

**US 101 Purdy Creek Bridge Replacement Mitigation Site
USACE NWP (23) NWS-2007-1812**

Olympic Region

2015 MONITORING REPORT

Wetlands Program

Issued March 2016



**Washington State
Department of Transportation**

Environmental Services Office

Author:
Kristen Andrews

Editor:
Doug Littauer

For additional information about this report or the WSDOT Wetlands Program, please contact:

Doug Littauer, Wetlands Program
WSDOT, Environmental Services Office
P. O. Box 47332, Olympia, WA 98504
Phone: 360-570-2579 E-mail: littaud@wsdot.wa.gov

Monitoring reports are published on the web at: <http://www.wsdot.wa.gov/Environment/Wetlands/Monitoring/reports.htm>

US 101 Purdy Creek Bridge Replacement Mitigation Site

USACE NWP (23) NWS-2007-1812



General Site Information		
USACE NWP 23 Number	NWS-2007-1812	
Mitigation Location	Downstream from the replaced bridge on US 101, along the closed Bourgault road, just off of the Purdy Cutoff road.	
LLID Number	1231601473033	
Construction Date	2010	
Monitoring Period	2011-2020	
Year of Monitoring	5 of 10	
Area of Permanent¹ Wetland Impact	0.23 acre	
Type of Mitigation	Wetland re-establishment	Buffer/riparian enhancement
Area of Mitigation	0.14 acre	0.67 acre

¹Impact and mitigation acreage from WSDOT (2009).

This Page Intentionally Left Blank

Summary of Monitoring Results and Management Activities (2015)

Performance Standards	2015 Results ²	Management Activities
Native woody vegetation in the planting areas will achieve a minimum of 50% aerial cover	41% cover (CI _{80%} = 35-47%)	
Noxious weeds, excluding <i>Phalaris arundinacea</i> , will not exceed 20% aerial cover	2% cover	Weed control conducted on: March 4, 2014, April 1, 2014, May 20, 2014, August 14, 2014, and April 6, 2015
<i>Phalaris arundinacea</i> will not exceed 50% aerial cover	10% cover	
<i>Polygonum bohemicum</i> (Bohemian knotweed), <i>Polygonum cuspidatum</i> (Japanese knotweed), <i>Polygonum polystachyum</i> (Himalayan knotweed), and <i>Polygonum sachalinense</i> (giant knotweed) shall not be present at the mitigation site	Non-native knotweed was not present at the time of monitoring	

Report Introduction

This report summarizes fifth-year (Year-5) monitoring activities at the United States (US) 101 Purdy Creek Bridge Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site development. Monitoring activities included vegetation surveys and photo-documentation on August 25, 2015.

² Estimated values are presented with their corresponding statistical confidence interval. For example, 41% (CI_{80%} = 35-47% cover) means we are 80% confident that the true cover value is between 35% and 47%.

What is the US 101 Purdy Creek Bridge Replacement Mitigation Site?

This 0.81-acre mitigation site (Figure 1) includes 0.14 acre of wetland re-establishment and 0.67 acre of riparian/buffer enhancement. This site was created to compensate for 0.23 acre of permanent impacts due to the replacement of the bridge over Purdy Creek on United States (US) 101. The enhancement of the riparian buffer and the wetland re-establishment are intended to provide hydrologic and water quality functions, as well as wildlife habitat. The wetland re-establishment area is on the northwest side of Mussel Shell Creek within the road removal area.

