

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

USACE NWS-2011-544

Southwest Region

2015 MONITORING REPORT

Wetlands Program

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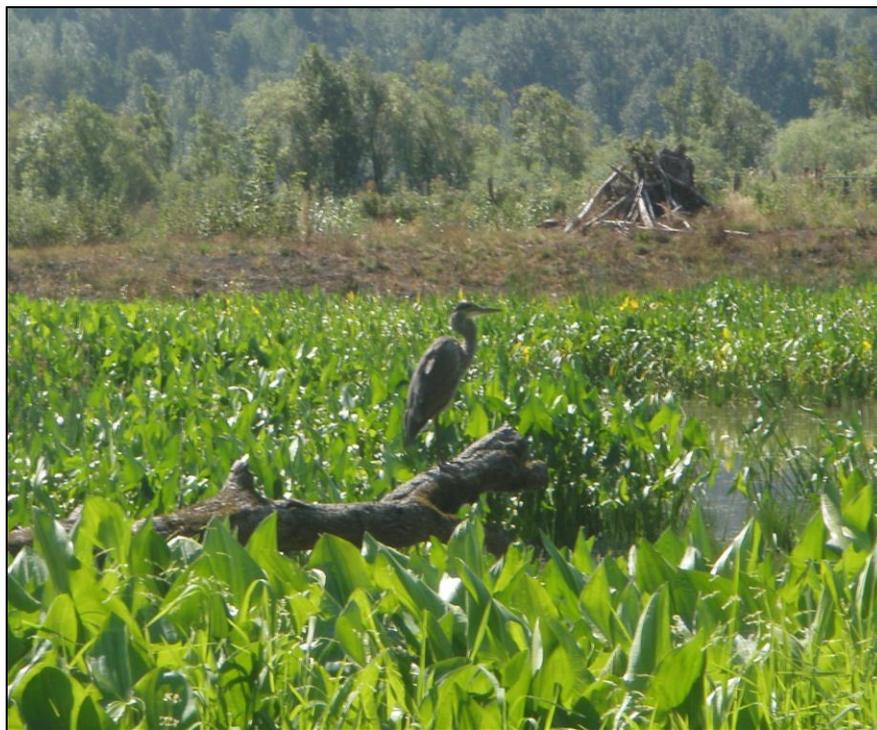
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| General Site Information | | |
|-------------------------------------|---|--------------------------|
| USACE NWS | NWS-2011-544 | |
| Mitigation Location | On the western edge of Beacon State Park, Skamania County, WA | |
| LLID Number | 1220409456160 | |
| Construction Date | 2014 | |
| Monitoring Period | 2015-2029 | |
| Year of Monitoring | 1 of 10 | |
| Area of Project Impact ¹ | Wetland | Oak Woodland |
| | 0.16 acre | 2.25 acres |
| Type of Mitigation | Wetland Creation | Oak Woodland Enhancement |
| Planned Area of Mitigation | 1.02 acres | 2.36 acres |

¹Mitigation and impact acreage from WSDOT (2011), 0.48 acre of wetland mitigation will be utilized by the SR 14 Marble Rd. Vicinity project. Additional oak woodland mitigation is provided by SR 14 Cleveland Mitigation Site.

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Summary of Monitoring Results and Management Activities (2015)

| Performance Standards | 2015 Results ¹ | Management Activities |
|---|--|---|
| Wetland Hydrology | Present | |
| There will be a minimum survival rate of 90% in all areas | 94% survival (CI _{80%} = 92-95%). | |
| The aerial extent of Blackberry Species and Class B noxious weeds will not exceed 15% | 1% cover | The site was visited on nine separate occasions for weed control in 2015. |
| Class A Noxious weeds, Japanese Knotweed, Purple Loosetrife will be eradicated | None observed | |
| Reed Canarygrass shall not exceed 25% total cover | 1% cover | |

Report Introduction

This report summarizes first-year (Year-1) monitoring activities at the State Route (SR) 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 and photo-documentation. Hydrology monitoring occurred on March 5, 18 and April 1, 2015. Vegetation monitoring occurred on August 17-19, 2015.

¹ Estimated values are presented with their corresponding statistical confidence interval. For example, 94% (CI_{80%} = 92-95% cover) means we are 80% confident that the true cover value is between 92% and 95%.

What is the SR 14 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.

