

**SR 9 Pilchuck Creek Replace Bridge (Pilchuck Buffer)  
Mitigation Site  
WIN # A00934R**

**USACE NWP (14) NWS-2011-299**

**Northwest Region**

**2015 MONITORING REPORT**

**Wetlands Program**

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# SR 9 Pilchuck Creek Replace Bridge Mitigation Site

## USACE NWP (14) NWS-2011-299



General Site Information			
USACE Number	NWS-2011-299		
Mitigation Location	East of I-5 in unincorporated Snohomish County, within the Southwest ¼ of Section 31, of Township 32 North, Range 5E		
LLID Number	1222174482231		
Construction Date	2012		
Monitoring Period	2013-2017		
Year of Monitoring	3 of 5		
Area of Project Impact	Wetland <sup>1</sup>	Stream	Wetland/Stream Buffer
	0.34 acre	60 feet	2.22 acre
Type of Mitigation	Wetland Establishment	Stream Restoration	Buffer
Area of Mitigation <sup>2</sup>	0.67 credits	53 feet	7.78 acre

<sup>1</sup> The wetland impact number comes from the USACE permit NWS-2011-299 (USACE 2012). Other impact numbers come from the SR 9 Pilchuck Creek Replace Bridge Addendum to the Wetland and Stream Mitigation Report (WSDOT 2012).

<sup>2</sup> To fully compensate for these wetland impacts, WSDOT debits 0.67 wetland mitigation credits from the Pilchuck Creek Mitigation Site. By debiting credits representing moderate to high functional values as compensation for the loss of low to moderate functional values, the net ecological benefits represented by 0.67 Pilchuck credits will offset the loss of wetland area and function caused by the project.

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## Summary of Monitoring Results and Management Activities (2015)

Performance Standards	2013 Results <sup>3</sup>	Management Activities
Native woody species (planted and volunteer) will have an average density of four plants per 100 square feet in the woody wetland communities.	9.2 plants/100ft <sup>2</sup> (CI <sub>80%</sub> = 8.2-10.2)	
Noxious weeds and species listed in Table 30 (Appendix 3) will not exceed 25 percent cover in the wetland or buffer.	2% cover	Herbicide and manual weed control efforts will continue in 2016.
Non-native blackberries ( <i>Rubus armeniacus</i> and <i>R. laciniatus</i> ) will not exceed 15 percent cover in the wetland or buffer within the mitigation site.	3% cover	Herbicide weed control occurred 4 times and manual control was on-going during growing season.
Reed canarygrass ( <i>Phalaris arundinacea</i> ) will not exceed 25 percent cover in the wetland or buffer within the mitigation site	4% cover	Herbicide weed control targeted RCG. During growing season, application occurred approximately every 6 weeks, based upon re- growth time.
The presence of Japanese knotweed species and purple loosestrife will initiate eradication measures.	Not observed	Review of site for Japanese Knotweed will occur in 2016.

