I-5 SR 432 Talley Way Interchange (Sandy Bend) Mitigation Site

USACE NWP (23) NWS-2009-444

Southwest Region

2018 MONITORING REPORT

Wetlands Program

Issued March 2019

Washington State Department of Transportation

Environmental Services Office
# I-5 SR 432 Talley Way Interchange (Sandy Bend) Mitigation Site

**USACE NWP (23) NWS-2009-444**

<table>
<thead>
<tr>
<th>General Site Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>USACE NWP 23 Number</strong></td>
<td>NWS-2009-444</td>
</tr>
<tr>
<td><strong>Mitigation Location</strong></td>
<td>West of SR 411 and south of Sandy Bend Road, just north of the Kelso/Longview area in Cowlitz Co.</td>
</tr>
<tr>
<td><strong>LLID Number</strong></td>
<td>1229120462282</td>
</tr>
<tr>
<td><strong>Construction Date</strong></td>
<td>2010-2011</td>
</tr>
<tr>
<td><strong>Monitoring Period</strong></td>
<td>2012-2021</td>
</tr>
<tr>
<td><strong>Year of Monitoring</strong></td>
<td>7 of 10</td>
</tr>
<tr>
<td><strong>Type of Project Impact</strong></td>
<td>Permanent Wetland</td>
</tr>
<tr>
<td><strong>Area of Project Impact</strong></td>
<td>3.38 acres(^1)</td>
</tr>
<tr>
<td><strong>Type of Mitigation</strong></td>
<td>Wetland Establishment</td>
</tr>
<tr>
<td><strong>Planned Area of Mitigation(^3)</strong></td>
<td>4.56 acres</td>
</tr>
</tbody>
</table>

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\(^1\) (USACE 2009)
\(^2\) (WSDOT 2009)
\(^3\) Mitigation for the impacts for this project are at two sites, Sandy Bend and Carrolls Creek. Carrolls Creek includes an additional 13.6 acres of wetland enhancement and 11.68 acres of buffer enhancement (WSDOT 2009).
Summary of Monitoring Results and Management Activities (2018)

<table>
<thead>
<tr>
<th>Performance Standards</th>
<th>2018 Results&lt;sup&gt;4&lt;/sup&gt;</th>
<th>Management Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland hydrology.</td>
<td>See Appendix 3</td>
<td></td>
</tr>
<tr>
<td>Minimum 50% cover of native wetland trees and shrubs combined in scrub-shrub and forested areas.</td>
<td>70% cover (CI&lt;sub&gt;80%&lt;/sub&gt; = 64-76%)</td>
<td></td>
</tr>
<tr>
<td>At least two species of native trees and four species of native shrubs will each provide at least 5% relative cover in forested and scrub-shrub areas.</td>
<td>Two native tree species and five native shrub species present at 5% cover each</td>
<td></td>
</tr>
<tr>
<td>Minimum 70% cover of native wetland herbaceous plant species in combined scrub-shrub and emergent communities.</td>
<td>77% cover (CI&lt;sub&gt;80%&lt;/sub&gt; = 67-87%)</td>
<td></td>
</tr>
<tr>
<td>At least five native herbaceous species will be present in emergent communities.</td>
<td>At least 7 native herbaceous species present</td>
<td></td>
</tr>
<tr>
<td>Minimum 50% cover of native plant species in the upland buffer.</td>
<td>90% cover (visual estimate)</td>
<td></td>
</tr>
<tr>
<td>At least two species of native trees and four species of native shrubs will each provide at least 5% relative cover in the upland buffer.</td>
<td>Red alder, Black cottonwood, Salix spp. and other shrubs present at 5% cover each</td>
<td></td>
</tr>
<tr>
<td>Washington State Class A weeds, Japanese knotweed, and purple loosestrife in any area of the site must be eradicated.</td>
<td>None observed</td>
<td>2017: One weed control visit</td>
</tr>
<tr>
<td>Cowlitz County Class B or C weeds will be controlled in any area of the site.</td>
<td>One applicable species present on site: Canada thistle</td>
<td>2018: Three weed control visits</td>
</tr>
<tr>
<td>The combined cover of non-native blackberry species and reed canarygrass shall not exceed 25% in the emergent, scrub-shrub, forested, or buffer areas.</td>
<td>5% cover (visual estimate)</td>
<td></td>
</tr>
</tbody>
</table>

Report Introduction

This report summarizes seventh-year (Year-7) monitoring activities at the 005 Sandy Bend Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site development. Monitoring activities in 2018 included vegetation surveys, photo-documentation, and assessments of wetland hydrology. Vegetation monitoring was conducted on August 20 and 23, and hydrology monitoring occurred on March 13, March 27, and April 10, 2018.