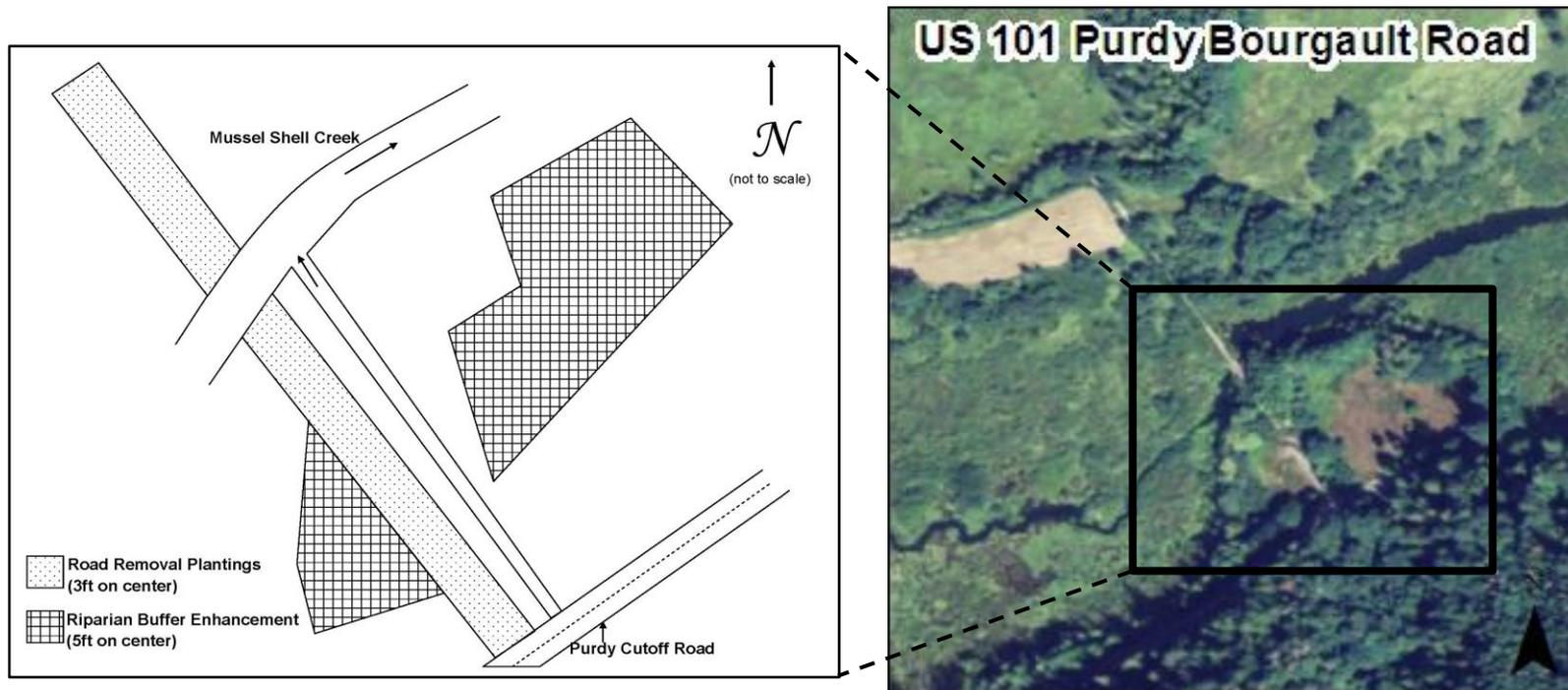


Figure 1 Site Sketch

The US 101 Purdy Creek Mitigation Site is out-of-kind mitigation for a bridge replacement upstream on US 101. The site consists of a section of Bourgault Road that was removed, decompacted, graded and planted; a bridge removal; and riparian buffer enhancement on the northeast and southwest sides of the site. Appendix 2 includes site directions.

What are the performance standards for this site?

Year 5

Performance Standard 1

Native woody vegetation in the planting areas will achieve a minimum of 50 percent aerial cover.

Performance Standard 2

Noxious weeds, excluding *Phalaris arundinacea*, will not exceed 20 percent aerial cover over the entire mitigation site.

Performance Standard 3

Phalaris arundinacea will not exceed 50 percent aerial cover over the entire mitigation site.

Performance Standard 4

Polygonum bohemicum (Bohemian knotweed), *Polygonum cuspidatum* (Japanese knotweed), *Polygonum polystachyum* (Himalayan knotweed), and *Polygonum sachalinense* (giant knotweed) shall not be present at the mitigation site.

Appendix 1 shows the as-built planting plan (WSDOT 2001).

How were the performance standards evaluated?

The table below documents the sampling methods used for all of the performance standards (PS) as required by the mitigation plan or permits. For additional details on the methods see the [WSDOT Wetland Mitigation Site Monitoring Methods Paper](#) (WSDOT 2008).

