North Spokane Corridor – US 2 Lowering Deadman Creek Fish Passage Culvert

NWS-2008-336

Eastern Region

2018 MONITORING REPORT

Wetlands Program

Issued March 2019

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Environmental Services Office
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Monitoring reports are published on the web at: http://www.wsdot.wa.gov/environment/technical/disciplines/wetlands/monitoring-reports
### General Site Information

<table>
<thead>
<tr>
<th>USACE NWP 14 and 33 Number</th>
<th>NWS-2008-336</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigation Location</td>
<td>At the intersection of Deadman Creek and US 2, approximately 3 miles northeast of Spokane</td>
</tr>
<tr>
<td>LLID Number</td>
<td>117364877791</td>
</tr>
<tr>
<td>Construction Date</td>
<td>2011</td>
</tr>
<tr>
<td>Monitoring Period</td>
<td>2012-2021</td>
</tr>
<tr>
<td>Year of Monitoring</td>
<td>7 of 10</td>
</tr>
<tr>
<td>Type of Project Impact</td>
<td>Permanent Wetland, Temporary Wetland</td>
</tr>
<tr>
<td>Area of Project Impact¹</td>
<td>0.30 acre, 0.24 acre</td>
</tr>
<tr>
<td>Type of Mitigation</td>
<td>Wetland Establishment, Wetland Restoration, Stream Channel Creation</td>
</tr>
<tr>
<td>Area of Mitigation²</td>
<td>0.17 acre, 0.24 acre, 0.11 acre</td>
</tr>
</tbody>
</table>

¹Area of project impact numbers were taken from the March 18, 2010 Permit Modification Request from Tammie Williams to Rick Pratt. In addition to the mitigation provided on site, WSDOT purchased 0.56 acre of credit from the Meadowcroft Mitigation Bank to mitigate for permanent wetland impacts.

²The area of mitigation numbers were taken from WSDOT 2008 as modified by the document referenced above.
Summary of Monitoring Results and Management Activities (2018)

<table>
<thead>
<tr>
<th>Performance Standards</th>
<th>2018 Results</th>
<th>Management Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerial cover of native woody species will be at least 30% in the scrub-shrub and forested communities of the restored wetland</td>
<td>40% cover</td>
<td></td>
</tr>
<tr>
<td>Aerial cover of native woody species will be at least 20% in the upland buffer</td>
<td>15% cover (CI&lt;sub&gt;80%&lt;/sub&gt; = 11-20%)</td>
<td></td>
</tr>
<tr>
<td>County-listed Class A, Class B Designates and Class B Noxious Weeds, and Canada thistle (<em>Cirsium arvense</em>) will not exceed 25% aerial cover across the restoration site</td>
<td>10% cover</td>
<td></td>
</tr>
</tbody>
</table>

Report Introduction

This report summarizes seventh-year (Year-7) monitoring activities at the 002 Deadman Creek 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 September 12, 2018.

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3 Estimated values are presented with their corresponding statistical confidence interval. For example, 15% cover (CI<sub>80%</sub> = 11-20% cover) means we are 80% confident that the true cover value is between 11% and 20%.
What is the 002 Deadman Creek Mitigation Site?

This 1.2 acre mitigation site (Figure 1) is a new and enhanced wetland and stream channel created at the intersection of Deadman Creek and US 2. This site was created to partially compensate for the loss of 0.30 acre of riverine wetlands due to construction of a fish-passable retrofit culvert where Deadman Creek crosses under US 2.

Figure 1 Site Sketch

The US 2 Deadman Creek Mitigation Site contains a realigned stream channel, floodplain wetlands, and upland buffer planting areas. Appendix 2 includes site directions.
What are the performance standards for this site?

**Year 7**

**Performance Standard 1**
Aerial cover of native woody species will be at least 30 percent in the scrub-shrub and forested communities of the restored wetland.

**Performance Standard 2**
Aerial cover of native woody species will be at least 20 percent in the upland buffer.

**Performance Standard 3**
County-listed Class A, Class B Designates and Class B Noxious Weeds, and Canada thistle will not exceed 25 percent aerial cover across the restoration site.

Appendix 1 shows the As-built (WSDOT 2008).
How were the performance standards evaluated?

The tables below document the sample 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 (2018)](image)

**Placement of Baseline:** The buffer baseline was placed parallel to the retaining wall on both sides of US 2.  
**Buffer:** Length- 131m Transects- 1-22.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>PS 1</th>
<th>PS 2</th>
<th>PS 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target population</td>
<td>Native Woody</td>
<td>Native Woody</td>
<td>Noxious Weeds/Invasive sp.</td>
</tr>
<tr>
<td>Zone Sample method</td>
<td>SS/PFO</td>
<td>Buffer</td>
<td>Entire site</td>
</tr>
<tr>
<td>SU length</td>
<td>N/A</td>
<td>5m</td>
<td>N/A</td>
</tr>
<tr>
<td>SU width</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Points per SU</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Total # of SU</td>
<td>N/A</td>
<td>23</td>
<td>N/A</td>
</tr>
</tbody>
</table>

![Table showing sample methods for different performance standards](image)
How is the site developing

The wetland is meeting the final year performance standard for woody cover and invasive cover is relatively low across the site. A small but diverse emergent wetland has developed along the shoreline of Deadman Creek. Native herbaceous species include: bay forget-me-not (*Myosotis laxa*), swordleaf rush (*Juncus ensifolius*), common spikerush (*Eleocharis palustris*), small-fruited bulrush (*Scirpus microcarpus*), jointleaf rush (*Juncus articulatus*), and soft-stem bulrush (*Schoenoplectus tabernaemontani*).

