

**I-5 – SR 161/SR 18 Triangle Improvements Project  
(Corrington) Mitigation Site**

**USACE NWP (23) NWS-2009-181**

**Northwest Region**

**2015 MONITORING REPORT**

**Wetlands Program**

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# I-5 – SR 161/SR 18 Triangle Improvements Project (Corrington) Mitigation Site

## USACE NWP (23) NWS-2009-181



General Site Information		
<b>USACE NWP 23 Number</b>	NWS-2009-181	
<b>WDFW HPA Permit Number</b>	116319-11	
<b>Mitigation Location</b>	Near the end of South 364th Street, City of Federal Way, WA T 21N, R 4E, sections 21 and 28	
<b>LLID Number</b>	1223221472752	
<b>Construction Date</b>	2011-2012	
<b>Monitoring Period</b>	2013-2022	
<b>Year of Monitoring</b>	3 of 10	
<b>Area of Project Impact<sup>1</sup></b>	0.24 acre	
<b>Type of Mitigation</b>	Wetland Establishment	Wetland Establishment
<b>Planned Area of Mitigation<sup>2</sup></b>	0.32 acre	1.37 acre

<sup>1</sup>The area of impact sourced from USACE 2009

<sup>2</sup>The area of mitigation numbers sourced from WSDOT 2010

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## Summary of Monitoring Results and Management Activities (2015)

Performance Standards	2015 Results <sup>3</sup>	Management Activities
Wetland Hydrology	See results	
Density of four native, facultative or wetter woody plants/100ft <sup>2</sup> in the scrub-shrub and forested communities of the created, enhanced, and restored wetlands and buffer enhancement areas	12 plants/100ft <sup>2</sup> (CI <sub>80%</sub> = 10.4-13.7)	
30% cover native, facultative or wetter herbaceous plant species in the emergent community of the created and enhanced wetlands	51% cover (CI <sub>80%</sub> = 40-61%)	
Less than 25% cover state listed noxious weeds and non-native blackberries ( <i>Rubus</i> species), purple loosestrife ( <i>Lythrum salicaria</i> ), Scotch broom ( <i>Cytisus scoparius</i> ), thistles ( <i>Cirsium</i> species), and non-native knotweeds ( <i>Reynoutria cuspidatum</i> , <i>R. polystachyum</i> , <i>R. sachalinensis</i> , and <i>R. X bohemica</i> ) in the created and enhanced wetlands	1% cover	Weed control occurred seven times in 2015.
<b>HPA Permit Requirement</b>		
Vegetative cuttings shall be planted and maintained as necessary for three years to ensure 80% survival	12 plants/100ft <sup>2</sup> (CI <sub>80%</sub> = 10.4-13.7)	