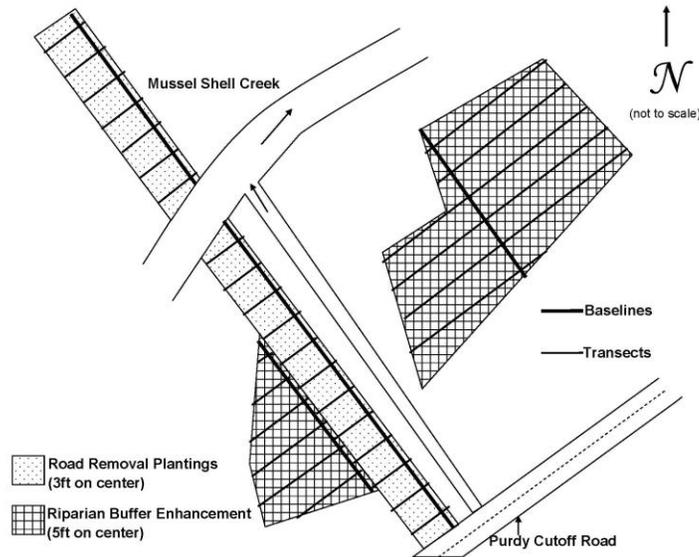


Figure 2 Site Sampling Design (2015)

Placement of Baseline: Three baselines were used for three separate pieces of the site. All baselines were placed roughly south to northwest.

Segmented Baseline: Length 128m Transects 1-14
 Length 54m Transects 15-20
 Length 37m Transects 21-24

	PS 1	PS 2	PS 3
Attribute	Cover	Cover	Cover
Target pop.	Native Woody	Noxious Weeds	Invasive sp.
Zone	Entire site	Entire site	Entire site
Sample method	Line Intercept	Qualitative	Qualitative
SU length	5 meters	N/A	N/A
SU width	N/A	N/A	N/A
Points per SU	N/A	N/A	N/A
Total # of SU	32	N/A	N/A

How is the site developing?

This site consists of three distinct planting areas that are achieving varying degrees of success. The road on the north side of Mussel Shell Creek that was taken out and then planted is performing fairly well. The plantings are still present and the adjacent willow species are colonizing to fill the gaps. The area consists of two distinct strata, the plantings that reach approximately two meters in height and the existing shrubs and trees that are in the three to five meter range.

The plantings on the south side of the creek are suffering and historically have had difficulty in becoming established. This is due to the area being used by anglers to access the creek. The access issue has led to increased soil compaction, plant removal by vandals, and increased trash in the area.

The planting area is essentially used as a parking lot. The plantings on the east side of the site are developing, however slowly. This area is more exposed and drier than the other sections and the plants experienced stress from the dry hot summer in 2015. There is also an access issue in this zone that is relatively new compared to the previously mentioned area. It is not causing as much damage because the vehicle traffic is not going through the planted area, but around it.

The site was intended to provide wildlife habitat and it appears that this function is supported. Several species of birds have been observed on site during monitoring. Salmon have been observed in the creek as well as on the banks of the river, attracting several species of raptors.

Water quality and water quantity functions are intended to be provided by this site. Removal of the bridge with creosote pilings during construction supported this function. As the plantings develop, they will add additional buffer to slow the water and remove toxicants and nutrients before they reach the creek. The road was removed due to repeated flooding in the area. This opens up the whole area to flood storage without impacting transportation infrastructure.

Remedial efforts include ongoing contact with the local community to solve the public access issues.

Results for Performance Standard 1

(Native woody vegetation in the planting areas will achieve a minimum of 50% aerial cover):

Cover in the planting areas is 41% cover (CI_{80%} = 35-47%). This result reflects only the areas in which the plantings have survived. Most of the plantings have survived the dry hot summer; however, the plantings in the southeast riparian buffer appeared the most stressed (Photo 1). The willows in the northern road removal area are thriving (Photo 2).

The area that the public uses to park and access the creek was not included in this sample.

Results for Performance Standard 2

(Noxious weeds, excluding *Phalaris arundinacea*, will not exceed 20% cover over the entire mitigation site):

Noxious weed cover across the site is estimated at two percent, consisting mostly of common tansy (*Tanacetum vulgare*), Himalayan blackberry (*Rubus armeniacus*), and bull thistle (*Cirsium vulgare*).

Results for Performance Standard 3

(*Phalaris arundinacea* will not exceed 50% cover over the entire mitigation site):

Cover of reed canarygrass across the site is 10 percent. Most of the grass is concentrated on the Bourgault road side of the creek as an understory to the willows planted there. This is not surprising as the adjacent fields primarily consist of the grass.



