. B. Van Duzer Forest Corridor to Steel Bridge Road Environmental Assessment. ODOT will send it to applicable government

agencies for review and comment. Notices of availability of the Draft Section 4(f) Report for public review and comment will be published in *The Sheridan Sun* and *Smoke Signals*.

The local service road improvement and extension of South Street is part of Phase 5 of the proposed project. Phase 5 is anticipated to begin approximately 10 to 20 years from now, and a funding source has not been identified. It may be funded by Polk County or with Federal Highway Administration funds. Details and construction plans will not be developed for many years. Because of this ODOT, in concurrence with Christine Curran, Preservation Specialist, SHPO, has determined that it is too early to prepare a determination of eligibility (DOE) and a Finding of Effect report. ODOT will prepare the appropriate Section 106 documentation when the project is more fully developed. See Appendix D for letters of consultation with the State Historic Preservation Office.

Figure 3
South Street Local Service Road within Grand Ronde Historic District
B&W
11" x 17"
Front

Figure 3
South Street Local Service Road within Grand Ronde Historic District
B&W
11" x 17"
Back

Figure 4
Local Service Road Options Northwest of Grand Ronde, Bunnsville Area
B&W
11" x 17"
Front

Figure 4
Local Service Road Options Northwest of Grand Ronde, Bunnsville Area
B&W
11" x 17"
Back

APPENDIX B

H.B. Van Duzer Forest Corridor to Steel Bridge Road

Corridor Refinement Plan

Compliance with Oregon Highway Plan

Note: Requirements have been edited from their exact wording in the OHP. The word “Statewide” or “Agency” at the end of a requirement indicates the requirement is a State or ODOT tasking generally involving policy or procedure.

GOAL # 1-To maintain and improve the safe and efficient movement of people and goods and contribute to the health of Oregon’s local, regional, and statewide economics and livability of its communities.

OHP Requirement	Plan Reference				Consistent	Comments
	Page	Column	Paragraph	Line		
Policy 1A - Apply the state highway classification to guide ODOT priorities for system investment and management.						
<ul style="list-style-type: none"> Action 1A1 - Use Statewide Highways (NHS), District, and Local Interest Roads classifications to guide decisions. 	2-1	Left	3	4 to 12	Yes	
<ul style="list-style-type: none"> Action 1A2 - Use Expressway as a subset classification for kind and number of accesses allowed. 	2-1	Left	3	9 to 12	Yes	
<ul style="list-style-type: none"> Action 1A3 - Study of highway classification. (Statewide) 	N/A	N/A	N/A	N/A	Yes	
Policy 1B - State and Local Governments work together, share responsibility for the road system. Coordinate land use and transportation decisions.						
<ul style="list-style-type: none"> Action 1B1 - Develop and implement plans to support compact development, especially community centers and commercial centers. Support plans with the following: <ul style="list-style-type: none"> √ Parallel and interconnected local road networks. √ Transit, bicycle, and pedestrian facilities. √ Buildings accommodating bicycles and pedestrians. √ Public and shared parking. √ In-fill and redevelopment. 	--	--	--	--	Yes	Provides parallel and interconnected local road networks, bike and pedestrian facilities. Land uses adjacent to roadway through resource zones is protected from development by EFU and Farm-Forest zoning. Polk County has indicated they would consider “super-EFU zoning” for additional protection. Regional Coordinating Council may also be a partner in evaluating potential land use changes.

√ Guide urban development away from state highways.						
• Action 1B2 - Work with Local Governments to protect state highway function by collaboration in developing land use and subdivision ordinances.					Yes	ODOT has been involved in Regional Problem Solving effort, and will also review any land use changes or partition requests through plan or zone amendment processes, and through the permit process, where ODOT facilities are involved.
• Action 1B3 - Work with Local Governments to develop access management in corridor plans.	ES-1 1-3	Left Left	3 3	1 to 5 4 to 10	Yes	Access management was a key element in development of the refinement plan.
<ul style="list-style-type: none"> • Action 1B4 - Work with Local Governments to maintain highway mobility standards by limiting expansion of development along the highway using the following: √ Adequate local network to limit use of state highway or interchanges for local trips. √ Reduce access to state highway by using shared accesses, access from side or back roads, and frontage roads and by developing the local network as redevelopment occurs. √ Clustering development off state highways in compact development patterns. √ Avoid expansion of UGB along Interstate and Statewide Highways and around interchanges unless there is an interchange management plan. 	3-5 3-6 4-4 4-5 4-17 to 4-33	Right Both Figure 4-1 Figure 4-2 Both and Figures	1 to 4 5 N/A N/A N/A	All All N/A N/A N/A	Yes	Adequate local network is provided in the refinement plan through local access roads, access control and consolidation, and key road connections. Development along local access roads will be discouraged as identified above (1B.1 and 1B.2 above). The Regional Problem Solving effort has identified allowable zoning in the plan area.