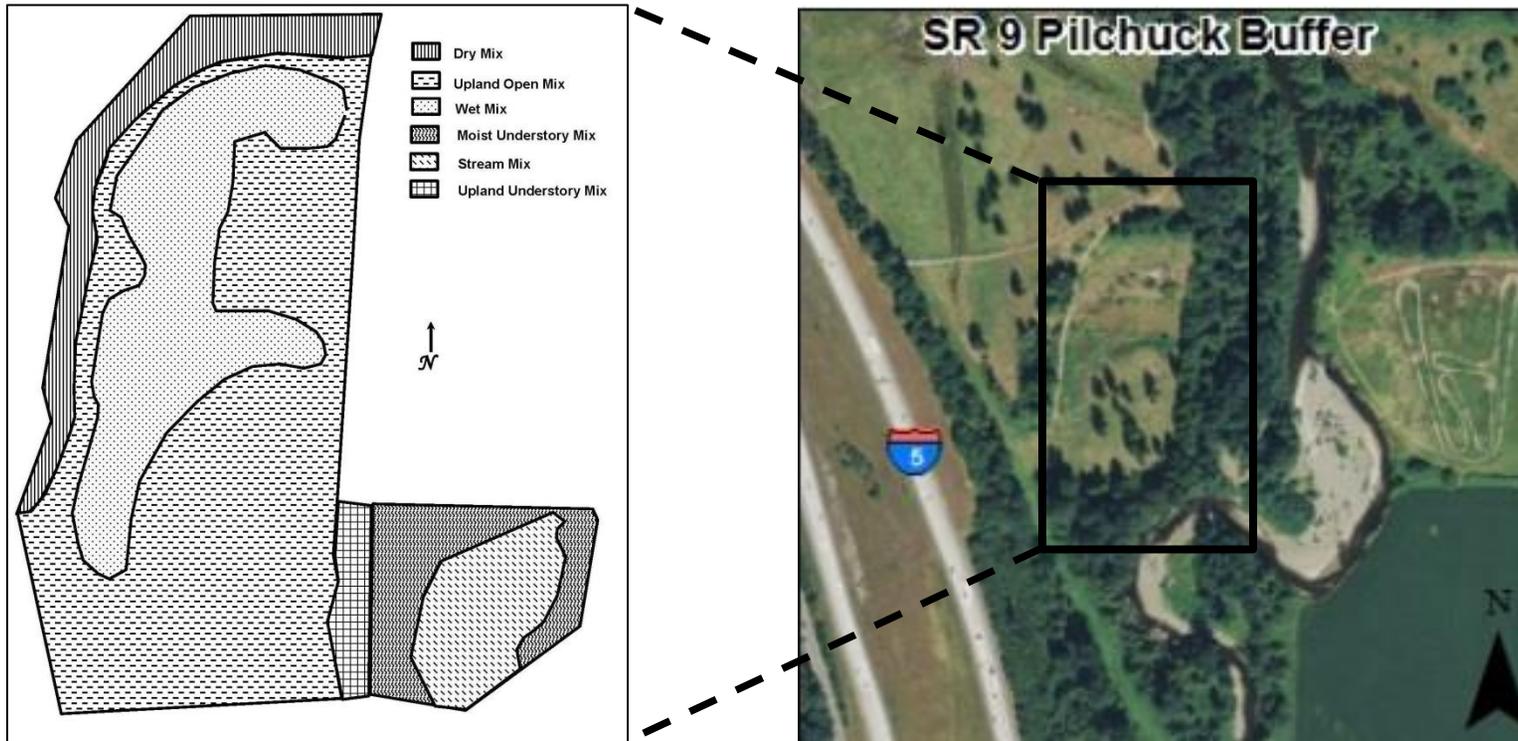
## Report Introduction

This report summarizes third-year (Year-3) monitoring activities at the State Route (SR) 9 Pilchuck Creek Replace Bridge (Pilchuck Buffer) 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. Monitoring activities occurred on August 24 and 25, 2015.

<sup>3</sup> Estimated values are presented with their corresponding statistical confidence interval. For example, 9.2 plants/100ft<sup>2</sup> (CI<sub>80%</sub> = 8.2-10.2) means we are 80% confident that the true density value is between 8.2 and 10.2 plants/100ft<sup>2</sup>.

## What is the SR 9 Pilchuck Buffer Mitigation Site?

This 7.44-acre mitigation site (Figure 1) is a combination of buffer re-establishment/enhancement and wetland enhancement north east of the Pilchuck Creek mitigation site. This site was created to compensate for the loss of 2.22 acre of wetland and riparian buffer due to road realignment and the construction of a new two-lane bridge along SR 9. The two enhanced wetlands and the wetland and riparian plantings are designed to provide mitigation for lost buffer functions including connectivity between floodplain, wetland, and upland habitat and additional water quality and quantity improvement through filtration, absorption, and attenuation of stormwater.



**Figure 1 Site Sketch**

The SR 9 Pilchuck Replace Bridge mitigation site contains an upper and lower terrace that contains a mix of wetland, riparian, and upland habitats. The site supports shrub and forested vegetation communities and is intended to replace stream and buffer functions. Appendix 2 includes site directions.