<sup>4</sup> Estimated values are presented with their corresponding statistical confidence interval. For example, 70% cover (CI<sub>80%</sub> = 64-76%) means we are 80% confident that the true cover value is between 64% and 76%.
What is the 005 Sandy Bend Mitigation Site?

This 8.5-acre mitigation site (Figure 1) is located in Cowlitz County directly west of SR 411. This site was created to compensate in part for the loss of 3.38 acres of wetlands due to improvements at the I-5/SR 432 interchange. The newly established scrub-shrub floodplain and forested wetland complex are designed to create floodplain conditions and stream connectivity to Sandy Bend Creek, supporting seasonally and occasionally flooded hydrologic regimes. The mitigation site is intended to improve water quality, hydrologic, and habitat functions.

Figure 1  Site Sketch

The 005 Sandy Bend Mitigation Site connects to Sandy Bend Creek, a tributary to the Cowlitz River, on the west side of the site. Emergent, scrub-shrub, and forested wetland areas are interspersed and surrounded by an upland buffer. Appendix 2 includes site directions.
What are the performance standards for this site?

**Year 7**

**Performance Standard 1**
The soil will be saturated, or a water table will be present, within 12 inches of the soil surface for at least 10 percent of the growing season or 30 consecutive days during the growing season in years when rainfall meets or exceeds the 30-year precipitation average.

**Performance Standard 2**
Cover of native wetland trees and shrubs combined (planted and volunteer) will be at least 50 percent in the combined scrub-shrub and forested communities.

**Performance Standard 3**
At least two species of native trees and four species of native shrubs will each provide at least five percent relative cover in the forested and scrub-shrub areas.

**Performance Standard 4**
Cover of native wetland herbaceous plant species (planted and volunteer) will be at least 70 percent in the emergent communities.

**Performance Standard 5**
At least five native herbaceous species will be present in the emergent communities.

**Performance Standard 6**
Cover of native plant species (planted and volunteer) will be at least 50 percent in the upland buffer.

**Performance Standard 7**
At least two species of native trees and four species of native shrubs will each provide at least five percent relative cover in the upland buffer areas.
**Performance Standard 8**
Washington State-listed or county-listed Class A weeds, Japanese knotweed, and purple loosestrife observed in any area of the mitigation site must be eradicated. All occurrences shall be immediately reported to the site manager and an eradication program will be initiated within 30 days of the report.

**Performance Standard 9**
Cowlitz County designated Class B or C weeds will be controlled in any area of the mitigation site.

**Performance Standard 10**
The cover of non-native blackberry species and reed canarygrass will not exceed 25 percent in the combined emergent, scrub-shrub, forested or buffer planting areas of the mitigation site.

Appendix 1 shows the as-built planting plan (WSDOT 2012).
How were the performance standards evaluated?

WSDOT staff collected hydrology data using methods described in the *Corps of Engineers Wetlands Delineation* Manual (Environmental Laboratory 1987), *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (USACE 2010) (Performance Standard 1). Shallow groundwater monitoring wells were installed following the Corps of Engineers guidance (USACE 2005) to evaluate groundwater during the growing season.