	<i>Page</i>	<i>Column</i>	<i>Paragraph</i>	<i>Line</i>		
• Action 1B5 - Work with Local Government to develop corridor plans that protect existing limited access interchanges according to functional priorities.	4-7 4-11 4-13 4-15	Figures 4-3, 4-4, 4-5, and 4-6	N/A	N/A	Yes	
• Action 1B6 - Develop design guidelines for highways. (Agency)	N/A	N/A	N/A	N/A	N/A	
• Action 1B7 - Use STAs, Commercial Center, Urban Business Areas, Urban highway segments to foster development patterns in communities.	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> • Action 1B8 - Use classification and objectives in 1B7 for planning and decision making for: √ Access Management √ Corridor Plans √ Review MPO and TSPs √ Review local comprehensive plans √ Review local plans and zoning amendments √ Review of major development designs √ Review of site acquisition 	N/A	N/A	N/A	N/A	N/A	

<ul style="list-style-type: none"> √ Review of UGBs √ Development of MIS √ Facility Design 						
• Action 1B9 - Relates to STAs	N/A	N/A	N/A	N/A	N/A	
• Action 1B10 & 1B11 - Relates to STAs	N/A	N/A	N/A	N/A	N/A	
• Action 1B12 - Encourage local governments to cluster commercial development in community centers or Commercial Centers	N/A	N/A	N/A	N/A	Yes	See 1B.1, 1B.2, 1B.3 and 1B.4.
• Action 1B13 - Designation of Urban Business Areas	N/A	N/A	N/A	N/A	N/A	
• Action 1B14 - Outside UGB and in unincorporated communities address pedestrian crossing safety.	2-12 4-1 4-2 4-9 5-16	Both Right Left Left Right	3 3 3 2 2	All 6 to 10 12 to 15 6 to 9 All	Yes	
Policy 1C - Balance need for movement of goods with other uses. Recognize importance of efficient through movement on major truck routes.						
• Action 1C1 - Apply performance standards appropriate to movement of freight on freight routes.	2-1 3-1	Left Left	3 2	6 1 to 5	Yes	
• Action 1C2 - Prepare statewide freight study. (Statewide)	N/A	N/A	N/A	N/A	N/A	
• Action 1C3 - Corridor Plans- Work with local governments to examine options to: √ Treat designated freight routes as Expressways √ Balance freight needs in STAs	2-1	Left	3	6 to 10	Yes	
• Action 1C4 - Consider freight route timeliness in developing plans and projects on freight routes.	3-1	Left	2	1 to 5	Yes	
Policy 1D - Preserve and Enhance designated Scenic Byways						
Policy 1E - Provide secure lifeline network of streets and bridges to facilitate emergency response	--	--	--	--	Yes	Provision of local access roads increases usability of road network in emergency situations.
Policy 1F - Use highway mobility standards to maintain acceptable and reliable. Use standards for: √ Implementing performance expectations for planning & plan implementation. √ Evaluate impacts of amendments to transportation plans pursuant to the TPR. √ Guiding operation decisions such as access management and traffic control systems.						

	<i>Page</i>	<i>Column</i>	<i>Paragraph</i>	<i>Line</i>		
<ul style="list-style-type: none"> Action 1F1 - Do not exceed v/c=0.70. Local roads may be 0.80 at intersections 	3-1 C-22	Left N/A	2 N/A	1 to 5 N/A	Yes	
<ul style="list-style-type: none"> Action 1F2 - Apply mobility standard over 20 years when doing corridor plans. 	3-1 C-22	Left N/A	2 N/A	1 to 5 N/A	Yes	
<ul style="list-style-type: none"> Action 1F3 - Establishing alternative mobility standards in MPOs. 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> Action 1F4 - Develop corridor plans for designated freight routes & standards to provide adequate levels of mobility. 	3-1 C-22	Left N/A	2 N/A	1 to 5 N/A	Yes	
<ul style="list-style-type: none"> Action 1F5 - For planning purposes on highway when v/c is substandard and improvements cannot be made in the planning horizon, the standard shall be to improve as much as possible and avoid further degradation. Examples of actions are: <ul style="list-style-type: none"> √ Reconfigure accesses to minimize traffic conflicts. √ Limit parking at signalized intersections. √ Coordinate traffic signals to improve traffic progress. √ Relocate driveways and improve local roads to direct traffic away from overburdened intersections. √ Improve turning radii at intersections used by heavy trucks to avoid lane blockages. √ Install raised medians to reduce traffic conflicts. √ Improve accesses for minimal flow interruptions. √ Manage land uses to favor types that generate less traffic or traffic peaks at different times than the highway. 	Chapter 4 (All improvements are intended to be implemented within the planning period, but if circumstances dictate, they could be implemented in smaller increments.	All	All	All	Yes	
<ul style="list-style-type: none"> Action 1F6 - Evaluate plans on substandard (v/c) segments using a standard to avoid further degradation. 	N/A	N/A	N/A	N/A	Yes	
Policy 1G - To maintain performance and improve safety, first improve system efficiency and management before adding capacity.						

