SR 14 Marble Rd. Vic. To Belle Center Rd. Safety Improvements (Homestead Lake) Mitigation Site

USACE NWS-2011-544

Southwest Region

2017 MONITORING REPORT

Wetlands Program

Issued March 2018

Washington State Department of Transportation

Environmental Services Office
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Monitoring reports are published on the web at: http://www.wsdot.wa.gov/Environment/Wetlands/Monitoring/reports.htm
The project impact and mitigation areas were referenced from the mitigation plan (WSDOT 2012).

Additional mitigation for impacts associated with this project is provided at the SR 14 Marble Road NSA Mitigation Site, the SR 14 Cleveland Oak Mitigation Site, and the Wind Mountain Oak Preservation Site. See the mitigation plan for details (WSDOT 2012).
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### Summary of Monitoring Results and Management Activities (2017)

<table>
<thead>
<tr>
<th>Performance Standards</th>
<th>2017 Results&lt;sup&gt;3&lt;/sup&gt;</th>
<th>Management Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year-3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland hydrology present</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>A minimum density of native woody species of 4,000 stems/acre</td>
<td>Present</td>
<td></td>
</tr>
<tr>
<td>At least six species of native trees or shrubs</td>
<td>6 trees, 12 shrubs</td>
<td></td>
</tr>
<tr>
<td>40% cover of herbaceous species in the emergent wetland</td>
<td>60% cover</td>
<td></td>
</tr>
<tr>
<td>Less than 15% cover blackberry (<em>Rubus</em>) species and Class B noxious weeds across the site</td>
<td>5% cover</td>
<td></td>
</tr>
<tr>
<td>Class A Noxious weeds, Japanese knotweed (<em>Reynoutria japonica</em>), and purple loosestrife (<em>Lythrum salicaria</em>) will be eradicated</td>
<td>Ricefield Bulrush (<em>Schoenoplectus mucronatus</em>) present</td>
<td>Weed control occurred on 7/18/2017 and 8/30/2017</td>
</tr>
<tr>
<td>Less than 25% cover reed canarygrass (<em>Phalaris arundinacea</em>) across the site</td>
<td>1% cover</td>
<td></td>
</tr>
<tr>
<td><strong>Year-10</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70% cover of native woody vegetation across the site</td>
<td>70% cover (CI&lt;sub&gt;80%&lt;/sub&gt; = 66-74%)</td>
<td></td>
</tr>
</tbody>
</table>

### Report Introduction

This report summarizes third-year (Year 3) monitoring activities at the 014 Homestead Lake 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, photo-documentation, and assessments of wetland hydrology. Hydrology monitoring occurred on March 20, and vegetation monitoring occurred on July 24 and 25, in 2017.

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<sup>3</sup> Estimated values are presented with their corresponding statistical confidence interval. For example, 70% cover (CI<sub>80%</sub> = 66-74% cover) means we are 80% confident that the true cover value is between 66% and 74%.
What is the 014 Homestead Lake Mitigation Site?

This 10.2-acre mitigation site (Figure 1) is a new wetland created on the western edge of Beacon Rock State Park. This site was created to compensate for the loss of 0.16 acre of wetlands and 2.25 acres of oak woodland due to road improvements along SR 14. The wetland establishment area expands a wapato-dominated shelf on the perimeter of Homestead Lake and enhances habitat for the endangered western pond turtle. This mitigation site is designed to improve water quality and provide hydrologic and habitat functions.

![Figure 1 Site Sketch](image)

The previous buffer of grazed and mowed grasslands has been replaced with a native transitional wet prairie. The wet prairie is screened by wetland buffer planted with a mix of native trees and shrubs. The oak woodlands have had non-native blackberry removed and have been under planted with native woody species associated with an undisturbed understory. Appendix 2 includes site directions.
What are the performance standards for this site?

**Year 3**

**Performance Standard 1**  
The soils will be saturated to the surface, or standing water will be present 12 inches or less below the surface for at least 10 percent of the growing season (growing season defined in the Soil Survey of Clark County, WA., USDA 1972) in years when the rainfall meets or exceeds the 30-year precipitation average.

**Performance Standard 2**  
Native Woody Species (planted and volunteer trees and shrubs): minimum density of 4,000 living native woody species per acre within the native woody species areas (Wetland and Riparian Buffer, and Oak Woodland Enhancement areas).

**Performance Standard 3**  
At least six species of native trees and/or shrubs will be present within the native woody species areas (Wetland and Riparian Buffer, and Oak Woodland Enhancement areas).

**Performance Standard 4**  
At monitoring Year 3, there will be a minimum density of native emergent species and native woody vegetation (planted and volunteer trees, shrubs and emergent) in wetland and riparian buffer (woody species), and oak woodland enhancement areas as follows: minimum of 40 percent aerial cover of native facultative wet and wetter species within the emergent zone.

**Performance Standard 5**  
The aerial extent of blackberry species and Class B noxious weeds will not exceed 15 percent in the combined scrub shrub, buffer, and riparian planting areas, exclusive to each mitigation site.

**Performance Standard 6**  
If/when detected, Class A noxious weeds, Japanese knotweed, and purple loosestrife shall be treated so that the species do not exist on the site.