The tables below document the sample methods used for all of the remaining 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)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>PS 2,3</th>
<th>PS 4,5</th>
<th>PS 6,7</th>
<th>PS 8,9,10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target population</td>
<td>Cover</td>
<td>Cover</td>
<td>Cover</td>
<td>Cover</td>
</tr>
<tr>
<td>Zone</td>
<td>Native woody species</td>
<td>Native Herbaceous species</td>
<td>Native woody species</td>
<td>Noxious weeds</td>
</tr>
<tr>
<td>Sample method</td>
<td>Line Intercept</td>
<td>Point Line</td>
<td>Memo/ Visual Estimate</td>
<td>Visual Estimates</td>
</tr>
<tr>
<td>SU length</td>
<td>15 m</td>
<td>10 m</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Points per SU</td>
<td>n/a</td>
<td>20</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Total # of SU</td>
<td>32</td>
<td>20</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

**Placement of Baseline:** North to south through the middle of the emergent area.

**Baseline:** Length 235m Transects 19
How is the site developing?

This site continues to progress well in all aspects of its development. All of the current performance standards have either been met or are very close to being met and the total woody cover in the buffer is already exceeding the final-year performance standard. Robust and diverse native plant communities are developing in all planting zones. Cover of invasive species is generally low across the site and is not interfering with the development of the plantings. One minor exception to this is the small wetland enhancement area in the northwest corner of the site where reed canarygrass (*Phalaris arundinacea*) still dominates cover and native species are not establishing as readily.

The buffer developed more rapidly than anticipated and previously met the final-year standard for native woody cover (Performance Standard 6) for at least two years. On April 16, 2018 a request to discontinue quantitative sampling for native woody cover in the buffer was sent to the USACE and the Department of Ecology, and this request was accepted by both agencies on the same day. This final-year standard is still currently being met.

The three primary goals for this site are to provide flood flow attenuation, opportunities for nutrient and sediment removal, and general forested wetland habitat. The consistent overbank flooding and water retention on-site in the winter and spring indicates that the first goal is being achieved. The forested wetland is still developing but the site is certainly providing quality wildlife habitat as evidenced by the various wildlife observed using the site: Pacific chorus frogs (*Pseudacris regilla*), garter snakes (*Thamnophis sirtalis*), coyotes (*Canis latrans*), and evidence of mule deer (*Odocoileus hemionus*) and Roosevelt elk (*Cervus canadensis*). A wide variety of bird species observed on-site includes many wetland-dependent species such as Red-winged Blackbird (*Agelaius phoeniceus*), Wilson's Snipe (*Gallinago delicata*), Mallard (*Anas platyrhynchos*), Ring-necked Duck (*Aythya collaris*), Wood Duck (*Aix sponsa*), Canada Goose (*Branta Canadensis*), Greater Yellowlegs (*Tringa melanoleuca*), and Belted Kingfisher (*Megaceryle alcyon*).
Results for Performance Standard 1
(Wetland hydrology):

Three hydrology monitoring visits were conducted in 2018 on March 13, March 27, and April 10 (see Appendix 3, Table 1). Adequate hydrology was present in all intended areas during all three visits (Photo 1).

Results for Performance Standard 2
(Minimum 50% cover of wetland trees and shrubs in scrub-shrub and forested areas):

Trees and shrubs are growing steadily in the scrub-shrub and forested wetland areas (Photo 2). Native woody cover in this zone is estimated at 70% (CI80% = 64-76%).

Results for Performance Standard 3
(At least two species of native trees and four species of native shrubs will comprise at least 5% relative cover in forested and scrub-shrub areas):

Within the sample dataset, two native tree species and four native shrub species each comprise at least five percent relative cover. The tree species are Pacific crabapple (Malus fusca) and Oregon ash (Fraxinus latifolia). The shrub species are redosier dogwood (Cornus alba), Sitka willow (Salix sitchensis), Pacific willow (Salix lasiandra), and hardhack (Spiraea douglasii).
Results for Performance Standard 4
(Minimum 70% cover of native wetland herbaceous plant species in emergent communities):

The cover of native facultative or wetter herbaceous species in the emergent wetland (Photo 3) is estimated at 77% (CI\textsubscript{80%} = 67-87%).

Results for Performance Standard 5
(At least five native herbaceous species present in emergent wetland):

At least 7 native species are present in the emergent wetland. The dominant species is slough sedge (Carex obnupta), with common spikerush (Eleocharis palustris) and pointed rush (Juncus oxymeris) subdominant. Other native species present include curvepod yellowcress (Rorippa curvisiliqua), marsh seedbox (Ludwigia palustris), soft rush (Juncus effusus), and tufted hairgrass (Deschampsia caespitosa).