Photo 1
Woody cover in the southeast riparian buffer (Aug 2015)



Photo 2
Woody cover in the north road removal (Aug 2015)

Results for Performance Standard 4

(Non-native knotweed and giant hogweed shall not be present at the mitigation site):

Non-native knotweed was not present at the time of monitoring.

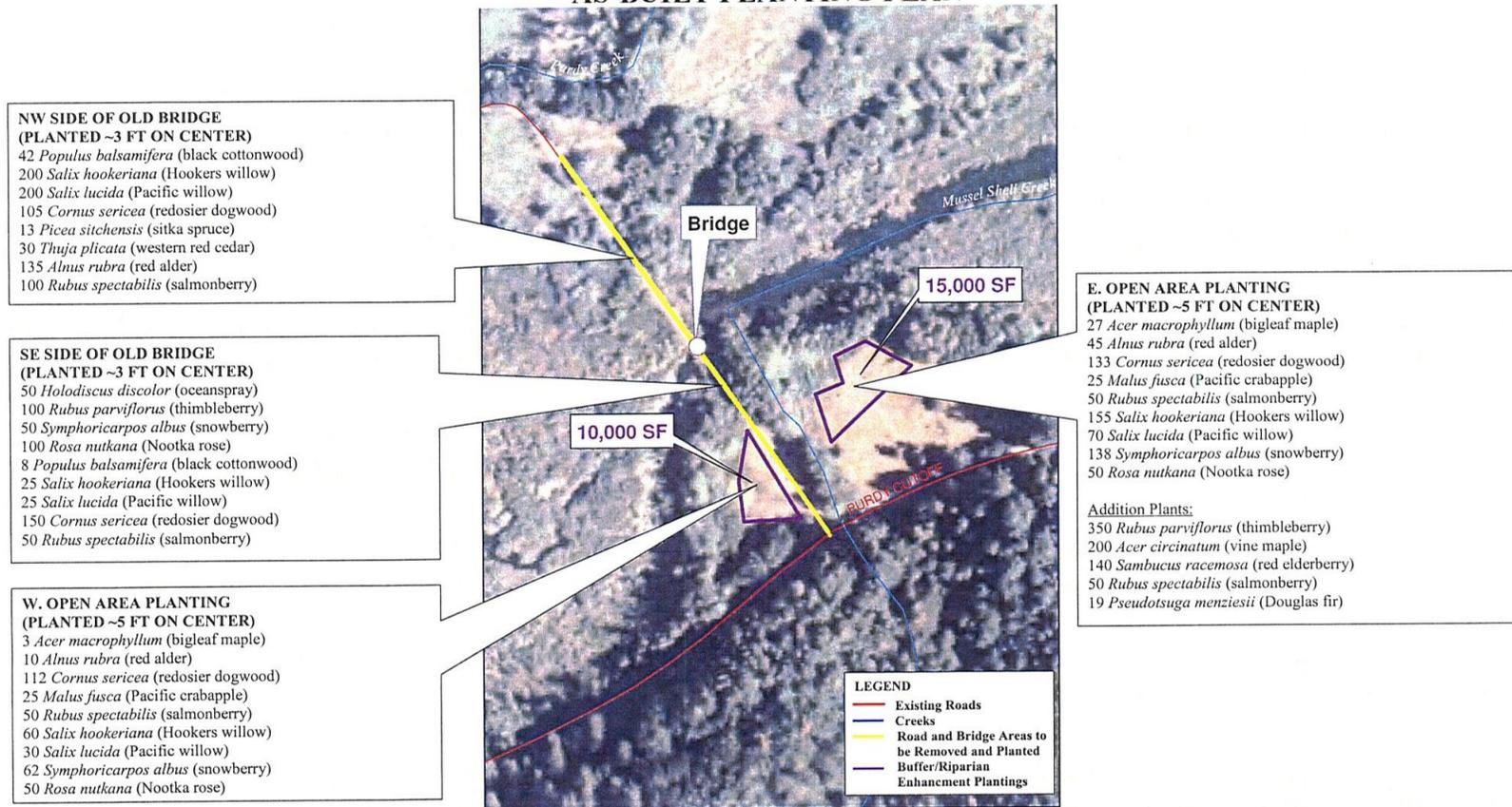
What is planned for this site?

The region has plans to continue working with the Tribe and County on access issues, replant where needed and continue weed control.

Appendix 1 – As-Built Planting Plan

(from WSDOT 2010)

US 101 PURDY CREEK BRIDGE/BOURGAULT ROAD MITIGATION SITE AS-BUILT PLANTING PLAN



Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on August 25, 2015 and document current site development.