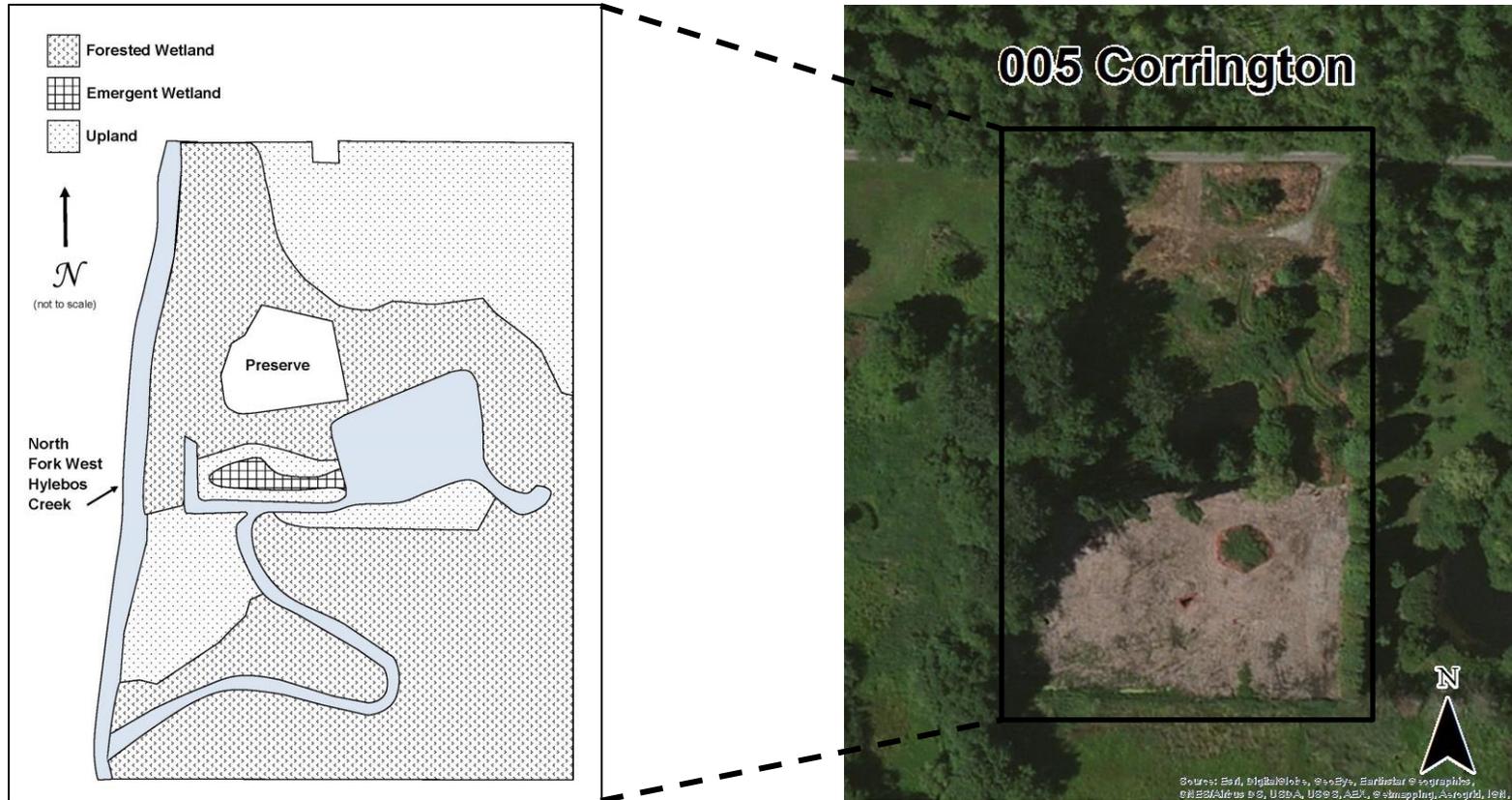
## Report Introduction

This report summarizes third-year (Year-3) monitoring activities at the Interstate (I) 5 Corrington 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 July 13-15, and assessments of wetland hydrology on March 17 and 31, and April 14, 2015.

<sup>3</sup>Estimated values are presented with their corresponding statistical confidence interval. For example, 12 plants/100ft<sup>2</sup> (CI<sub>80%</sub> = 10.4-13.7) means we are 80% confident that the true density value is between 10.4 and 13.7 plants/100ft<sup>2</sup>.

## What is the I-5 Corrington Mitigation Site?

This 3.37-acre mitigation site (Figure 1) is a new and enhanced wetland located in the Hylebos Creek watershed. This site was created to compensate for the loss of 0.24 acre of wetlands due to improvements to the I-5/SR 161/SR 18 Interchange. The established and enhanced wetlands are designed to provide mitigation for lost hydrologic, water quality, and habitat functions.



**Figure 1 Site Sketch**

The I-5 Corrington Mitigation Site contains a forested and emergent wetland with several upland areas. A new channel connects the existing pond to the North Fork of West Hylebos creek. Appendix 2 includes site directions.

## **What are the performance standards for this site?**

### **Year 3**

#### Performance Standard 1

The soils in the created wetland will be saturated to within six inches of the surface, or standing water will be present within 12 inches of the surface, for at least four consecutive weeks (10 percent) of the growing season in years when rainfall meets or exceeds the 30-year average.

#### Performance Standard 2

Native, wetland (facultative and wetter) woody species (planted and volunteer) will achieve an average density of at least four plants per 100 square feet in the scrub-shrub and forested communities of the created, enhanced, and restored wetland areas and the buffer enhancement areas.

#### Performance Standard 3

Aerial cover of native, wetland (facultative and wetter) herbaceous plant species will be at least 30 percent in the emergent community of the created and enhanced wetlands.

#### Performance Standard 4

State listed noxious weeds and non-native blackberries, purple loosestrife, Scotch broom, thistles, and non-native knotweeds will not exceed 25 percent aerial cover in the created and enhanced wetlands.