Results for Performance Standard 6
(Minimum 50% cover of native plant species in upland buffer):

The upland buffer has previously met the final-year performance standard for native woody cover and continues to do so in 2018 (Photo 4). The buffer was last sampled in 2016 when the native woody cover was estimated at 78% (CI\textsubscript{80%} = 75-82%). In 2018, native woody cover in this zone was visually estimated at 90 percent.
Results for Performance Standard 7
(At least two species of native trees and four species of native shrubs will comprise at least 5% relative cover in the upland buffer):

When the buffer was last sampled, in 2016, one native tree species and four native shrub species met this five percent threshold. The tree species was red alder (*Alnus rubra*) and the shrub species were Sitka willow (*Salix sitchensis*), snowberry (*Symphoricarpos albus*), tall oregongrape (*Mahonia aquifolium*), and Scouler's willow (*Salix scouleriana*). Two additional native tree species were close at three percent relative cover each: bigleaf maple (*Acer macrophyllum*) and black cottonwood (*Populus balsamifera*). Relative cover is impossible to visually estimate with any reasonable precision, but these tree species are doing well on-site and have likely increased in cover relative to the shrubs, possibly enough to reach the five percent threshold.

Results for Performance Standard 8
(Washington State Class A weeds, Japanese knotweed, and purple loosestrife in any area of the site must be eradicated):

None of the applicable species were observed on-site.

Results for performance Standard 9
(Cowlitz County designated Class B or C weeds will be controlled on-site):

Canada thistle (*Cirsium arvense*) was observed in isolated patches throughout the site. However, no large stands were found. Management of the site will continue to control this species to meet this performance standard.

Results for performance Standard 10
(Maximum 25% cover of non-native blackberry species and reed canarygrass):

Reed canarygrass is concentrated in the northwestern region of the site in the forested and scrub-shrub zones and encroaching in the emergent zone. Isolated patches of Himalayan blackberry (*Rubus armeniacus*), cutleaf blackberry (*Rubus laciniatus*) are present. Total cover of these species is estimated at five percent.
What is planned for this site?

WSDOT will continue weed control efforts throughout 2019. Beaver activity has been present in the past, and the site will be reviewed on a regular basis to determine if new control measures are necessary.
Appendix 1 – Planting Plan with Photo Point Locations and Hydrology Well Locations
(from WSDOT 2012)
Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on September 4, 2018 and document current site development.

Photo Point 1a

Photo Point 1b

Photo Point 2a

Photo Point 2b
Driving Directions:
From I-5 South, take Exit 49 toward Castle Rock/Toutle. Turn right onto Huntington Avenue North. Continue until you reach North A Street/SR 411 and take a right. Continue until you reach SR 411/Westside Highway and take a left. Drive south on SR 411 for approximately four miles. The site is on the right (west) side of the road. Park on the gravel parking pad. A key should be obtained from region personnel.
## Table 1. Hydrology Observations

<table>
<thead>
<tr>
<th>Date</th>
<th>Surface Observations</th>
<th>Well ID #</th>
<th>Water Level (inches below soil surface unless otherwise noted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 13, 2018</td>
<td>The site was inundated throughout the middle portion and saturated in other areas. It is unclear whether this saturation is a result of steady rain today or not. Well 3 was inconclusive. No water was detected in the well but there was inundation near the well. Close enough that water should have been present in the upper 12 inches.</td>
<td>1</td>
<td>5”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>0”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>0.5”</td>
</tr>
<tr>
<td>March 27, 2018</td>
<td>The site is inundated almost up to the edge of the buffer, especially on the northeast side. Saturation was observed in all other areas.</td>
<td>1</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Inundated to 1” above soil surface.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>Inundated to 1” above soil surface.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Inundated to 2” above soil surface.</td>
</tr>
<tr>
<td>April 10, 2018</td>
<td>Wetland is saturated by 100 percent up to the buffer margin in some areas.</td>
<td>1</td>
<td>7”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Inundated to 2” above soil surface.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>Inundated to 1” above soil surface.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Inundated to 1” above soil surface.</td>
</tr>
</tbody>
</table>
Literature Cited