The buffer continues to have low cover overall. The northeast portion of the site has 8% cover (CI$_{80\%} = 2$-$13\%$). The southern side of the site has 20% cover (CI$_{80\%} = 14$-$27\%$). A seed mix installed in the buffer in 2015 to stabilize the slope and potentially improve the condition of the slope has been slow to establish. The region plans to install new plants with an emphasis on the northeast portion of the site that is below the performance standard.

The site is providing habitat for wildlife. A beaver dam was observed on site one year, deer browse and scat have been present, numerous species of birds have been observed foraging, and red–legged frogs and garter snakes have been observed along the creeks edge.
Results for Performance Standard 1
(At least 30% cover of woody vegetation in the scrub-shrub wetland):

Cover of woody species in the scrub-shrub zone is estimated to be 40 percent (Photo 1). This estimate meets the performance standard requirement. The cover is comprised predominantly of gray alder (Alnus incana) with a lesser presence of Pacific willow (Salix lasiandra) and sandbar willow (Salix exigua).

Results for Performance Standard 2
(At least 20% cover of woody vegetation in the buffer):

The estimated cover of woody species in the buffer is 15% (CI$_{80%}$ = 11-20%) (Photo 2). This fails to meet the performance standard requirement. The two dominant species are snowberry (Symphoricarpos albus) and golden currant (Ribes aureum).

Results for Performance Standard 3
(Listed noxious weeds and Canada thistle will not exceed 25% cover):

The estimated cover of the listed species is 10 percent. This consist predominantly of Common bugloss (Anchusa officinalis) scattered throughout the buffer. Canada thistle (Cirsium arvense) and spotted knapweed (Centaurea stoebe) were also included in the coverage estimate. Not included in the cover estimate, but present on site are reed canarygrass (Phalaris arundinacea), paleyellow iris (Iris pseudacorus), common tansy (Tanacetum vulgare), narrowleaf cattail (Typha angustifolia), and bull thistle (Cirsium vulgare).
What is planned for this site?

The region has plans to replant the northeast portion of the buffer and continue weed control.
Appendix 1 – As-Built with Photo Point Locations
(from WSDOT 2008)
# PLANT MATERIAL LIST

<table>
<thead>
<tr>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>QUANTITY</th>
<th>SIZE</th>
<th>ROOT CONDITION</th>
<th>SPACING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Oak Sapling</td>
<td>Red Oak Sapling</td>
<td>25-35</td>
<td>1.7</td>
<td>F.S.C.</td>
<td>12 to 18 inches in height</td>
<td></td>
</tr>
<tr>
<td>White Oak Sapling</td>
<td>White Oak Sapling</td>
<td>25-35</td>
<td>1.7</td>
<td>F.S.C.</td>
<td>12 to 18 inches in height</td>
<td></td>
</tr>
<tr>
<td>Blue Spruce</td>
<td>Blue Spruce</td>
<td>35-40</td>
<td>1.7</td>
<td>F.S.C.</td>
<td>12 to 18 inches in height</td>
<td></td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>Western Hemlock</td>
<td>35-40</td>
<td>1.7</td>
<td>F.S.C.</td>
<td>12 to 18 inches in height</td>
<td></td>
</tr>
<tr>
<td>Low Buffer</td>
<td>Low Buffer</td>
<td>44-49</td>
<td>1.7</td>
<td>F.S.C.</td>
<td>12 to 18 inches in height</td>
<td></td>
</tr>
<tr>
<td>S�2 Plant</td>
<td>S�2 Plant</td>
<td>44-49</td>
<td>1.7</td>
<td>F.S.C.</td>
<td>12 to 18 inches in height</td>
<td></td>
</tr>
<tr>
<td>Spokane Willow</td>
<td>Spokane Willow</td>
<td>35-40</td>
<td>1.7</td>
<td>F.S.C.</td>
<td>12 to 18 inches in height</td>
<td></td>
</tr>
</tbody>
</table>

**ABBREVIATIONS**

- F.S.C.: Field Supplied Container
- A.L.: ASSESSMENT LIST
- L.: LACONIA

**NOTES**

1. All plant material specifications for size and condition are minimum requirements, and glaring defects may cause rejections. When the size falls below the specified size, the rejected plant may be replaced at no charge to the client.
2. At the discretion of the client, plants shall be distributed by the contractor.
3. Immediately prior to transplantation, plants' roots that are damaged, broken, or torn shall be pruned. The sides of the rootball where the root is exposed shall be covered with soil placed around the base of the plant.
4. The contractor is advised that a grading contract may be necessary to obtain additional contractor services of the project.
5. All plants shall be protected with a supported hose from the construction owners.
6. See the plans from 8-15-08 for more detailed information.
7. The contractor shall cover the forms and equipment with protective plastic薄膜 if required.

**STATE OF WASHINGTON**

**WASHINGTON DEPARTMENT OF TRANSPORTATION**

**PLANT MATERIAL LIST**

**US 395**

**NSC - US 2 LOWERING**

**WR2**

**Design By:** A. ANDERSON

**Estimating By:** A. ANDERSON

**Project No.:** 829011

**Date:** 8-13-08
Appendix 2 – Photo Points
The photographs below were taken from permanent photo-points on September 12, 2018 and document current site development.

Photo Point 1a

Photo Point 1b

Photo Point 1c

Photo Point 2a
Driving Directions:
Take I-90 to Exit 281 and turn left onto Division. In about six miles, merge onto US 2. In 2.8 miles, turn right onto Farwell Road. In 0.3 miles, turn left onto Shady Slope Road. In 0.5 miles, turn right onto Wilson Avenue. In 0.3 miles, turn right onto Emilee Court. Continue down the private driveway and park at a pullout on the left.
Literature Cited


