

EXISTING CONDITIONS SUMMARY REPORT



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River S Unit access road – Ridgefield, WA

Summary and discussion of the existing conditions for the current River S Unit access.

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RIVER S UNIT ACCESS ROAD- RIDGEFIELD, WA

INTRODUCTION

The River “S” Unit is part of the Ridgefield National Wildlife Refuge (NWR) in Ridgefield, WA. Access for the River “S” Unit is located 0.7 miles south of SR 501 (Pioneer Street) on South Hillhurst Road and 2 miles from the NWR headquarters. River S provides various recreational opportunities with the primary feature being a 4.3 mile auto-tour route that is open to the general public year round. The NWR was established in 1965, with the acquisition of its first property, the River S Unit.

Following is an existing conditions assessment that documents known field conditions, traffic data, existing right of way, structure condition and existing features of the access road to the River S Unit.

SITE INSPECTION

There are no signs directing visitors to the River “S” Unit of the Refuge from Pioneer Street in Ridgefield. The access ties into South Hillhurst Road near the Taverner Ridge subdivision. There is a large sign and solar power operated gate at the access road off South Hillhurst Road. The road to the River “S” Unit is at a grade of up to 14.6% and is single-lane gravel road (with some widening in the curves). The existing road width varies from 13.9’ to 22.5’. The access road is 1995 feet (0.378 miles) in length from the turn off of Hillhurst to the railroad crossing. Just past the entrance gate, there is a “15 mph” speed limit sign (the only signage until reaching the railroad crossing (2 tracks) and 2 electronic crossing arms. From the far side crossing arm, it is 100’ to the beginning of the bridge over Lake River. The bridge is signed at both ends with “5 MPH” and “ONE LANE BRIDGE”.

Comfortable driving speeds on the gravel road vary between 15-20 mph (depending on the direction and presence of opposing traffic). There are some short segments of w-beam guardrail along the steep section, though there are no terminals and many of the rails and posts appear to have been damaged from fallen trees.

Beyond this Railroad crossing is another speed limit sign at the single lane timber bridge that crosses Lake River and connects to the Auto Tour Route. Due to the arch in the bridge it can be difficult to see on-coming vehicles, but the sight distance does meet minimum design standards. There is w-beam rail on the bridge on both sides.

Access to the River “S” Unit, as of March 11, 2012, is available from 7 am to 7 pm daily. Times for access to the River “S” Unit vary depending on the time of year.

LAKE RIVER BRIDGE

The existing bridge is 331.5 feet long and has 19 spans. It was originally built in prior to 1960 and a major modification took place in 1980. At that time, the main span was modified (lengthened) at the request of a contractor hired to dredge Vancouver Lake in the early 80’s. The Refuge granted permission to

modify the bridge to allow this one time access (Dredge equipment in and out of Vancouver Lake via Lake River) passage. The main span is composed of steel beams and the others are spanned by timber beams, ranging in length from 8 to 17 feet.

The most recent bridge appraisal was completed in 2010. This report characterized the overall bridge condition as Fair. The condition assessment is based on conditions of the deck, superstructure, approach elements, channel elements and substructure items. The report estimated a remaining life to be 5-10 years – which is based on current load capacity, without major repairs or rehabilitation. Another way to say this is that it is highly likely that within the next 5 to 10 years, a major repair or rehabilitation will be necessary to keep this bridge in service.

Bridge rehabilitation work was completed in 2008 that included reconstruction of the west abutment with new piling and bulkhead planks. This improvement allowed the bridge to maintain the current load capacity.

The majority of the timber piling that compose the trestle bents have been in place since the bridge was built. These piles are considered to be in poor condition with moderate to heavy rot above the water line. Although it is not an immediate need, it is likely that rehabilitation of these elements would be needed within the next 5-10 years.

Typical timber bridges have an average life of 40 years of service or more. The trestle structure of this bridge is currently at least 52 years of age. The inspection reports make note that several elements of this bridge are approaching the end of their useful life and will likely need repair or rehabilitation in the near future.

The bridge has a sufficiency rating of 44.7% (as of 2010 inspection). This ranks the bridge 8th/44 regionally and 35th/290 nationally within the USFWS inventory. (100% is an entirely sufficient bridge and 0% is an entirely deficient bridge).



For the complete bridge conditions summary see Memo dated March 28, 2012.

ASSESSMENT OF EXISTING GEOMETRY

The approach to the River S auto tour route is approximately 2000 feet in length with widths varying from 13.9' to 22.5'. Over half of the roadway is less than 18' in width. The grades for the approach road are generally mild with short lengths getting as steep as 14.6%. The design speed for this segment is assumed to match the posted speed and the typical travel speed; 15 mph. The USFWS design guidelines recommend the use of the AASHTO local low volume road guideline, which provides considerable flexibility in the geometry. For a design speed of 15 mph, the recommended minimum curve radius is 150'; the current minimum curve radius along the road is 182'.

The current approach serves two-way traffic, but the roadway width was most likely built as a one lane road with turnouts. With current traffic volumes and geometric conditions, the roadway has adequate sight distance to accommodate oncoming traffic, but the single land roadway with pullouts does not effectively accommodate the peak volumes that are typically found on this roadway.