<ul style="list-style-type: none"> • Action 1G1 - Use following priorities in planning, funding, and project development. √ Protect existing system. √ Improve efficiency and capacity of existing system. √ Add capacity to the existing system. √ Add new facilities to the system. 	3-1	Left	3	1 to 10	Yes	
	3-1	Right	2	5 to 8		
	3-1	Right	3	7		
	3-2	Left	3	2 to 4		
	3-3	Left	3	1 to 3		
	4-33 to 4-34	Phasing	All	All		
4-34 to 4-40	Section Implementation	All	All			

	<i>Page</i>	<i>Column</i>	<i>Paragraph</i>	<i>Line</i>		
<ul style="list-style-type: none"> • Action 1G2 - Only support improvements in local comprehensive and TSPs meeting the following conditions: √ Satisfies a state transportation objective. √ Scope is reasonably identified considering long range need. √ Improvement identified through: <ul style="list-style-type: none"> ~ Public Involvement ~ Evaluation of reasonable transportation and land use alternatives. ~ Environmental analysis at fatal flaw level. √ Plan includes measures to manage, but management is not enough. √ Would be a cost-effective means. √ Timing is consistent with priorities in corridor plan and regional transportation plan. √ Funding can be expected when project is ready. If needed the local government schedules funding in its financing program. √ Plan includes policies that protect the corridor. 	N/A	N/A	N/A	N/A	Yes	Project developed through extensive public involvement effort. Regional Problem Solving included in evaluating alternatives. Environmental analysis done beyond minimal fatal flaw level. Polk County has indicated support for developing zoning to protect local access roads from further development. Plan amendments, zone changes, and road approach permits will be evaluated by ODOT for impacts to the transportation corridor.
<ul style="list-style-type: none"> • Action 1G3 - Use IGA to implement cost sharing when project has major benefits to local system. 	4-36	N/A	3	1 to 3	Yes	To be evaluated
<ul style="list-style-type: none"> • Action 1G4 - Design major improvements for limited access. Develop and implement access management IGA. 	Chapter 4	All	All	All	Yes	Extensive access management study was incorporated into refinement plan development.
<ul style="list-style-type: none"> • Action 1G5 - Project Development-Transfer jurisdiction for bypass improvements 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> • Action 1G6 - Consider purchase or protecting right of way in locations with future projects.(Agency) 	N/A	N/A	N/A	N/A	Yes	Would be considered if funding available.

GOAL#2 - System Management. To work with local jurisdictions and federal agencies to create an increasingly seamless transportation system with respect to the development, operation, and maintenance of the highway and road system that:

- Safeguards the highway system by maintaining functionality and integrity;
- Ensures that local mobility and accessibility needs are met; and
- Enhance system efficiency and safety