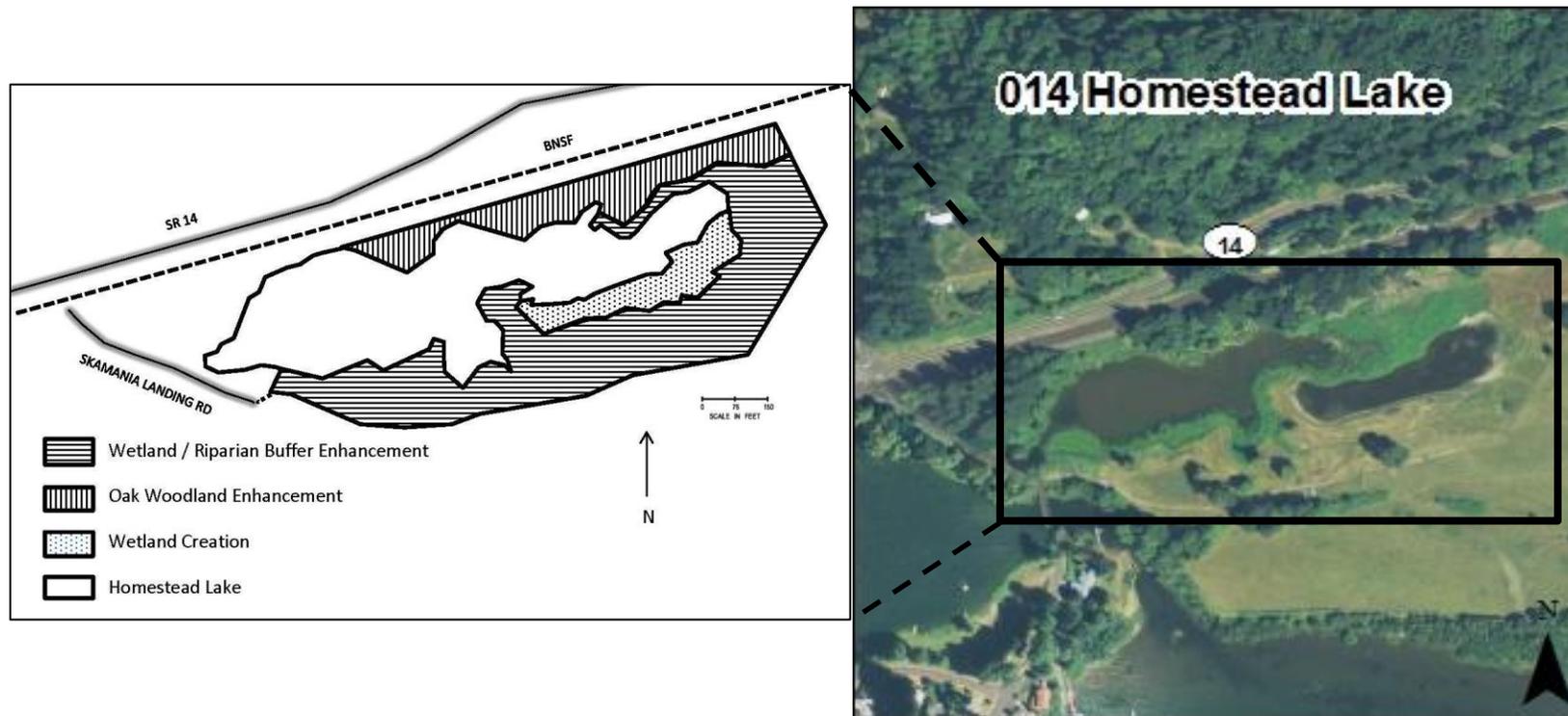


Figure 1 Site Sketch

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 invasive 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 1

Performance Standard 1

The soils will be saturated to the surface, or standing water will be present 12 inches or less below the the surface for at least 10% 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

At monitoring year 1, there will be a minimum survival rate of 90% in all areas identified on the Revegetation Concept as Emergent, Wetland and Riparian Buffer Enhancement (woody species), and Oak Woodland Enhancement

Performance Standard 3

The aerial extent of Blackberry Species and Class B noxious weeds will not exceed 15% in the combined scrub shrub, buffer, and riparian planting areas, exclusive to each mitigation site.

Performance Standard 4

Class A Noxious weeds, Japanese Knotweed, Purple Loosestrife – all areas 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 5

At monitoring years 1, 3, 5, and 7, the aerial extent of Reed Canarygrass at each mitigation site shall not exceed 25% total cover in the wetland creation or buffer enhancement areas.

Appendix 1 shows the planting plan (WSDOT 2011).

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).

The table below documents the sampling methodology utilized for the vegetative 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).

