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From: Wagner, Richard W <Richard.Wagner@BNSF.com>
To: Traffalis, Michael (FHWA)
Cc: Visser, Hannah (FHWA); Loftsgaarden, Kirk (FHWA); Minor, Brian C (FHWA)
Subject: RE: Ridgefield Wildlife Refuge, River S Access Study

Sent: Mon 11/19/2012 4:29 PM

Mike, I gave it a quick look, just to clarify further:

- Under train types you should add oil trains;
- If a third track were constructed, the only time trains would move slowly would be during construction activities – very short term;
- We would not construct a meet/pass siding that would block a public crossing for a substantial length of time.

Regards.

Rick Wagner
BNSF Mgr Public Projects
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From: Wagner, Richard W
Sent: Monday, November 19, 2012 9:47 AM
To: 'Michael.Traffalis@dot.gov'
Cc: Hannah.Visser@dot.gov; Kirk.Loftsgaarden@dot.gov; Brian.Minor@dot.gov
Subject: RE: Ridgefield Wildlife Refuge, River S Access Study

Mike, I will try to get to it this weekend, but I have been swamped.

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From: Michael.Traffalis@dot.gov [mailto:Michael.Traffalis@dot.gov]
Sent: Monday, November 19, 2012 8:24 AM
To: Wagner, Richard W
Cc: Hannah.Visser@dot.gov; Kirk.Loftsgaarden@dot.gov; Brian.Minor@dot.gov
Subject: RE: Ridgefield Wildlife Refuge, River S Access Study

Railroad Assessment

Prepared for

**Western Federal Lands
Highway Division
(WFLHD)**

Ridgefield River 'S' Unit

Date: September 7, 2012



HDR

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1.0 INTRODUCTION

HDR Engineering, Inc., has prepared this report to document the findings of a study of potential impacts on public roadway access to the Ridgefield National Wildlife Refuge River “S” Unit, which includes the addition of a proposed third main track through the Wildlife Refuge Road public at-grade railroad crossing. Wildlife Refuge Road is a public road, and is the sole access to the Ridgefield National Wildlife Refuge. The road crosses BNSF Railway’s (BNSF) Seattle, Washington, to Portland, Oregon, main line prior to entering the River “S” Unit. This report was prepared at the request of the Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration (FHWA). The WFLHD, in cooperation with the U.S. Fish and Wildlife Service (USFWS), is conducting an in-depth transportation analysis to assess the current access to the River “S” Unit and to identify potential alternative access locations, under the National Environmental Policy Act (NEPA). This report documents existing effects of the BNSF crossing on public accessibility to the River “S” Unit and existing provisions for safety to motorists and pedestrians at the BNSF crossing, forecasts potential impacts of the additional main track on accessibility and safety, and suggests potential strategies to improve accessibility and safety.

2.0 DESCRIPTION OF EXISTING CROSSING

Wildlife Refuge Road crosses the BNSF Seattle-to-Portland main line near Ridgefield, Washington. This location is identified by BNSF as milepost (MP) 123.32 of its Seattle Subdivision, and the roadway/railway crossing is identified as USDOT Number 092425R.¹ Figure 1 shows the location of the crossing.

Wildlife Refuge Road is a single-lane, gravel-surfaced road with a two lane at grade rail crossing. The Refuge has determined through their CCP that there is a maximum sustainable level of 200 vehicle trips per day with current average daily traffic around 120. Note that in this document directions will be referenced geographically and railroad directions will be noted as “to Portland” or “to Seattle”. There is very little pedestrian traffic and bicycling is prohibited at the River “S” Unit in accordance with the Refuge’s Comprehensive Conservation Plan. There are pedestrian trails within the wildlife refuge, but most users of the Refuge arrive via automobile. Bicycles are restricted from use within the refuge.

BNSF’s main line at this location consists of two main tracks². Both tracks are of typical construction for North American Class 1 railways. The crossing occurs within a 2 degree, 0 minute curve of the main tracks; the curve is approximately 2,500 feet long and the crossing is located approximately 800 feet from the southern end of the curve. The main tracks at this location have a maximum authorized speed of 79 mph for passenger trains using Talgo³ equipment, 70 mph for passenger trains using conventional equipment, and 50 mph for freight trains. The main tracks at this location are operated as Centralized Traffic Control (CTC), a method of operation in which trains proceed according to the visual indications provided by signals located along the tracks, or by verbal instructions

¹ Information about the Wildlife Refuge Road Crossing is derived from the Federal Railroad Administration (FRA) Crossing Inventory for crossing 092425R, accessed July 18, 2012. This inventory was last updated on January 1, 2011.

² Main track is a track on which trains operate between stations or terminals, as opposed to a yard or industry track, which is used at slow speeds for switching railroad cars

³ Talgo equipment tilts to reduce the effects of curves, which enables it to pass through curves at a higher speed

from train dispatchers. Trains may travel in either direction on either track at equivalent speeds under CTC operation.