OHP Requirement	Plan Reference				Consistent	Comments
	Page	Column	Paragraph	Line		
Policy 2A - Establish cooperative partnerships between ODOT, state and federal agencies, regional governments, cities, counties, tribal governments and the private sector.						
• Action 2A1 - Support planning of highway and local road projects which enhance seamless qualities and balance state, regional and local needs.	N/A	N/A	N/A	N/A	Yes	
• Action 2A2 - Continue and increase partnerships to share planning, development, operational and maintenance responsibilities.	N/A	N/A	N/A	N/A	Yes	Local jurisdictions, tribe, Regional Problem Solving, and regulatory agencies involved in planning process.
• Action 2A3 - Investigate legality of combining jurisdictional funding. (Agency)	N/A	N/A	N/A	N/A	Yes	
• Action 2A4 - Establish partnership with private sector.	N/A	N/A	N/A	N/A	N/A	
• Action 2A5 - Bi-state Columbia River bridges.(Agency)	N/A	N/A	N/A	N/A	N/A	
Policy 2B - State policy to provide state financial assistance relating to improvements when cost effective						
• Action 2B1 - Establish statewide criteria to identify and prioritize potential off-system improvements.(Agency)	N/A	N/A	N/A	N/A	N/A	
• Action 2B2 - Develop model intergovernmental agreement.(Agency)	N/A	N/A	N/A	N/A	N/A	
• Action 2B3 - Participate in local transportation and land use planning to identify and mitigate potential adverse impacts to state highways.(Agency)	N/A	N/A	N/A	N/A	N/A	
• Action 2B4 - Corridor plans, TSPs, and project plans - work with local governments to identify and evaluate off-system improvements that will be cost-effective in improving the state highway performance.	ES-1 ES-1 1-3 3-3 Chapter 4 C-22	Left Right Left Left All N/A	3 5 3 1 & 3 All N/A	1 to 5 All 4 to 10 All N/A	Yes	This is a significant element in development of the refinement plan alternatives.

Policy 2C – Consider, with local governments involvement, interjurisdictional transfers. (Statewide Policies, Procedures)	--	--	--	--	Yes	Will be evaluated as specific projects developed and implemented.
Policy 2D – Ensure citizens, businesses, regional and local governments, state agencies, and tribal governments have opportunities to have input into decisions regarding proposed policies, plans, programs, and improvement projects.	--	--	--	--	Yes	Local jurisdictions, tribe, Regional Problem Solving, regulatory agencies, businesses and citizens involved in planning process.
• Action 2D1 – Conduct public involvement programs that create opportunities to comment.	Chapter 6 Appendix D	Both All	All All	All All	Yes	Extensive public involvement effort included in refinement plan development.
• Action 2D2 – Increase public information about construction, operations, and maintenance activities.	N/A	N/A	N/A	N/A	N/A	
• Action 2D3 – Coordinate with local governments and other agencies to ensure public involvement target those affected.	ES-1 1-3 Chapter 6	Left Left All	3 3 All	1 to 5 4 to 10 All	Yes	
• Action 2D4 – Evaluate agency public involvement programs.(Agency)	N/A	N/A	N/A	N/A	N/A	
Policy 2E – Consider a broad range of ITS services to improve system efficiency and safety.						
• Action 2E1 – Establish processes within ODOT.	N/A	N/A	N/A	N/A	N/A	
• Action 2E2 – Expand capabilities in metropolitan areas.	N/A	N/A	N/A	N/A	N/A	

• Action 2E3 – Expand incident management capabilities in metropolitan areas and along freight and recreational routes.	Page 2-8	Column Left & Right	Paragraph 4 & 1	Line All	Yes	
• Actions 2E4 through 2E11 – Statewide Actions	N/A	N/A	N/A	N/A	N/A	
• Action 2E12 – Support ITS planning, development, and implementation in corridor plans and TSPs.	N/A	N/A	N/A	N/A	N/A	
Policy 2F – Continually improve safety for all users using solutions involving engineering, education, enforcement, and emergency medical services.						
• Action 2F1 – Establish process to develop and implement most cost-efficient solutions to high priority safety problems.(Agency)	N/A	N/A	N/A	N/A	N/A	
• Action 2F2 – When safety improvements is the stated objective of the project, include goals and a process to evaluate the outcome and further refine the project selection and solution process.	1-1 1-3 1-7	Left Left Right	2 4 3 to 7	All All All	Yes	Safety was a key element in the decision-making process, especially given that this plan involves a Safety Corridor.