#### HPA Permit Requirement

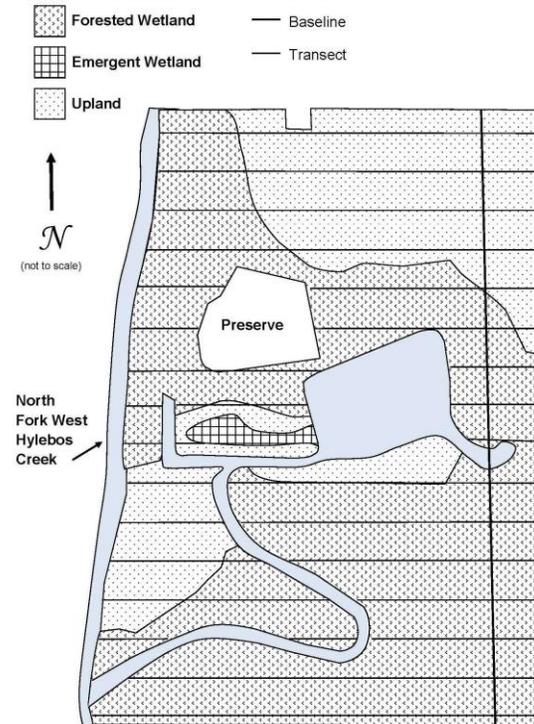
Vegetative cuttings shall be planted and maintained as necessary for three years to ensure 80 percent survival.

Appendix 1 shows the as-built planting plan (WSDOT 2013).

## 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 tables below document the sampling methodology utilized for all of the remaining performance standards (PS) and permit requirements (PR) 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:** Along the eastern edge of the site boundary. Length 141m  
**Transects 1-14**

	<b>PS 2</b>	<b>PS 3</b>	<b>PS 4</b>	<b>PR</b>
<b>Attribute</b>	Density	Cover	Cover	Density
<b>Target pop.</b>	Native Woody	Native Herbaceous	Invasive Species	Woody Plantings
<b>Zone</b>	Forested and Scrub-Shrub Wetlands, Buffer, and Riparian	Emergent Wetland	Wetland	Forested and Scrub-Shrub Wetlands, Buffer, and Riparian
<b>Sample method</b>	UBT	Point-Intercept	Qualitative	UBT
<b>SU length</b>	NA	1m	NA	NA
<b>SU width</b>	1m	NA	NA	1m
<b>Points per SU</b>	NA	20	NA	NA
<b>Total # of SU</b>	13	12	NA	13

## **How is the site developing?**

This site is generally developing as intended, and contains robust herbaceous and woody vegetation communities. The southwest corner has been inundated for a prolonged period of time due to an active beaver dam located just off the site. This inundation has caused significant mortality in that area, which is relatively small. Cover of invasive species is low. Chorus frogs, bird nests, and birds were observed at the time of monitoring.

Results for Performance Standard 1  
(Wetland Hydrology):

Standing water was present within 12 inches of the soil surface in wells 1-3 on all three visits (see Appendix 3, Tables 1 and 2). Well 4 was dry on all visits, and is likely located in a small raised area that is not consistent with the rest of the wetland. Areas of inundation and saturation appear widespread, however an early delineation will occur in 2016 to confirm that the wetland is meeting the target acreage.

Results for Performance Standard 2  
(Density of four native, facultative or wetter woody plants/100ft<sup>2</sup> in the scrub-shrub and forested wetlands and buffer):

Density of native, facultative or wetter woody species in the scrub-shrub and forested wetlands and buffer and riparian areas combined is estimated at 12 plants/100ft<sup>2</sup> (CI<sub>80%</sub>= 10.4-13.7). This value exceeds the performance standard target. Dominant species include Nootka rose (*Rosa nutkana*), salmonberry (*Rubus spectabilis*), red alder (*Alnus rubra*), and black cottonwood (*Populus balsamifera*). (Photo 2)



**Photo 1**  
**Inundation in the shrub-shrub wetland**  
**(March 2015)**



**Photo 2**  
**Density in the buffer (July 2015)**

Results for Performance Standard 3

(30% cover native, facultative or wetter herbaceous species in the emergent wetland):

Cover of native, facultative or wetter herbaceous species in the emergent wetland is estimated at 51 percent (CI<sub>80%</sub> = 40-61%). This value exceeds the performance standard target. Dominant species include hardstem bulrush (*Schoenoplectus acutus*) and fringed willowherb (*Epilobium ciliatum*). (Photo 3)

Results for Performance Standard 4

(Less than 25% state-listed noxious weeds and non-native blackberries, purple loosestrife, Scotch broom, thistles, and non-native knotweeds in the wetland):

Cover of invasive species in the wetland is qualitatively estimated at one percent. This value is below the performance standard threshold. Himalayan blackberry (*Rubus armeniacus*) and reed canarygrass (*Phalaris arundinacea*) are present in low densities, scattered across the site.