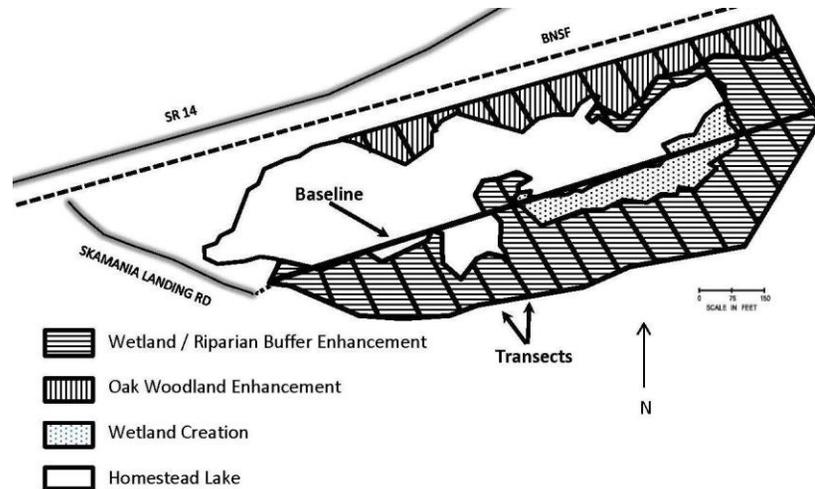


Figure 2 Site Sampling Design (2015)

Placement of Baseline: Mainly through the center of the site with two jogs: one to avoid the lake and one to ensure the entire site had the potential to be sampled.

| | PS 2 | PS 3 | PS 4 | PS 5 |
|----------------------|-----------------|-----------------|----------------------|---------------------|
| Attribute | Survival | Cover | Presence/ Absence | Cover |
| Target pop. | Native Woody | Invasive sp. | Noxious Weeds | Reed canarygrass |
| Zone | Entire site | Entire site | Entire site | Entire site |
| Sample method | UBT | Qualitative | Qualitative | Qualitative |
| SU length | Variable | N/A | N/A | N/A |
| SU width | 1 m | N/A | N/A | N/A |
| Points per SU | N/A | N/A | N/A | N/A |
| Total # of SU | 47 | N/A | N/A | N/A |
| Other | | | | |

How is the site developing?

In general the site is developing quite well and is on a positive trajectory. Survival of native woody species across the site is high despite the dry hot summer. There are numerous volunteer black cottonwoods (*Populus balsamifera*) within the wetland buffer, with many of them reaching up to 2 meters in height. There are many new Oregon white oak (*Quercus garryana*) starts coming up in the understory since the removal of the blackberry understory in the stand of oak woodlands. The density of native woody species across the site is estimated at 4,581 plants/acre ($CI_{80\%} = 4,307-4,854$) which exceeds the year-three performance standard of 4000 plants/acre. The newly created emergent wetland has developed extremely rapidly and was qualitatively estimated to be meeting the final year performance standard of 70 percent cover.

Results for Performance Standard 1
(Wetland Hydrology):

On each of the three hydrology visits the created wetland was inundated from approximately 9 inches at the shoreline to up to greater than 20 inches at the outer edge of the zone (Photo 1). Due to the continual inundation on each visit no ground monitoring wells were installed.

Results for Performance Standard 2
(Native woody survival):

Survival of woody species across the site is estimated at 94% (CI_{80%} = 92-95%). There is an abundance of volunteer black cottonwood (*Populus balsamifera*) in the southeast corner of the site. Other dominant species include snowberry (*Symphoricarpos albus*) and beaked hazelnut (*Corylus cornuta*) (Photo 2 and 3).

Results for Performance Standard 3
(Cover of non-native blackberry and Class B noxious weeds):

The extent of blackberry species and Class B noxious weeds is estimated at one percent. This consists entirely of scattered blackberry starts.



Photo 1
Inundation in the created wetland (July 2015)



Photo 2
Native woody survival in the wetland buffer (July 2015)

Results for Performance Standard 4

(Presence/absence of Class A noxious weeds, Japanese knotweed and Purple Loosestrife):

None of the listed species were observed on site.

Results for Performance Standard 5

(Cover of reed canarygrass):

The cover of reed canarygrass is qualitatively estimated at less than one percent. This is located predominantly along the lake edge and the peninsula, but for the most appears to have been treated.