<ul style="list-style-type: none"> • Action 2F3 – Consider solutions including: <ul style="list-style-type: none"> ✓ Increasing traffic enforcement. ✓ Involving business and community groups in education efforts. ✓ Making engineering improvements such as geometrics, signing, lighting, striping, signals, improving sight distance, and appropriate speeds. ✓ Construct appropriate bicycle and pedestrian facilities including crossings. ✓ Managing access. ✓ Uniformity of traffic control devices. ✓ Developing driver information systems. 	Chapter 4	Both & Figures	All	All	Yes	Additional work could be done to determine if additional traffic enforcement could be funded through Safety Corridor status, and encouraging business and community groups to assist in education effort. Access management is key element in refinement plan.
<ul style="list-style-type: none"> • Action 2F4 – Develop and implement Safety Management System to target resources to sites and routes.(Statewide) 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> • Action 2F5 – Seek additional funding for state and local law enforcement. 	N/A	N/A	N/A	N/A	Yes	Additional work could be done to determine if additional traffic enforcement could be funded through Safety Corridor status.
<ul style="list-style-type: none"> • Action 2F6 – Work with citizens and local jurisdictions to address safety concerns. 	1-1 1-3 1-8	Left Right Left	2 1 2 to 3	All All All	Yes	Alternatives were developed with extensive involvement of citizens and local jurisdictions. Safety concerns raised by citizens and jurisdictions, as well as by ODOT, were incorporated into alternatives development.
Policy 2G – Increase safety and transportation efficiency through reduction and prevention of railroad and highway user conflicts.						
<ul style="list-style-type: none"> • Action 2G1 – Eliminate at grade crossings wherever possible. 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> • Action 2G2 – Design projects to avoid or reduce rail crossings at grade. 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> • Action 2G3 – Target resources to increase safety with automated devices and enforcement at specific crossings. 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> • Action 2G4 – Coordinate design, construction, etc. with ODOT Rail Division.. 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> • Action 2G5 – Address bicycle and pedestrian when designing grade-separated crossings. 	N/A	N/A	N/A	N/A	N/A	

GOAL#3 - Access Management. To employ access management strategies to ensure safe and efficient highways consistent with their determined function, ensure the statewide movement of goods and services, enhance community livability and support planned development patterns, while recognizing the needs of motor vehicles, transit, pedestrians and bicyclists.

OHP Requirement	Plan Reference				Consistent	Comments
	Page	Column	Paragraph	Line		
Policy 3A – Manage location, spacing and type of road and street intersections and approaches on state highways to assure the safe and efficient operation of state highways consistent with classification.						
<ul style="list-style-type: none"> • Action 3A1 – Manage access based on following access management classification. ✓ Freeways ✓ Statewide (NHS) – Rural Expressways, Rural Others, Urban Expressways, Urban Other, Urban Business Area, Special Transportation Areas ✓ Regional ✓ District and Local Interest. 	ES-1 2-1	Right Left	1 to 5 3	All 4 to 12	Yes	
<ul style="list-style-type: none"> • Action 3A2 – Establish spacing standards based on highway classification and speed. ✓ Apply standards to the development of all ODOT construction, reconstruction or modernization projects, permits, as well as plans such as corridor plans. ✓ Standards are not retroactive until redevelopment, change of use, or construction, reconstruction, or modernization occurs. ✓ Goal is to meet standards when in-fill occurs. ✓ When right-to-access exists, and no other option is available, less than standards distance may be allowed. ✓ If property is landlocked, except by self-inflicted hardship, and all other options rejected, and approach road unsafe, ODOT may be required to purchase the property. 	Chapter 4 5-13 to 5- 16 B-4	Both and Figures Both N/A	All All 5 & 7	All All All	Yes	
<ul style="list-style-type: none"> • Action 3A3 – Manage location and spacing of traffic signals. 	5-2 5-3	Right Left	2 3	All All	Yes	
<ul style="list-style-type: none"> • Action 3A4 – In general, traffic signals should not be installed on rural high-speed highways. 	5-2 5-3 C-20 C-21	Right Left	2 3	All All	Yes	
<ul style="list-style-type: none"> • Action 3A5 – Private approach road operating with public road characteristics and signal installation. 	N/A	N/A	N/A	N/A	N/A	

Policy 3B – Plan for and manage median placement and location.						
<ul style="list-style-type: none"> Action 3B1 – Plan for median placement consistent with highway classification. Corridor plans and TSPs shall identify planned median treatment. 	ES-1	Right	1	1 to 3	Yes	
	4-1	Right	3	1 to 3 2 to 6 N/A		
	4-2	Left	3			
	4-4	Figure 4-1	N/A			
<ul style="list-style-type: none"> Action 3B2 – Design and construct non-traversable medians for: ✓ All new multi-lane highways on new alignment. ✓ Modernization of all rural, multi-lane Expressways. 	ES-1	Right	1	1 to 3 1 to 3	Yes	
	4-1	Right	3			
<ul style="list-style-type: none"> Action 3B3 – Consider construction of non-traversable medians for : ✓ Urban Statewide and Regionals. ✓ Multi-lane highways with 3-R and 4-R improvements. ✓ When a median could improve safety. ✓ Certain conditions apply. 	ES-1	Right	1	1 to 3 1 to 3	Yes	
	4-1	Right	3			

