

I-405 Kelsey Creek Wetland Mitigation Site

SE 8th to I-90 Project - USACE NWP (14) 200501405

112th Ave SE to I-90 Project - NWP (14) 200600524

NE 195th St to SR 527 - Northbound Auxiliary Lane - NWP (14) NWS200900396

Bellevue to Lynwood Improvement Project – NWP (14) NWS-2007-1711

Northwest Region

2014 MONITORING REPORT

Wetlands Program

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General Site Information	
USACE NWP (14) Numbers	200501405, 200600524, 200900396, NWS-2007-1711
Mitigation Location	In Kelsey Creek Park, in the City of Bellevue, King Co.
LLID Number	1221672475986
Construction Date	2007-2008
Monitoring Period	2008-2017
Year of Monitoring	7 of 10
Type of Impact	Wetland
Area of Project Wetland Impacts¹	0.794 acre
Type of Mitigation	Wetland Restoration
Area of Mitigation¹	2.4 acres

¹See Appendix 3, Table 1 for a breakdown of the project impacts and mitigation acreages.

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Summary of Monitoring Results and Management Activities (2014)

Performance Standards	2014 Results ²	Management Activities
The soils will be saturated to the surface, or standing water will be present 12 inches below the surface or less for at least 3 consecutive weeks (10 percent) of the growing season in a year when rainfall meets or exceeds the 30-year average.	Not present in all intended areas in 2014	
Aerial cover of the native woody species will be at least 50 percent in the forested and scrub-shrub wetland restoration area.	45% cover (CI _{80%} = 41-49%)	Replanted May 2014
Reed canarygrass will not exceed 30 percent aerial cover in the wetland restoration areas. Other species identified as King County Class A noxious weeds, including non-native blackberries and Scot's broom, will not exceed 20 percent aerial cover in the wetland restoration areas.	3 percent (qualitative)	Weed control occurred 11 times in 2014
The snags and large woody debris installed in the wetland mitigation area will be in-place and functional during each monitoring event.	Present	
At least three native, non-invasive plant species will achieve a minimum of 5 percent relative cover for each species in the buffer.	6 species present in the buffer that provide at least 5 percent relative cover	
Aerial cover of native woody species will be at least 45 percent in the buffer.	82% cover (CI _{80%} = 76-88%)	
Reed canarygrass will not exceed 30 percent aerial cover in the buffer areas. Other species identified as King County Class A noxious weeds, including non-native blackberries and Scot's broom, will not exceed 20 percent aerial cover in the buffer.	1% (qualitative)	Weed control occurred 11 times in 2014

Report Introduction

This report summarizes seventh-year (Year-7) monitoring activities at the Interstate (I) 405 Kelsey Creek 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. Vegetation surveys took place on July 7 and 8 and hydrology visits took place on March 10, March 24, and April 14, 2014.

² Estimated values are presented with their corresponding statistical confidence interval. For example, 45% (CI_{80%} = 41-49% cover) means we are 80% confident that the true cover value is between 41% and 49%.

What is the I-405 Kelsey Creek Mitigation Site?

The Kelsey Creek Mitigation Site includes 2.4 acres of wetland restoration located within Kelsey Creek Park in the City of Bellevue. This 3.6-acre mitigation site (Figure 1) is bordered on three sides by the existing Kelsey Creek wetland complex. This site was established in part to compensate for the loss of 0.794 acres from the four projects listed above. Currently 1.408 acres of wetland have been applied to mitigate these impacts. The remaining wetland restoration acreage on this site is intended as advanced mitigation for future I-405 Corridor Program projects (Appendix 3 Table 1).