Results for HPA Permit Requirement

(80% survival vegetative cuttings in the riparian area):

Survival appears high and was difficult to determine. Density was measured instead. See results for performance standard 2.

**What is planned for this site?**

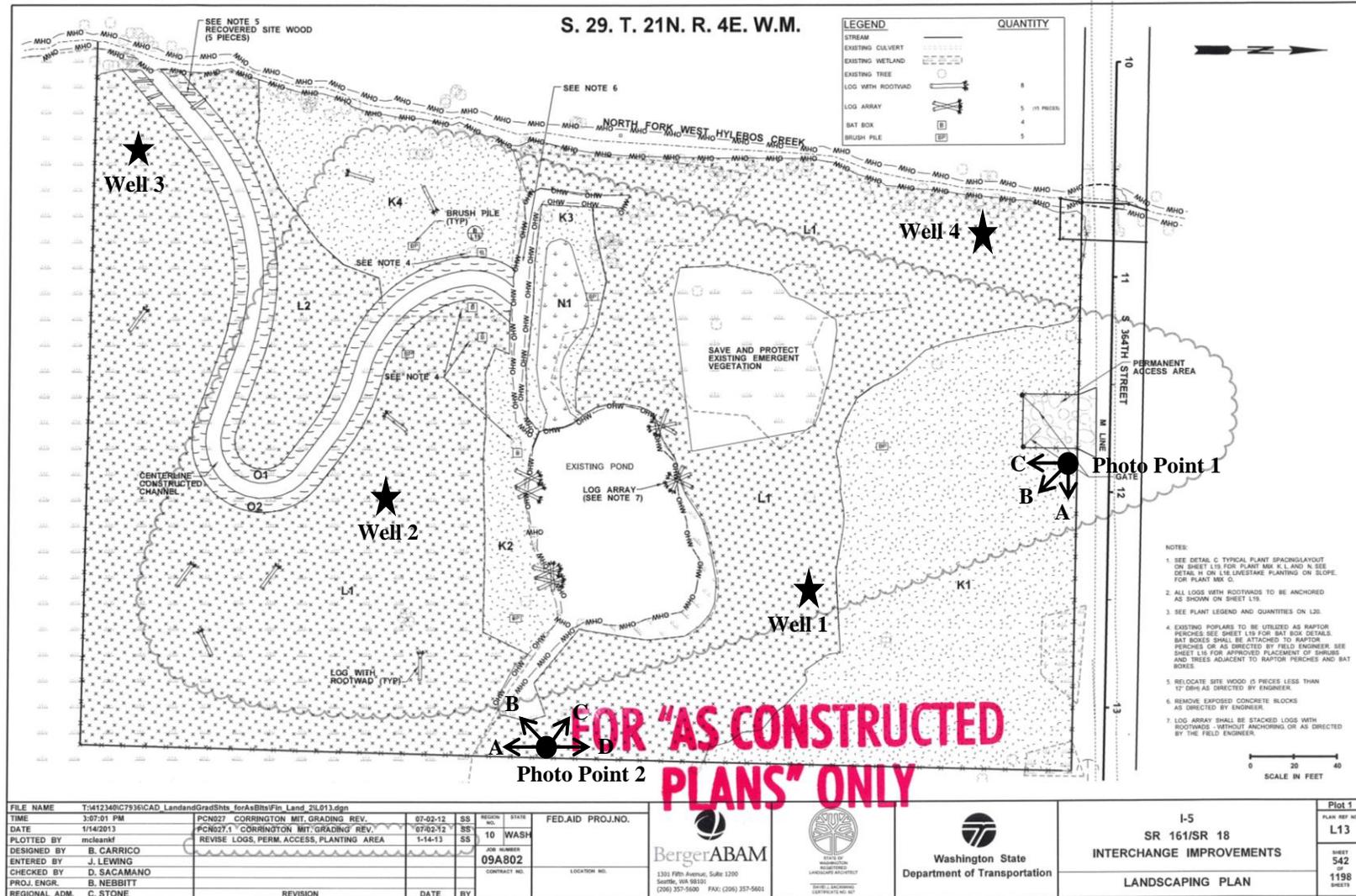
Routine weed control will continue in 2016.



