SR 16 Union Avenue to Jackson Avenue HOV (Leach Creek) Mitigation Site

USACE NWP (14) 2003-01129

Olympic Region

2017 MONITORING REPORT

Wetlands Program

Issued March 2018
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Monitoring reports are published on the web at: http://www.wsdot.wa.gov/Environment/Wetlands/Monitoring/reports.htm
### General Site Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>USACE NWP (14)</td>
<td>2003-01129</td>
</tr>
<tr>
<td>USACE IP</td>
<td>OYB-4-012713</td>
</tr>
<tr>
<td>Ecology WQC</td>
<td>1173, OYB-4-012713</td>
</tr>
<tr>
<td>City of Tacoma</td>
<td>WET2003-00009_40000013523</td>
</tr>
<tr>
<td>Mitigation Location</td>
<td>University Place, east of Alameda Avenue, west of Orchard Street, Pierce County</td>
</tr>
<tr>
<td>LLID Number</td>
<td>1225136472154</td>
</tr>
<tr>
<td>Enhancement Date</td>
<td>2006</td>
</tr>
<tr>
<td>Monitoring Period</td>
<td>2007-2016</td>
</tr>
<tr>
<td>Year of Monitoring</td>
<td>11 of 10</td>
</tr>
<tr>
<td>Type of Impact</td>
<td>Wetland</td>
</tr>
<tr>
<td>Area of Project Impact Mitigated for at Leach Creek(^1)</td>
<td>4.34 acres</td>
</tr>
<tr>
<td>Type of Mitigation</td>
<td>Preservation and Enhancement</td>
</tr>
<tr>
<td>Planned Area of Mitigation(^1)</td>
<td>26.80 acres</td>
</tr>
</tbody>
</table>

\(^1\) Impact and mitigation numbers sourced from *SR 16 Union Avenue to Jackson Avenue HOV Wetland Mitigation Plan* (WSDOT 2008). Additional wetland acreage provided by the 016 Tacoma Nature Center Mitigation Site (Appendix 3, Table. 1).
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Summary of Monitoring Results and Management Activities (2017)

<table>
<thead>
<tr>
<th>Performance Standards</th>
<th>2017 Results²</th>
<th>Management Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>60% survival of planted trees and shrubs in the forested wetland</td>
<td>194 conifers counted in accessible areas of the site</td>
<td>• Additional “Critical Area” signs posted on 2/8/2017</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 500 conifers planted on 12/14/2017</td>
</tr>
<tr>
<td>25% cover native trees and shrubs in the buffer</td>
<td>41% cover (CI_{80%} = 31-51%)</td>
<td></td>
</tr>
</tbody>
</table>

Report Introduction

This report summarizes eleventh-year (Year-11) monitoring activities at the 016 Leach Creek Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site success. Monitoring activities included bird surveys on May 25, June 1 and 13, and vegetation surveys and photo-documentation on July 31 and August 1, in 2017.

² Estimated values are presented with their corresponding statistical confidence interval. For example, 41% cover (CI_{80\%} = 31-51\% cover) means we are 80% confident that the true cover value is between 32% and 51%.
What is the 016 Leach Creek Mitigation Site?

This 35.97 acre WSDOT property (Figure 1) contains mitigation to compensate for the loss or redesignation of 4.34 acres of wetland due to road realignment and lane widening projects designed to improve safety and traffic flow associated with the new Tacoma Narrows Bridge. Enhancement of the site occurred on 26.8 acres of wetland and 4.67 acres of wetland buffer. The remaining 4.5 acres is part of the parcel, but was not utilized for mitigation. The Leach Creek mitigation site is part of a large wetland complex located in the city of University Place. The wetland is a combination of palustrine forested, scrub-shrub, and emergent systems that provide the following functions: floodwater storage, sediment and toxicant retention, groundwater discharge and recharge, and wildlife habitat. The site has been enhanced by planting native coniferous trees beneath an existing deciduous canopy, replanting areas of the wetland buffer, and controlling noxious and invasive weeds.

Figure 1  Site Sketch

Wetland enhancement efforts at the 016 Leach Creek Mitigation Site are aimed at establishing a coniferous understory beneath an existing canopy of deciduous trees. The long-term goal is for that understory to develop into a coniferous canopy that would provide additional shading for Leach Creek, a salmon bearing stream. Appendix 2 contains driving directions.
What are the performance standards for this site?

**Year 10**

**Performance Standard 1**
Sixty percent survival (or replacement) of planted trees and shrubs at the end of Year 10 within the forested wetland enhancement area. This can be measured based on a density of at least one plant per 280 square feet.

**Performance Standard 2**
Native upland buffer trees and shrubs will achieve 25 percent coverage by the end of Year 10.

Appendix 1 shows the as-built planting plan (WSDOT 2006).
How were the performance standards evaluated?

Survival of the under-planted conifers in the forested wetland (Performance Standard 1) was not measured due to inaccessibility to the west side of the site due to high water.

The table below documents the sampling methodology utilized for cover of native trees and shrubs in the buffer (Performance Standard 2). For additional details on the methods see the WSDOT Wetland Mitigation Site Monitoring Methods Paper (WSDOT 2008).