## What are the performance standards for this site?

### Performance Standard 1

Native woody species (planted and volunteer) will have an average density of four plants per 100 square feet in the woody wetland communities. If all dead planted species are replaced, the interim performance standard will be met.

### Performance Standard 2

Snohomish County Class A, Class B, Class B Undesignated, and Class C noxious weeds and species listed in Table 30 will not exceed 25 percent cover in the wetland or buffer within the mitigation site.

### Performance Standard 3

Reed canarygrass (*Phalaris arundinacea*) will not exceed 25 percent cover in the wetland or buffer within the mitigation site.

### Performance Standard 4

Non-native blackberries (*Rubus armeniacus* and *R. laciniatus*) will not exceed 15 percent cover in the wetland or buffer within the mitigation site.

### Performance Standard 5

The presence of Japanese knotweed species and purple loosestrife will initiate eradication measures.

Appendix 1 shows the planting plan (WSDOT 2012).

Appendix 3 shows Table 30 (non-native invasive species from (WSDOT 2012)).

## How were the performance standards evaluated?

The tables below document the sampling methodology utilized for all of the/the remaining performance standards (PS)/performance criteria (PC) 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)

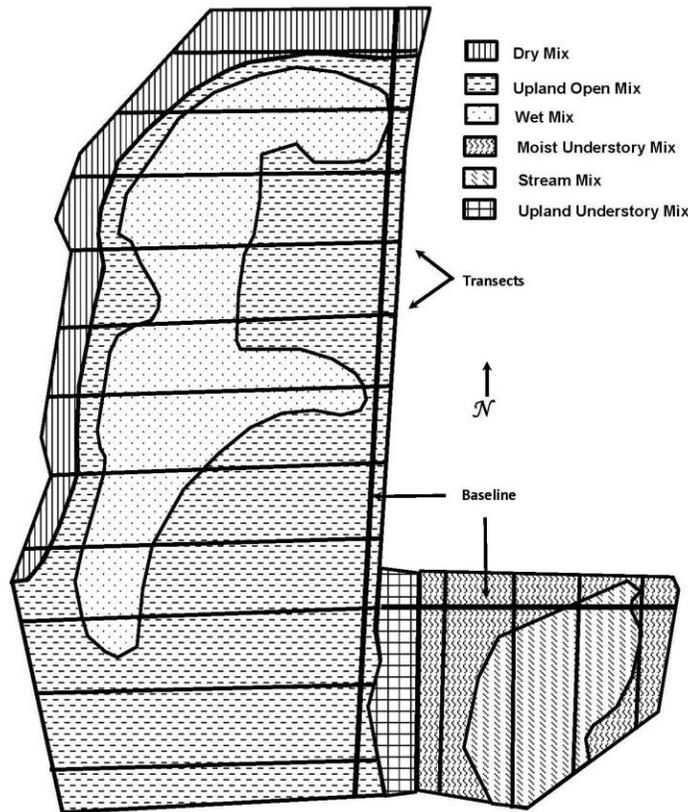


Figure 2 Site Sampling Design (2015)

**Placement of Baseline:** The top plateau section was placed roughly along the southern fence line. The riverine section was placed along the northern border of the planting zone.

**Segmented Baseline:** Length 219m Transects 2-15  
Length 54m Transects 1, 16-18

	PS 1	PS 2	PS 3	PS 4	PS 5
<b>Attribute</b>	Density	Cover	Cover	Cover	Presence/ Absence
<b>Target pop.</b>	Native Woody	Noxious Weeds	Reed Canarygrass	Non-native Blackberries	Japanese knotweed & Purple
<b>Zone</b>	Entire site	Entire site	Entire site	Entire site	Entire site
<b>Sample method</b>	UBT	Qualitative	Qualitative	Qualitative	Qualitative
<b>SU length</b>	Variable	N/A	N/A	N/A	N/A
<b>SU width</b>	1m	N/A	N/A	N/A	N/A
<b>Points per SU</b>	N/A	N/A	N/A	N/A	N/A
<b>Total # of SU</b>	18	N/A	N/A	N/A	N/A

## How is the site developing?

The site has developed a thriving native woody community. The site was qualitatively estimated to be exceeding the final year (Year-5) woody cover standards with the wetland communities estimated to have a cover of 85 percent (the Year-5 target is 45%) and the buffer communities estimated at 60 percent cover (the Year-5 target is 30%). There has been a substantial die off western red cedar (*Thuja plicata*).