Photo Point 1a



Photo Point 1b



Photo Point 1c



Photo Point 2a

The photographs below were taken from permanent photo-points on August 25, 2015 and document current site development.



Photo Point 2b



Photo Point 3a



Photo Point 3b



Photo Point 3c

The photographs below were taken from permanent photo-points on August 25, 2015 and document current site development.



Photo Point 3d



Photo Point 3e



Photo Point 3f



Photo Point 4a

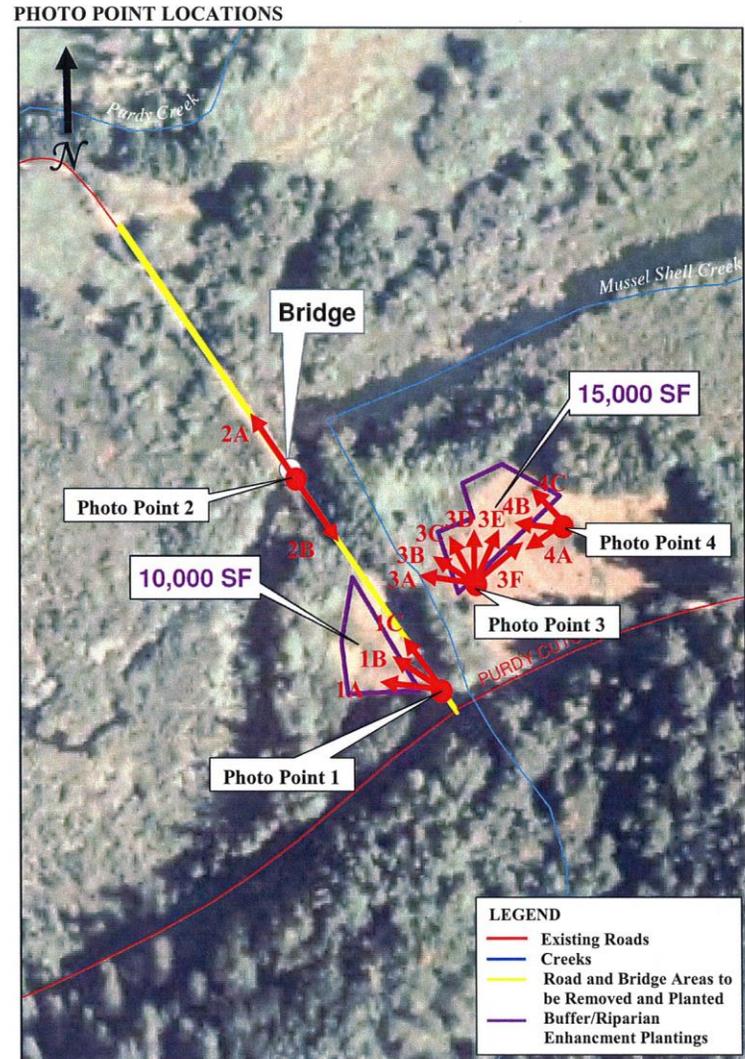
The photographs below were taken from permanent photo-points on August 25, 2015 and document current site development.



Photo Point 4b



Photo Point 4c



Driving Directions:

Take US 101 west toward Aberdeen/Port Angeles. Drive approximately 25 miles. Take a slight right onto East Purdy Cutoff Road. The site is about one mile on the left hand side of the road. There is parking on the side of the road right next to the site.

Literature Cited

1. [USACE] US Army Corps of Engineers. 2009. Department of the Army Individual Permit Number NWS-2007-1812-SOD.
2. [WSDOT] Washington State Department of Transportation. 2009. US 101 Purdy Creek Bridge Replacement, Final Mitigation Plan Mitigation Site, Tumwater (WA): Washington State Department of Transportation, Olympic Region.
3. [WSDOT] Washington State Department of Transportation. 2010. US 101 Purdy Creek Bridge Mitigation Site, Wetland Mitigation As-Built Report, As-built Planting Plan.
4. [WSDOT] Washington State Department of Transportation. 2008. WSDOT Wetland Mitigation Site Monitoring Methods. <http://www.wsdot.wa.gov/NR/rdonlyres/C211AB59-D5A2-4AA2-8A76-3D9A77E01203/0/MethodsWhitePaper052004.pdf>