The recommended stopping sight distance for this type of facility is 65'. The road, as built, provides the 65' minimum sight distance in all cases. The sight distance at the bridge does meet the 65' criteria, but the current posted speed at either end of the single bridge is 5 mph, so the theoretical sight distance requirement is less than 65'. The likelihood of future accidents at this location is low due to the typical travel speeds matching the driver expectation for the roadway.

A summary of the geometric conditions is provided below. The standard used is based on "Geometric Design of Very Low-Volume Local Roads (ADT <= 400) 2001"

Given: Design Speed = 15 mph, Surface condition = Gravel, loose, wet condition,

<u>Design Standard</u>	<u>Existing Condition</u>
Minimum curve radius = 150 feet	182 feet minimum
Minimum road width = 18 feet*	13.9 feet minimum
Stopping sight distance = 65 feet (wet pavement)	> 65'

* 18' width is the standard design width for a low volume, two lane facility. This was used to compare the existing to a typical two lane facility, which is how the road is currently utilized.

GEOTECHNICAL ASSESSMENT

A literature review and a site assessment were completed as part of the assessment. The literature review looked at existing reports in the area, geologic maps and USGS data for the area. Based on these reports, generalized information was collected and summarized in the Geotechnical memorandum no. 08-12.

The site assessment noted that the road was built with a partial cut bench on the uphill side and a fill on the downhill side. The cut and fill slopes range from 1H:1.2V to near vertical, with some vertical slopes reaching 30' to 40' in height. The slopes had up to 10' of slough material at the toe. Natural slopes within the same drainage appear to have a maximum slope of 1H:1.2V.

The soil types were visually classified as silt with some clay, moist, brown and low plasticity. The steeper higher cuts exposed conglomerate that was visually classified as gravel and cobbles in a fine to medium grained silty sand matrix, subrounded to round gravel and cobbles (less than 6" in diameter). Near the lower end of the alignment, a layer of weakly cemented fine to medium sand with silt was observed underlying the conglomerate. Seepage was observed just above the contact of the two layers.

A landslide was observed across the drainage from the roadway. The slide is estimated to be recent (last 20 years) and is not impacting the roadway. Several smaller slumps (minor slope failures) were observed. These do not appear to be a significant issue other than the need for some additional maintenance during heavy rain events.

The slumps and landslide are commonly observed throughout this geologic formation. It should be noted that these types of soils will stand vertical and this is often done to minimize the amount of precipitation that directly impacts the slopes. However, when the material becomes saturated it loses strength and can result in landslides and slumps, as observed in the corridor.

A detention basin was observed, via aerial photography, near the top of the cut slopes. It is noted that the storage of water at the top of a slope, even temporarily, could raise the groundwater table and increase the likelihood of landslides.

For the full geotechnical assessment see GM 08-12.

RAILROAD CROSSING

The railroad crossing is a 2 track timber crossing with 2 mast mounted gates with warning lights and a bell. There are also two cross bucks and advanced warning signs leading to the crossing. The crossing serves both commercial trains and passenger trains (11 total train crossings per day- per AMTRAK train schedule as of March 14, 2012), with a total of 57 total trains per day. The speed of the trains along this stretch of track range from 1 to 79 mph. The track is owned and operated by Burlington Northern Santa Fe (BNSF). Union Pacific (UP) and AMTRAK also utilize the tracks. This location is not in a quiet zone as defined by the BNSF railroad.



LAND OWNERSHIP

The existing roadway is on a 33' wide easement that was recorded in 1966. The language for the current easement noted that the easement will remain in place until the road it is no longer needed or until there is access to the River S from the Lower River Road.

Maintenance of the road by the USFWS is limited to the 33' wide easement. Maintenance outside the easement (such as tree trimming, etc.) has been handled on a case by case basis, by obtaining permission from the landowner.

VEHICLE USAGE

The existing access is largely used by casual visitors with typical vehicle types ranging from passenger cars to SUVs to pickup trucks. There are occasional school buses that access the refuge, but the Ridgefield School District and Vancouver School Districts do not currently have consistent school trips planned to the refuge. The largest vehicles accessing the refuge are as follows:

1. Farm tractor and implements up to 12' in width.
2. Truck and Trailer: Type 3 Load Rating 55,000lbs
3. Truck and Trailer: Type 3S2 Load Rating 87,000lbs
4. Truck and Trailer: Type 3-3 Load Rating 93,600lbs

Equipment used for maintaining the Ridgefield NWR, Steigerwald NWR, Pierce NWR and Franz NWR is housed on the Bachelor Island Unit. The River S unit entrance is their primary route travelled when performing routine maintenance for all of the refuges noted.

TRAFFIC DATA (RIVER "S" UNIT)

A review was made of the Ridgefield NWR website and on-line maps of the Ridgefield area. A 2009 Traffic Impact Analysis and traffic counter data for the Ridgefield NWR were also reviewed for traffic

data at the existing access, and between June and August 2011 there appeared to be an average of approximately 125 vehicles per day on the access road to the River "S" Unit (counts were conducted on the Auto Tour Route).

The USFWS has provisions in place for when traffic volumes are expected to exceed 200 trips on the auto tour route within a single day (which is equivalent to 400 vehicles per day). These events are typically known in advance and alternate transportation is often in place for these events. An example of this would be the bird festival that occurs annually.

Accident History:

No crash data was available for the River "S" Unit access road. The USFWS noted that they have no records of accidents in their files.