Figure 1. Location of Wildlife Refuge Road and BNSF Main Tracks



At present, trains scheduled to operate through the crossing each day include 8 Talgo equipment passenger trains, 2 conventional equipment passenger trains, and approximately 50 freight trains. The volume of rail traffic is similar in each direction. Freight traffic is not scheduled and total daily freight trains can vary substantially, with weekly and seasonal traffic peaks. Talgo train frequency is expected to increase to 12 trains daily by 2017. The frequency of conventional equipment passenger trains is expected to continue at two trains per day. Freight train traffic growth is contingent upon economic patterns locally, nationally, and globally, and has historically grown at about 2 percent annually. The Federal Railroad Administration assumes that freight train traffic on any main line will continue to grow at 2 percent annually. Freight trains are operated by BNSF and Union Pacific Railroad, and include manifest trains,⁴ unit trains⁵ of grain and coal, and trains carrying finished automobiles and intermodal freight.⁶ Passenger trains are operated by Amtrak. The two conventionally-equipped Amtrak trains are long-distance intercity trains operated under Amtrak’s national network, and the Talgo

⁴ Manifest trains are trains hauling individual carloads of freight, such as lumber.

⁵ A unit train is a solid train of a single commodity for a single shipper.

⁶ Intermodal freight is freight loaded into containers or semi trailers.

equipped trains are regional intercity trains operated by Amtrak on behalf of the State of Washington.

There is no railroad switching activity regularly occurring at or near the location of the crossing; however, there is a Control Point,⁷ identified by BNSF as “Ridgefield South,” 0.28 miles south of the crossing where trains may be held, crossed over from one main track to the other, or slowed. Trains proceeding southward toward Vancouver may wait at this Control Point or proceed through it slowly due to train traffic ahead; in either case, these trains may occupy the Wildlife Refuge Road crossing for a greater period of time than if they were proceeding at the maximum authorized track speed at this location.

Figure 2 through Figure 8 illustrate the Wildlife Refuge Road crossing as of July 2012. Figure 9 shows the geometry of the road crossing.

The grade crossing surface of Wildlife Refuge Road and the BNSF Seattle Subdivision is a precast concrete panel crossing of each track maintained by BNSF. The crossing is equipped with active warning signal devices consisting of bells, flashing lights, and gates. Flashing lights are located in the direction of roadway travel, both to the side of the roadway on each side of the crossing, and above the roadway on a cantilevered mast. The crossing signals are activated by approaching trains.

While the USDOT inventory report is not clear, it appears the signal system is activated by a Constant Warning Time (CWT) Device, an electronic device that detects approaching trains, determines the speed of approaching trains, and activates the signal so that there is at least 25 seconds of warning time between the time the signal is fully activated and the arrival of an approaching train at the crossing. Grade crossing warning signal systems typically deactivate within 5 seconds after the train has cleared the crossing. Because the CWT is active on both main tracks, the crossing signal system may stay active after the exit of one train because a second train is approaching on the other track. The crossing signal system is maintained by BNSF.

⁷ A Control Point is a railroad location where train dispatchers can control signals that provide authority for trains to proceed, change tracks, or require trains to reduce speed or stop.



Figure 2. Wildlife Refuge Road, looking west toward the crossing, showing the warning signal system activated by a passing train.



Figure 3. Wildlife Refuge Road, looking east through the crossing, showing concrete panel crossing surfaces and asphalt paving approaches to the crossing.



Figure 4. Wildlife Refuge Road crossing, looking north. The silver structure is the instrument house that contains the electronic equipment that controls the warning signal system.



Figure 5. Wildlife Refuge Road crossing, looking south from the west side of the BNSF main tracks. This figure and Figure 4 illustrate the curvature of the BNSF main tracks at this location.



Figure 6 Wildlife Refuge Road crossing, looking south from the east side of the BNSF main tracks



Figure 7. Wildlife Refuge Road crossing, looking north from the east side of the BNSF main tracks