**Photo 3  
Herbaceous cover in the emergent wetland  
(July 2015)**

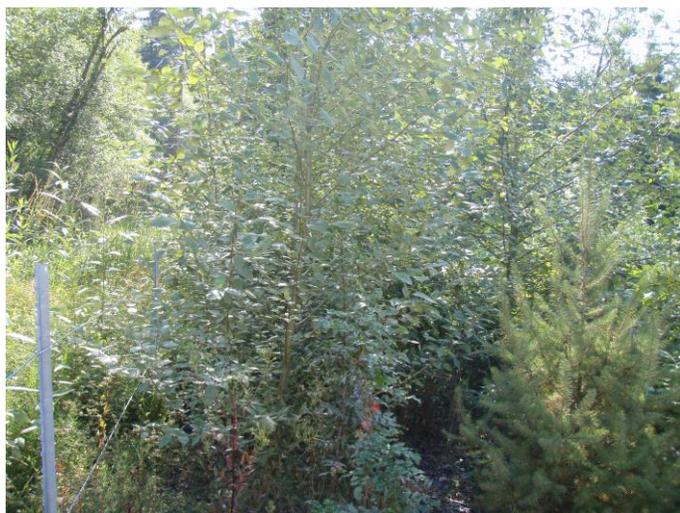
# Appendix 1 – As-Built Planting Plan with Photo Point Locations and Hydrology Well Locations

(from WSDOT 2013)



## Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on July 15, 2015 and document current site development.



**Photo Point 1a**



**Photo Point 1b**



**Photo Point 1c**



**Photo Point 2a**



**Photo Point 2b**



**Photo Point 2c**

**Driving Directions:**

From I-5 take Exit 137 onto SR 99. Turn right onto South 373<sup>rd</sup> Street. Bear left onto Kinney Road. Turn left onto 11th Place South, which becomes South 364<sup>th</sup> Street. The site is on the left about 400 feet from the beginning of 364<sup>th</sup> Street.

# Appendix 3 – Data Tables

Table 1. Comparison of Observed and Normal Precipitation (NRCS 1997)

Monthly precipitation data for SeaTac Airport.

		Long-term rainfall records <sup>a</sup>							
		3 yrs. in 10 less than	Average	3 yrs. in 10 more than	Rain fall <sup>a</sup>	Condition dry, wet, normal <sup>b</sup>	Condition Value	Month weight value	Product of previous two columns
1 <sup>st</sup> prior month	Feb	2.65	4.18	5.04	5.27	W	3	3	9
2 <sup>nd</sup> prior month	Jan	3.50	5.13	6.12	3.66	N	2	2	4
3 <sup>rd</sup> prior month	Dec	3.85	5.62	6.70	4.79	N	2	1	2
								<b>Sum</b>	<b>15</b>

<sup>a</sup> NRCS 2014

<sup>b</sup> Conditions are considered normal if they fall within the low and high range around the average.

Note: If sum is

- 6 - 9 then prior period has been drier than normal
- 10 - 14 then period has been normal
- 15 - 18 then period has been wetter than normal

Condition value:

- Dry (D) =1
- Normal (N) =2
- Wet (W) =3

Conclusions: Wetter than normal precipitation conditions were present prior to the hydrology field visits.

Table 2. Hydrology Observations.

Date	Surface Observations	Well ID #	Water Level (inches below soil surface unless otherwise noted)
March 17, 2015	Water marks	1	8
		2	7
		3	5.5
		4	<b>17.5</b>
March 31, 2015	Surface saturation and shallow inundation scattered across the site covering about 35 percent of the wetland. Beaver dam in southwest corner of the site.	1	6.5
		2	8
		3	0
		4	<b>18</b>
April 14, 2015	Inundation in the southwest corner where beaver are active. Pockets of saturation here and there in the scrub-shrub areas.	1	6
		2	8.5
		3	2
		4	<b>17.5</b>

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