	<i>Page</i>	<i>Column</i>	<i>Paragraph</i>	<i>Line</i>		
<ul style="list-style-type: none"> Action 3B4 – Full and directional median openings shall be : ✓ Restricted to locations that conform to ODOT spacing standards. ✓ Designed with a left-turn bay and deceleration. <p>Full median openings will be given preference to a public road connection which is part of a continuous and comprehensive public road network.</p>	ES-1	Right	3	All	Yes	
	4-1	Right	3	13 to 15		
<ul style="list-style-type: none"> Action 3B5 – Continuous two-way left-turn lanes are primarily used on urban highways 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> Action 3B6 – Raised median pedestrian islands in urban areas 	N/A	N/A	N/A	N/A	N/A	
Policy 3C - Plan and manage grade separated interchange areas.						
<ul style="list-style-type: none"> Action 3C1 – Develop interchange management plans to protect function between connecting roadways and minimize need for major improvements of existing interchanges.(Agency) 	N/A	N/A	N/A	N/A	Yes	
<ul style="list-style-type: none"> Action 3C2 – Improve existing or construct new interchanges; ✓ Use interchange management spacing standards. ✓ Standards are not retroactive until 	4-2	Right	4	8 to 12 N/A	Yes	Interchange spacing standards incorporated into preferred alternative. Funding likely over the 20-year planning period. Plan alternative to be incorporated into local comprehensive plan;
	4-7	Figure 4-3	N/A	All		
	4-9	Right	All	All		

<p>redevelopment, change of use, or construction, reconstruction, or modernization occurs.</p> <ul style="list-style-type: none"> ✓ Supporting improvements, such as road networks, channelization, medians, and access control must be in local comprehensive plans and committed with identified funding. ✓ Interchange standards supersede access standards. ✓ Where possible, interchanges on Expressway shall connect state highway, major and minor arterials. ✓ Interchanges on Statewide, Regional, District may connect state highways, major or minor arterials, county or city roads, or private roads, as appropriate. ✓ Urban Interchange Design ✓ When possible, access control shall be purchased on crossroads for a minimum of 400 meters from a ramp intersection. 	4-10 to 4-17	All	All				road network, channelization and access control are incorporated. Funding for two of the projects within the refinement plan area is scheduled.
<ul style="list-style-type: none"> • Action 3C3 – Establish criteria for when to consider deviations. (Agency) 	N/A	N/A	N/A	N/A	N/A		
<ul style="list-style-type: none"> • Action 3C4 – When new approach roads or intersections are planned or constructed near existing interchanges, property is redeveloped or there is a change of use, the following standards should be applied in the Interchange Access Management Area. ✓ Approach roads on the crossroads no closer than 230 meters, and between 230 meters and 400 meters, shall be limited to a right-in, right-out. ✓ The first intersection on a crossroads should be no closer than 400 meters. 	4-9 to 4-17	All	All	All	Yes		
<ul style="list-style-type: none"> • Action 3C5 – As opportunities arise, rights of access shall be purchased on crossroads around existing interchanges. When possible this should be for a distance of 400 meters. 	N/A	N/A	N/A	N/A	Yes		Access management incorporated into refinement plan preferred alternative.
<ul style="list-style-type: none"> • Action 3C6 – Traffic Controls within Interchange Access Management Area. 	N/A	N/A	N/A	N/A	Yes		
<ul style="list-style-type: none"> • Action 3C7 – Use grade separated crossings without connecting ramps to provide crossings corridors that relieve traffic crossing demands through interchanges 	N/A	N/A	N/A	N/A	Yes		
<p>Policy 3D Manage request for deviations from adopted access management standards through an application process.</p>	--	--	--	--	Yes		Refinement plan alternative included extensive efforts to meet access management standards. Where this was not feasible, deviations to standards will be requested – however, this need was minimized to the extent possible.
<p>Policy 3E Manage appeals for statewide consistency.</p>	--	--	--	--	N/A		

Goal#4 - Optimize efficiency and utility of state highway through the use of alternative modes and travel demand management strategies.