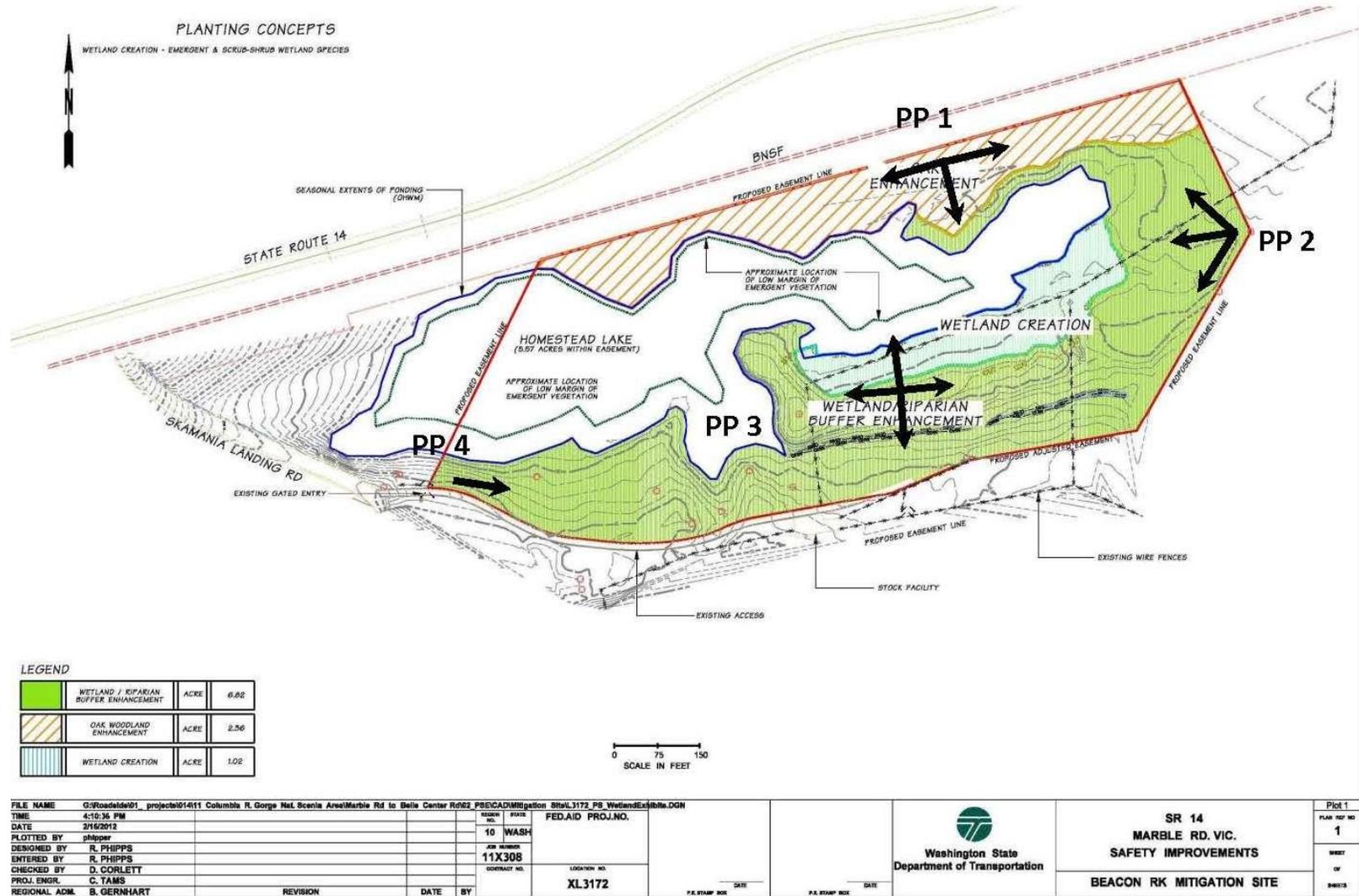
Photo 3
Native woody survival in the oak enhancement (July 2015)

What is planned for this site?

The region has plans to continue weed control as needed and re-seed the wet prairie mix. The wet prairie area was reseeded in September 2015, with no documented success by February 17, 2016. This area will be monitored for germination in March and April 2016. It was also recently discovered that the contractor substituted a species without approval during the reseeding operation, eliminating the Columbia Sedge (*Carex aperta*) and replacing it with the Inflated Sedge (*Carex vesicaria*). While native to the Pacific Northwest, the Inflated Sedge is not endemic to the Columbia River floodplain in the Gorge, a requirement of the seed mix design for this site which was approved by the State Parks ecologist and the USFS Botanist. This area may still require chemical elimination of the seeded area, followed by preparation and reseeding.

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 19, 2015 and document current site development.



Photo Point 1a



Photo Point 1b



Photo Point 1c



Photo Point 2a



Photo Point 2b



Photo Point 2c



Photo Point 3a



Photo Point 3b



Photo Point 3c



Photo Point 3d



Photo Point 4

Driving Directions:

From I-5 take exit to I-205 S. Take exit 27 to WA 14 E. Turn right onto Skamania Landing Road. Gate is located on the east side of the road before the bridge.

Literature Cited

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