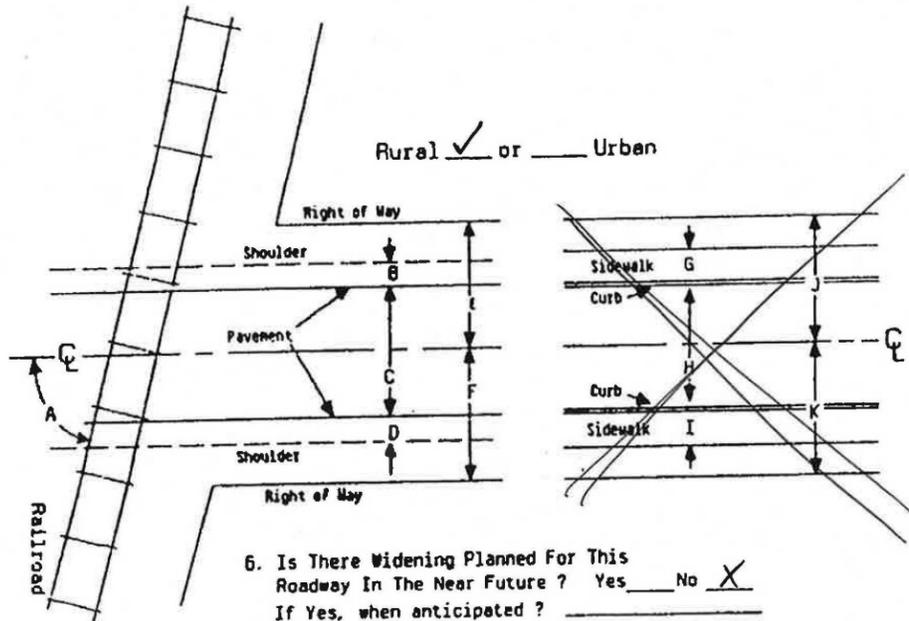
Figure 8. Wildlife Refuge Road crossing, looking east from bridge into River “S” Unit

RAILROAD PROJECT DATA

Furnish Appropriate Information to Railroad With Each Project

1. Agency Name FHWA WFL
2. Location of Crossing BNSF & Wildlife Refuge Rd RR MP 123.32
3. Number of Traffic Lanes 2 Railroad Tracks 2
4. Crossing Number Available from Railroad DOT # 092425 R
5. Statistics:

A <u>81°</u>	D <u>0</u>	H <u>-</u>
B <u>0</u>	E <u>-</u>	I <u>-</u>
C <u>23'</u>	F <u>-</u>	J <u>-</u>
	G <u>-</u>	K <u>-</u>



6. Is There Widening Planned For This Roadway In The Near Future? Yes No

If Yes, when anticipated? _____

If within 3 years, provide a profile of the proposed approach roadway and show proposed ultimate dimensions on above plan.

Figure 9. Geometry of the Wildlife Refuge Road crossing as of July 2012.

2.1 Train Traffic Blockage of the Existing Crossing

The Wildlife Refuge Road grade-crossing is a public crossing. Use of the crossing by trains and roadway users is governed by Washington Administrative Code (WAC) 480-62-220, which reads in whole:

- (1) Railroad companies may not block a grade crossing for more than ten consecutive minutes, if reasonably possible.
- (2) A blocked grade crossing must be cleared immediately by the fastest available method, if the train movement will not violate rules issued by the Federal Railroad Administration, upon the request of law enforcement or other emergency services personnel, or when the engineer becomes aware that the crossing is being approached by a law enforcement or other emergency services vehicle with its emergency lights flashing or that such a vehicle is stopped with its emergency lights flashing at the crossing blocked by the train.
- (3) A grade crossing is “blocked” if any part of a stopped train occupies the crossing or causes warning devices to be activated.

Note that WAC 480-62-220 does not limit or regulate the amount of time that the crossing can be occupied by moving trains, only by stopped trains. Thus, as long as BNSF trains are moving through the crossing, there is no requirement (other than for emergencies) for trains to clear the crossing for roadway use. Because the crossing has two main tracks, it is possible that roadway blockages can extend for the time it takes for two trains to travel through the crossing.

2.2 Safety Provisions at the Existing Crossing

The existing crossing has poor sight distances due to vegetation alongside the BNSF main tracks and the curvature of the main tracks. The crossing has warning signal systems that provide warning to roadway users of approaching trains. The use of cantilevered flashing lights in addition to the mast-type flashing lights on either side of the roadway provide additional visual indication of trains approaching or occupying the crossing. Cantilevered flashing lights are typically used where a narrow, curved roadway bordered by vegetation may limit the sight distance at which mast-type flashing lights can be seen by a motorist approaching the crossing.

Roadway users can circumvent the warning signals by driving around the gates, as the gates only block the regular lane of travel in each direction. Roadway users who disregard the signal system would have limited visual warning of approaching trains due to the sight distance restrictions. Roadway users who see one train exit the crossing, and then observe the signal system does not deactivate, may not be aware that the crossing has a second main track and that the signal system has remained activated because a train is approaching on the second main track.

2.3 Potential Third Main Track at the Crossing

BNSF has indicated it may construct a third main track east of the two existing main tracks through the Wildlife Refuge Road grade crossing. The purpose of this third main track is understood by HDR to improve the capability of the BNSF Seattle Subdivision for freight trains. Whether this increased capability is intended to provide for increased

speed, frequency, length, or reduced delay to freight trains is not known to HDR. This track is not known to be specifically intended to provide for increased passenger train speed, capacity, or reliability, and it is not included in existing federally or state-funded passenger-rail improvement projects for the Seattle-Portland corridor. While other infrastructure projects in the Seattle-Portland corridor are funded by existing FRA High Speed Intercity Passenger grants, or by Washington State Department of Transportation (WSDOT) funding for Amtrak *Cascades* service, this project is not.