Placement of Baseline: parallel to the fence on the eastern site boundary
Length 200m Transects 1-15

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target population</td>
<td>Native woody species</td>
</tr>
<tr>
<td>Zone</td>
<td>Buffer</td>
</tr>
<tr>
<td>Sample method</td>
<td>Line-intercept</td>
</tr>
<tr>
<td>SU length</td>
<td>15m</td>
</tr>
<tr>
<td>Total # of SU</td>
<td>15</td>
</tr>
</tbody>
</table>

Figure 2  Site Sampling Design (2017)
Is this site a success?

This site is successful in achieving the vegetation goals. Cover of native woody species in the buffer is high. Areas in the wetland on the west side of the site were not accessible during the monitoring visit due to high water levels, so we were unable to assess survival of the under-planted conifers. The wetland enhancement areas have always been difficult to access due to the amount of inundation year round. The WSDOT restoration crew has had success planting by targeting areas that appear to stay drier than other areas, particularly on the edges of the wetland, where survival has been high. Mortality increases near the creek channel. The original planting number was 3,213 conifers in 2006. In 2008, 966 conifers were added to the wetland enhancement area, 82 in 2009, 386 in 2010, 259 in 2011, and 500 in 2017. Structural diversity of the forested wetland has increased with the addition of these conifers. Cover of invasive vegetation is low, and not out-competing the native vegetation.

Hydrology goals have also been achieved. The wetland preservation and enhancement areas are continually receiving floodwaters from adjacent developments as well as Leach Creek. The large forested wetland contains braided stream channels throughout with depressions that store floodwater, trap sediment, and take up toxicants. Beaver are active in this area and contribute to the dynamic hydrology observed since monitoring began. The site is located in an area mapped by Pierce County as a county floodplain. Water from Leach Creek, runoff from adjacent properties, and precipitation is stored within the forested wetland and discharged into the Leach Creek riparian corridor. The site is located above the Chambers-Clover Creek Aquifer, and can store water long enough for it to infiltrate into the aquifer.

Wildlife habitat has successfully been preserved. The Leach Creek site is located in an open space corridor as mapped by Pierce County. It provides a large link in the Leach Creek riparian corridor that allows wildlife the space and resources to move to other landscapes in a highly urbanized area. Documentation of wildlife on this site is extensive considering the surrounding landscape. Wildlife and wildlife sign observed over the course of the monitoring period include porcupine, beaver, deer scat, bear scat, Pacific chorus frogs, red-legged frogs, garter snakes, and over 30 different species of birds (nine of which are considered wetland-associated or wetland-dependent) (Appendix 3, Table 2.). Critical area signs are posted along the site boundary.
Results for Performance Standard 1
(60% survival of planted trees and shrubs in the forested wetland):

On the east side of Leach Creek, 194 conifers were counted. The rest of the site was inaccessible due to inundation.

Results for Performance Standard 2
(25% cover native trees and shrubs in the buffer):

Cover of native trees and shrubs is estimated at 41% (CI80% = 31-51%) (Photo 1). This exceeds the performance standard target. Dominant species are Douglas-fir (*Pseudotsuga menziesii*) and snowberry (*Symphoricarpos albus*).

What is planned for this site?
Routine weed control will continue in 2018.
Appendix 1 – As-Built Planting Plan
(from WSDOT 2006)
Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on August 1, 2017 and document current site development.

Photo Point 1a

Photo Point 1b

Photo Point 1c

Photo Point 1d
Photo Point 2a

Photo Point 2b
Driving Directions:
From I-5, take Exit 130 and drive west on South 56th Street. Continue to Orchard Street and take a right. Soon after, take a left on Emerson Street and then a left onto Alameda Avenue. Take a left on 45th Street. When you come to a “T” in the road, take a right onto 58th Street and park at the end of the cul-de-sac.
## Appendix 3 – Data Tables

Table 1. Mitigation sites that compensate for impacts incurred during construction of the SR 16 Union Avenue to Jackson Avenue HOV project and SR 16 West Bound Nalley Valley HOV.

<table>
<thead>
<tr>
<th>Mitigation Site</th>
<th>Wetland Impact (acre)</th>
<th>Type of Impact</th>
<th>Mitigation (acre)</th>
<th>Type of Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leach Creek</td>
<td>4.34(^1)</td>
<td>Permanent, Stormwater designation</td>
<td>26.80(^1)</td>
<td>Preservation and Enhancement</td>
</tr>
<tr>
<td>Snake Lake</td>
<td>0.82(^1)</td>
<td>Temporary</td>
<td>0.9(^1)</td>
<td>Re-vegetation</td>
</tr>
<tr>
<td>Tacoma Nature Center</td>
<td>0.07(^2)</td>
<td>Permanent</td>
<td>0.42(^3)</td>
<td>Re-establishment</td>
</tr>
<tr>
<td></td>
<td>0.007(^4)</td>
<td>Permanent</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.49(^4)</td>
<td>Shading</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Impacts</strong></td>
<td><strong>5.72</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\)Acreages from WSDOT (2008).  \(^2\)Acreage from USACE Permit # NWP (14) 2008-358.  \(^3\)Acreage from GeoEngineers (2008).  \(^4\)Acreage from USACE Permit # 200301129
Table 2. List of Birds Observed During Formal Bird Surveys