**Performance Standard 7**  
Aerial extent of reed canarygrass at each mitigation site shall not exceed 25 percent total cover in the wetland creation or buffer enhancement areas.
**Year 10**

**Performance Standard 1**
Minimum of 70 percent cover of native woody vegetation (planted and volunteer trees and shrubs) within the native woody species areas (Wetland and Riparian Buffer, and Oak Woodland Enhancement areas).

Appendix 1 shows the 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) and a Global Positioning System (Trimble Mapping Grade) (Performance Standard 1).

The figure below and Table 1 (Appendix 3) document the sampling methodology utilized for all 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).

**Placement of Baseline:** The creation of the baseline occurred in ArcMap. GPS units were utilized in the field to locate the sampling transects.

![Figure 2    Site Sampling Design (2017)](image)
How is the site developing?

In general, the site is developing well, with native woody species expanding their canopy, and thicket-forming shrubs spreading. The site is meeting the final-year performance standard for woody cover and the emergent zone is just shy of the final year performance standard. Native emergent cover is down slightly in the newly created wetland since year one, but species diversity has increased. The restoration crew documented ricefield bulrush, a Class A noxious weed previously limited to one location in adjacent Clark County at Ridgefield Wildlife Refuge. The bulrush is actively being treated and monitored.
Results for Performance Standard 1
(Wetland Hydrology):

One hydrology visit occurred on March 20, 2017. Hydrology was present in all intended areas on the visit. A newly constructed beaver dam was located on the outlet to Homestead Lake at that time (Photo 1). The dam raised water levels across the site. Partial removal of the dam occurred on March 27, 2017 and complete removal occurred on April 24, 2017. Throughout this timeframe, the site experienced higher than normal water levels.

Results for Performance Standard 2
(Density of 4,000 living native woody species):

See results for Year 10 cover.

Results for Performance Standard 3
(Six species of native trees and/or shrubs):

Over six woody species were observed in riparian buffer including snowberry (*Symphoricarpos albus*), bigleaf maple (*Acer macrophyllum*), red-flowering currant (*Ribes sanguineum*), twinberry honeysuckle (*Lonicera involucrata*), Oregon ash (*Fraxinus latifolia*), and dull oregongrape (*Mahonia nervosa*).

Over six woody species were observed in oak enhancement area including snowberry, oceanspray (*Holodiscus discolor*), beaked hazelnut (*Corylus cornuta*), Oregon white oak (*Quercus garryana*), vine maple (*Acer circinatum*), and redosier dogwood (*Cornus alba*).
Results for Performance Standard 4
(40% aerial cover of native facultative wet and wetter species within the emergent zone):

Cover of native facultative or wetter species within the emergent zone is estimated at 60 percent (Photo 2). This exceeds the performance standard target. Wapato (*Sagittaria latifolia*) comprises approximately 90 percent of the cover with soft-stem bulrush (*Schoenoplectus tabernaemontani*), rice cutgrass (*Leersia oryzoides*), and common spikerush (*Eleocharis palustris*) present in shallow water on the lake margins.

Results for Performance Standard 5
(Less than 15% cover of non-native blackberry and Class B noxious weeds):

Cover of blackberry species and Class B noxious weeds is estimated at five percent. This is below the performance standard threshold. This consists predominantly of Robert geranium (*Geranium robertianum*) and Himalayan blackberry (*Rubus armeniacus*), and is located in the oak enhancement area.
Results for Performance Standard 6
(Presence/absence of Class A noxious weeds, Japanese knotweed and Purple Loosestrife):

Ricefield bulrush (*Schoenoplectus mucronatus*) was discovered on site in 2016. The restoration crew implemented a regiment of herbicide application and manual removal. Ricefield bulrush has effectively been restricted or reduced in the infested area. The treatment will continue until the population has been eradicated.

Results for Performance Standard 7
(Less than 25% cover of reed canarygrass):

Cover of reed canarygrass is qualitatively estimated at less than one percent. This is below the performance standard threshold. This is located predominantly along the lake edge and the outlet channel.

Results for Performance Standard 1 (Year-10)
(70% cover of native woody vegetation)

Cover of native woody vegetation is estimated at 70% (CI80% = 66-74%) (Photo 3).

What is planned for this site?
Weed control will continue in 2018.
Appendix 1 – Planting Plan with Photo Point Locations
(from WSDOT 2012)
Appendix 2 – Photo Points
The photographs below were taken from permanent photo-points on July 26, 2017 and document current site development.

Photo Point 1a
Photo Point 1b
Photo Point 1c
Driving Directions:
From I-5 take exit to I-205 South. Take exit 27 to WA 14 East. Turn right onto Skamania Landing Road. The gate is located on the east side of the road before the bridge.
## Appendix 3 – Sample Design

<table>
<thead>
<tr>
<th>Attribute</th>
<th>PS 2</th>
<th>PS 3</th>
<th>PS 4</th>
<th>PS 5</th>
<th>PS 6</th>
<th>PS 7</th>
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<td>Native Woody</td>
<td>Herbaceous</td>
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<tr>
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<td>Line Intercept</td>
<td>Qualitative</td>
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Literature Cited