The reed canarygrass (*Phalaris arundinacea*) was beginning to reach the performance standard cover threshold in 2014 in the lower riparian area, but this has been addressed and invasive species cover across the site is now relatively low.

The proposed buffer mitigation is intended to replace buffer acreage and functions lost or impacted by the project. The goal of the proposed mitigation is to restore and improve wetland, stream, and buffer functions. The buffer site provides three times the amount of impacted buffer, and as the site matures it will provide increased sources of detrital matter and large woody debris (LWD) recruitment.

Results for Performance Standard 1

(Native woody species (planted and volunteer) will have an average density of four plants per 100 square feet in the woody wetland communities):

The density of planted and volunteer native woody species is 9.2 plants/100ft<sup>2</sup> (CI<sub>80%</sub> = 8.2-10.2 (Photo 1 and 2) across the site. This greatly exceeds the performance standard. Dominant species include snowberry (*Symphoricarpos albus*), cluster rose (*Rosa pisocarpa*), and salmonberry (*Rubus spectabilis*). A total of 24 native woody species were observed.

Results for Performance Standard 2

(Noxious weeds and species listed in Table 30 will not exceed 25 percent cover in the wetland or buffer):

Of the listed species the cover is estimated at 2 percent. This consists of scattered instances of Robert geranium (*Geranium robertianum*), narrowleaf cattail (*Typha angustifolia*), bull thistle (*Cirsium vulgare*), and Canada thistle (*Cirsium arvense*).



**Photo 1**  
**Woody cover in the upper terrace (July 2015)**



**Photo 2**  
**Woody cover in the lower flood plain terrace (July 2015)**

Results for Performance Standard 3

(The presence of Japanese knotweed species and purple loosestrife will initiate eradication measures):

Japanese knotweed species and purple loosestrife were not observed on site. There is Japanese knotweed just offsite along the creek that is being watched to ensure it doesn't encroach on site.

Results for Performance Standard 4

(Non-native blackberries (*Rubus armeniacus* and *R. laciniatus*) will not exceed 15 percent cover in the wetland or buffer within the mitigation site):

Non-native blackberry cover is estimated at 3 percent. The majority of the cover is located in the lower portion of site along the creek in the riparian zone.

Results for Performance Standard 5

(Reed canarygrass (*Phalaris arundinacea*) will not exceed 25 percent cover in the wetland or buffer within the mitigation site):