<table>
<thead>
<tr>
<th>Family Name</th>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ardeidae</td>
<td>Great blue heron</td>
<td>Ardea herodias</td>
<td>Wetland-dependent</td>
</tr>
<tr>
<td>Buteo</td>
<td>Red-tailed hawk</td>
<td>Buteo jamaicensis</td>
<td></td>
</tr>
<tr>
<td>Columbidae</td>
<td>Mourning Dove</td>
<td>Zenaida macroura</td>
<td></td>
</tr>
<tr>
<td>Trochilidae</td>
<td>Rufous Hummingbird</td>
<td>Selasphorus rufus</td>
<td></td>
</tr>
<tr>
<td>Picidae</td>
<td>Northern Flicker</td>
<td>Colaptes auratus</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Downy woodpecker</td>
<td>Picoides pubescens</td>
<td></td>
</tr>
<tr>
<td>Tyrannidae</td>
<td>Pacific-slope Flycatcher</td>
<td>Empidonax difficilis</td>
<td></td>
</tr>
<tr>
<td>Corvidae</td>
<td>American Crow</td>
<td>Corvus brachyrhynchos</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Common Raven</td>
<td>Corvus corax</td>
<td></td>
</tr>
<tr>
<td>Hirundinidae</td>
<td>Barn Swallow</td>
<td>Hirundo rustica</td>
<td>Wetland-associated</td>
</tr>
<tr>
<td></td>
<td>Violet-green Swallow</td>
<td>Tachycineta thalassina</td>
<td></td>
</tr>
<tr>
<td>Paridae</td>
<td>Black-capped Chickadee</td>
<td>Poecile atricapillus</td>
<td>Wetland-associated</td>
</tr>
<tr>
<td>Troglodytidae</td>
<td>Bewick’s Wren</td>
<td>Thryomanes bewickii</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marsh wren</td>
<td>Cistothorus palustris</td>
<td>Wetland-dependent</td>
</tr>
<tr>
<td>Regulidae</td>
<td>Golden-crowned kinglet</td>
<td>Regulus satrapa</td>
<td></td>
</tr>
<tr>
<td>Turdidae</td>
<td>American Robin</td>
<td>Turdus migratorius</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Swainson’s Thrush</td>
<td>Catharus ustulatus</td>
<td></td>
</tr>
<tr>
<td>Bombycillidae</td>
<td>Cedar Waxwing</td>
<td>Bombycilla cedorum</td>
<td>Wetland-associated</td>
</tr>
<tr>
<td>Geothlypis</td>
<td>Common Yellowthroat</td>
<td>Geothlypis trichas</td>
<td>Wetland-dependent</td>
</tr>
<tr>
<td>Wilsonia</td>
<td>Wilson’s warbler</td>
<td>Wilsonia pusilla</td>
<td>Wetland-associated</td>
</tr>
<tr>
<td>Thraupidae</td>
<td>Western tanager</td>
<td>Piranga ludoviciana</td>
<td></td>
</tr>
<tr>
<td>Emberizidae</td>
<td>Dark-eyed Junco</td>
<td>Junco hyemalis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spotted Towhee</td>
<td>Pipilo maculatus</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Song Sparrow</td>
<td>Melospiza melody</td>
<td></td>
</tr>
</tbody>
</table>

4 Birds are assigned a wetland-dependent or wetland-associated status based on the classification scheme presented in Brown and Smith (1998). Regional variation occurs. Additional references used to further classify bird species include Thomas (1979), Ehrlich et al. (1988), and Smith et al. (1997).
<table>
<thead>
<tr>
<th>Family</th>
<th>Species</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cardinalidae</strong></td>
<td>Savannah sparrow</td>
<td><em>Passerculus sandwichensis</em></td>
</tr>
<tr>
<td><strong>Icteridae</strong></td>
<td>Black-headed Grosbeak</td>
<td><em>Pheucticus melanocephalus</em></td>
</tr>
<tr>
<td></td>
<td>Brown-headed Cowbird</td>
<td><em>Molothrus ater</em></td>
</tr>
<tr>
<td></td>
<td>Red-winged blackbird</td>
<td><em>Agelaius phoeniceus</em></td>
</tr>
<tr>
<td><strong>Fringillidae</strong></td>
<td>American Goldfinch</td>
<td><em>Carduelis tristis</em></td>
</tr>
<tr>
<td></td>
<td>Pine siskin</td>
<td><em>Carduelis pinus</em></td>
</tr>
<tr>
<td></td>
<td>House finch</td>
<td><em>Carpodacus mexicanus</em></td>
</tr>
<tr>
<td><strong>Parulidae</strong></td>
<td>Black-throated Gray Warbler</td>
<td><em>Dendroica nigrescens</em></td>
</tr>
</tbody>
</table>
Literature Cited