There are no specific plans at present by either BNSF or WSDOT to increase maximum authorized freight or passenger train speeds at this location or in the Seattle-Portland corridor. WSDOT has conducted planning studies that have examined higher-speed passenger trains between Seattle and Portland. These studies have not identified a specific track alignment for these passenger-rail services, or a specific schedule of implementation. Funding for higher speed passenger trains has not been made available for this corridor at this time, and no potential funding source is known to be pending. Most of the existing alignment of BNSF between Seattle and Portland, including this location, may not be feasible for the realization of higher train speeds due to curvature, environmental impacts that may occur, freight train traffic that must be accommodated, freight switching of industries, and roadway crossings. FRA regulations require closure or grade separation of all at-grade crossings for crossings at which maximum train speeds may exceed 110 mph, and advanced grade crossing protection systems for crossings that are not closed or separated for train speeds between 80 and 110 mph.

Operation of the third main track will have unknown effects on the total time per day that the Wildlife Refuge Road crossing is occupied by trains. It is possible that the additional fluidity that the third main track provides to BNSF's Seattle-Vancouver corridor results in a net increase in average actual train speeds through the crossing. It is also possible that average train speeds will decrease and crossing occupancy times will increase if one of the main tracks is used following construction of the third main track to stage trains waiting to enter BNSF's Vancouver Yard. Thus, the addition of a third main track – if it results in more trains traveling through the crossing daily, or a lower average speed of trains – may result in longer periods of time that the crossing is occupied by trains per day, and possibly greater wait times for vehicles entering or exiting the Refuge.

No engineering concepts or drawings are available to HDR that would enable examination of whether a third main track would improve or diminish sight distances at the crossing. Engineering concepts or drawings of a warning signal system that accommodates a third main track are also not available. The typical practice for crossing warning systems following the construction of a third main track, is for warning signal systems that are similar to those already in place. The addition of four-quadrant gates, or channelization devices that limit the ability of roadway users to disregard two-quadrant gates and drive around them, would serve to restrict the opportunity for roadway users to circumvent the warning signal system and place themselves in potential harm.

3.0 FUTURE PLANNING

The City of Ridgefield has acquired land and is planning a park where the existing Ridgefield Wildlife Refuge Road is located (per the City of Ridgefield Parks and Recreation Capital Facilities Plan Figure 4.1). The addition of a park close to the wildlife refuge may increase the amount of pedestrian traffic across the grade crossing.

The Port of Ridgefield has a planned improvement of Pioneer Street to provide a grade-separated crossing of the BNSF tracks. The stated purpose of the project is to provide direct access to the waterfront as well as the “Carty” and “River S” units of the Ridgefield National Wildlife Refuge.

3.1 Access Improvement Strategies for the Crossing

Vehicular and pedestrian users of the Wildlife Refuge Road crossing may experience longer wait times after the construction of a third main track. Mitigation strategies that are available to reduce wait times consist of constructing a separated grade crossing, or relocation of the road access to avoid crossing BNSF. There are no federal or state regulatory avenues by which the Refuge is likely to successfully enforce a reduction in train traffic, an increase in average train speeds, or (in most cases) prevent construction of a third main track. (Construction of a third main track, further, might serve to reduce crossing wait times.) In some instances, roadway agencies have participated in the funding of railroad infrastructure designed to increase average train speeds, and thus decrease crossing wait times. This option could be explored through discussion with BNSF.

3.2 Safety Improvement Strategies for the Crossing

Vehicular and pedestrian users of the Wildlife Refuge Road crossing can place themselves in harm by disregarding the existing warning signal system. Construction and operation of a third main track may create risks to those who disregard the signal system, because trains can operate on three tracks instead of two, in both directions on any track. Mitigation strategies that are available to improve safety consist of the following:

- Constructing a separated grade-crossing
- Channelization of the Wildlife Refuge Road to limit the ability of motorists to drive around the crossing gates
- Installing four quadrant gates to limit the ability of motorists to disregard the warning signal system.

Appendix A

ORDC Effectiveness Ratings

Appendix B

FRA Highway-Rail Grade Crossing Guidelines for High-Speed Passenger Rail

Appendix C

FHWA Railroad-Highway Grade Crossing Handbook

Appendix D

**WSDOT Local Agency Guidelines Chapter 32
Railroad/Highway Crossing Program**

Appendix E

**Wildlife Refuge Road Rail Crossing Inventory
Report**