OHP Requirement	Plan Reference				Consistent	Comments
	Page	Column	Paragraph	Line		
Policy 4A - Maintain and improve freight movement efficiency. Balance need of long distance and through freight movements with local transportation needs						
<ul style="list-style-type: none"> Action 4A1 - Identify obstacles to efficient truck movement. Include weight limited bridges. Set up STIP process to systematically improve the hindering segments. 	2-10 2-11 to 2-12	Right All	4 All	All All	Yes	Widening roadway and bridges, reducing accesses, improving road and access connections will improve efficient truck movement.
<ul style="list-style-type: none"> Action 4A2 - Uniform regulations at regional and national levels 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> Action 4A3 - ITS Commercial Vehicle Operating technology in the western U.S. (Agency) 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> Action 4A4 - Maintain and improve intermodal freight facilities. Support facilities that are part of local or regional TSPs. 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> Action 4A5 - Support funding or financing for transportation system benefiting freight efficiency 	N/A	N/A	N/A	N/A	Yes	
<ul style="list-style-type: none"> Action 4A6 - Work with private sector to improve planning coordination between highway and freight infrastructure. 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> Action 4A7 - Support maintenance and improvement of non-highway infrastructure that provides alternate freight-moving capacity in critical corridors. 	N/A	N/A	N/A	N/A	Yes	Provision of local access roads and improved road networks will result in overall improvement of alternate freight-moving.
Policy 4B - Advance and support alternative passenger transportation systems when potential for successful and effective development of same exists.						
<ul style="list-style-type: none"> Action 4B1 - Promote alternative passenger services in commute corridors to maintain or meet performance standards. 	N/A	N/A	N/A	N/A	Yes	Park and ride provided at Wallace Interchange. Discussions included support for continued Casino vanpool efforts.
<ul style="list-style-type: none"> Action 4B2 - Promote services off the system that help to preserve the performance and function of the state highway system. 	N/A	N/A	N/A	N/A	Yes	Local road network improvements (including local access roads) will provide opportunities for services off-system.
<ul style="list-style-type: none"> Action 4B3 - Encourage development of alternative passenger services and systems as part of broader corridor strategies. Ex. Land use regulations, collector-distributor roadway. 	4-4 4-5 4-17 through 4-29	Figure 4-1 Figure 4-2 Varied	N/A N/A Section titled North or South Local Service Roads plus Figures	N/A N/A All	Yes	

<ul style="list-style-type: none"> Action 4B4 – Encourage alternative passenger modes to reduce trips where limited facilities accommodate large numbers of intercity and local trips. 	N/A	N/A	N/A	N/A	Yes	ODOT supports the Casino vanpool services for local trips.
<ul style="list-style-type: none"> Action 4B5 – Support development of alternative intercity passenger services in congested corridors through additional peak hour services, use of excess freight rail system capacity. 	N/A	N/A	N/A	N/A	N/A	
Policy 4C - Utilize High Occupancy Vehicle (HOV) facilities in favorable locations.						
<ul style="list-style-type: none"> Action 4C1 – Promote HOV where: <ul style="list-style-type: none"> ✓ They are supported in local or regional TSPs. ✓ Current or projected demand will allow efficient operation. ✓ HOV facilities will function as part of the overall system. 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> Action 4C2 – Support conversions of existing mixed-flow facilities for HOV when it would close gaps in the HOV network. 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> Action 4C3 – Promote HOV support facilities such as park and ride. 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> Action 4C4 – Support High-Occupancy/Toll lanes when this supports objectives of plans. 	N/A	N/A	N/A	N/A	N/A	

	<i>Page</i>	<i>Column</i>	<i>Paragraph</i>	<i>Line</i>		
Policy 4D - Invest in traffic demand management						
<ul style="list-style-type: none"> Action 4D1 – Strategies that reduce peak period SOV travel, reduce peak period demand and/or improve traffic flow on the state highway. 	5-16	Left	3 & 4	All	Yes	Traffic flow will be improved by implementation of the refinement plan alternative.
<ul style="list-style-type: none"> Action 4D2 – Investigate tolling and congestion-based pricing. 	N/A	N/A	N/A	N/A	N/A	
<ul style="list-style-type: none"> Action 4D3 – Support existing programs in Portland, Salem, Eugene, etc.. 	N/A	N/A	N/A	N/A	N/A	
Policy 4E – Develop and use of park-and-rides						
<ul style="list-style-type: none"> Action 4E1 – Provide facilities at appropriate locations after coordination with local jurisdictions and analysis of needs and use. 	N/A	N/A	N/A	N/A	Yes	Park-and-ride provided at Wallace Interchange. Additional evaluation of park-and-ride at Grand Ronde would be warranted.
<ul style="list-style-type: none"> Action 4E2 – Acquire right-of-way for park and ride facilities during construction or expansion. Consider at highway interchanges. 	N/A	N/A	N/A	N/A	Yes	Park-and-ride provided at Wallace Interchange. Additional evaluation of park-and-ride at Grand Ronde would be warranted.
<ul style="list-style-type: none"> Action 4E3 – Partner with other jurisdictions to site facilities. 	N/A	N/A	N/A	N/A	Yes	Park-and-ride provided at Wallace Interchange. Additional evaluation of park-and-ride at Grand Ronde would be warranted.