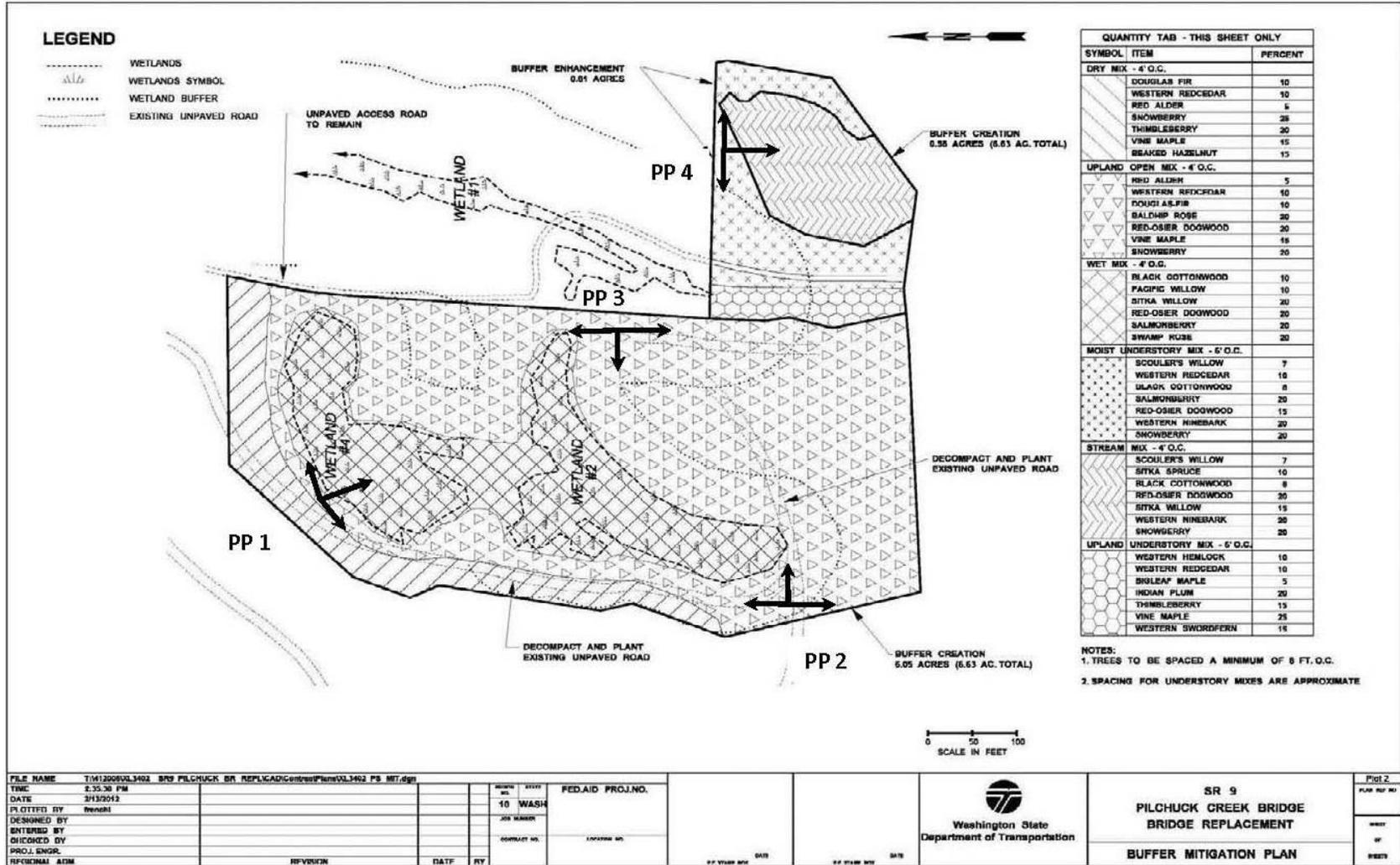
Reed canarygrass cover is estimated at less than one percent. This is predominantly located through the center of the upper portion of the site along the drainage.

**What is planned for this site?**

Continued weed control as needed.

# Appendix 1 – Planting Plan with Photo Point Locations

(from WSDOT 2011)



## 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 2c**



**Photo Point 3a**



**Photo Point 3b**



**Photo Point 3c**



**Photo Point 4a**



**Photo Point 4b**



**Photo Point 4c**

**Driving Directions:**

From I-5 take Exit 212 at Camano Island/Stanwood. Travel east on Stanwood Bryant Rd 0.1 mi. Turn right onto 4<sup>th</sup> Ave/Dahl follow to the nursery. Once in the nursery go left past the office and then go right on dirt road. Follow past the buffalo pens and park at top of hill.

## Appendix 3 – Data Tables

### Table 30. Non-native invasive species.

(from WSDOT 2012)

Scientific Name	Common Name
<i>Buddleia alternifolia</i>	Fountain butterfly bush
<i>Cirsium arvense</i>	Canadian thistle
<i>Cirsium vulgare</i>	Bull thistle
<i>Cytisus scoparius</i>	Scotch broom
<i>Hedera helix</i>	English ivy
<i>Ilex aquifolium</i>	English holly
<i>Iris pseudacorus</i>	paleyellow iris
<i>Myriophyllum spicatum</i>	Eurasian water milfoil
<i>Phalaris arundinacea</i>	Reed canarygrass
<i>Prunus laurocerasus</i>	English laurel
<i>Rubus laciniatus</i>	Evergreen blackberry
<i>Rubus armeniacus</i>	Himalayan blackberry

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