	<i>Page</i>	<i>Column</i>	<i>Paragraph</i>	<i>Line</i>		
Policy 4D - Invest in traffic demand management						
<ul style="list-style-type: none"> Action 4E4 - Convert informal areas in highway right-of-ways to formal park-and-rides when appropriate. 	N/A	N/A	N/A	N/A	Yes	Park-and-ride provided at Wallace Interchange. Additional evaluation of park-and-ride at Grand Ronde would be warranted.
<ul style="list-style-type: none"> Action 4E5 - Use surplus ODOT property for park-and-rides when appropriate. 	N/A	N/A	N/A	N/A	Yes	Park-and-ride provided at Wallace Interchange. Additional evaluation of park-and-ride at Grand Ronde would be warranted.
<ul style="list-style-type: none"> Action 4E6 - Park-and-ride in urban areas. 	N/A	N/A	N/A	N/A	N/A	

Goal#5 - Protect and enhance the natural and built environment throughout the process of constructing, operating, and maintaining the state highway system.

OHP Requirement	Plan Reference				Consistency	Comments
	Page	Column	Paragraph	Line		
Policy 5A - The design, construction, operation, and maintenance of state highways should maintain or improve the natural and built environment including air quality, fish passage and habitat, wildlife habitat and migration, sensitive habitat, vegetation and water resources.						
• Action 5A1 - Implement best management practices to minimize effects of construction, operations, and maintenance.	N/A	N/A	N/A	N/A	Yes	
• Action 5A2 - Attain and maintain air quality in highway-related plans, programs, projects, and maintenance.	See Environmental Assessment	N/A	N/A	N/A	Yes	Air quality is not an issue in this area.
• Action 5A3 - Partner with other governments to identify sensitive habitat areas with high value that are affected by ODOT facilities. Incorporate design features to avoid, minimize, or mitigate impacts.	N/A	N/A	N/A	N/A	Yes	Location of local access roads adjusted to avoid and minimize threatened and endangered species and wetland areas.
• Action 5A4 - Design, construct, and maintain all stream crossings with anadromous fish using Oregon Department of Fish and Wildlife standards.	N/A	N/A	N/A	N/A	Yes	
Policy 5B - Use best management practices to protect and enhance scenic resources in all phases of planning, development, construction, and maintenance.						
• Action 5B1 - Coordinate scenic and cultural resources with appropriate governments and agencies.	2-14 through 2-22 See Environmental Assessment	All	All	All	Yes	Impacts to historic resources avoided and minimized through refinement plan development.
• Action 5B2 - Coordinate with miscellaneous groups to encourage aesthetic considerations outside the state right-of-way.	See Environmental Assessment	--	--	--	Yes	
• Action 5B3 - Design transportation facilities that consider visual qualities with functional requirements.	N/A	N/A	N/A	N/A	Yes	
• Action 5B4 - Use best management practices to minimize impacts to scenic resources.	N/A	N/A	N/A	N/A	N/A	
• Action 5B5 - Identify criteria, and measure and evaluate scenic resource management performance.	N/A	N/A	N/A	N/A	N/A	
• Action 5B6 - Develop an inventory system that identifies scenic resources on unsold state lands that may be used for visual mitigation. (Statewide)	N/A	N/A	N/A	N/A	N/A	

<ul style="list-style-type: none"> Action 5B7 - Inventory and map historic resources within the state highway right-of way 	2-18 & 2-19 See Environmental Assessment	All	All	All	Yes	Historic resources potentially impacted by the proposed roadway were inventories, mapped, and impacts avoided or minimized.
<ul style="list-style-type: none"> Action 5B8 - In project design, include aesthetic elements. 	N/A	N/A	N/A	N/A	Yes	

APPENDIX A

Right-of-Way Acquisition Information

Acquiring Land for Highways and Public Projects
Moving Because of the Highway or Public Project

APPENDIX B

H.B. Van Duzer Forest Corridor to Steel Bridge Road

Compliance of Corridor Refinement Plan with
Oregon Highway Plan

APPENDIX C

Natural Resources Consultations

National Marine Fisheries Service

U.S. Fish and Wildlife Service

APPENDIX D

Cultural Resources Consultations

State Historic Preservation Office