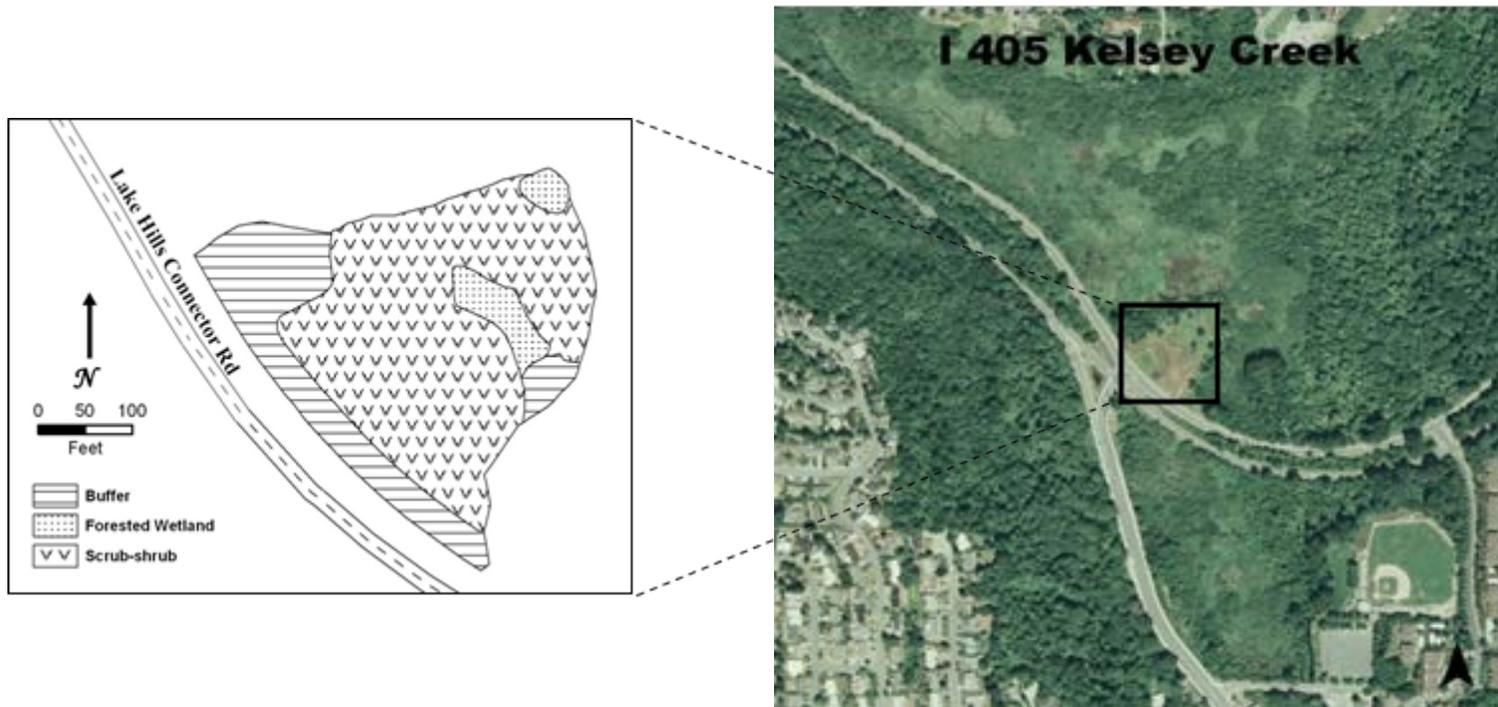


Figure 1 Site Sketch

The I-405 Kelsey Creek Mitigation Site contains scrub-shrub wetland, forested wetland and upland buffer plant communities. Directions to the site are in Appendix 2.

What are the performance standards for this site?

Year 7

Performance Standard 1

The soils will be saturated to the surface, or standing water will be present 12 inches below the surface or less for at least 3 consecutive weeks (10 percent) of the growing season in a year when rainfall meets or exceeds the 30-year average.

Performance Standard 2

After 7 years, aerial cover of the native woody species will be at least 50 percent in the forested and scrub-shrub wetland restoration area.

Performance Standard 3

Reed canarygrass will not exceed 30 percent aerial cover in the wetland restoration areas. Other species identified as King County Class A noxious weeds, including non-native blackberries and Scot's broom, will not exceed 20 percent aerial cover in the wetland restoration areas. If this cover threshold is exceeded, weed control measures will be implemented. If purple loosestrife or non-native knotweeds (Japanese, giant, Himalayan or related hybrid) are observed during monitoring, methods directed at eradicating these species will be implemented immediately (see Section 6.6, Contingency Plans)

Performance Standard 4

The snags and large woody debris installed in the wetland mitigation area will be in-place and functional during each monitoring event in Year 4 through Year 9. If snags are fallen or missing as a result of vandalism or improper installation, they will be replaced by installing unanchored large woody debris within the wetland. Out-of-kind replacement will occur because re-installing vertical snags after year 3 could result in potentially damaging established vegetation. Missing large woody debris will be replaced in-kind. If snags have fallen as a result of rot or other natural process, they will remain as found and this performance measure will be met.

Performance Standard 5

At least three native, non-invasive plant species will achieve a minimum of 5 percent relative cover for each species in the buffer.

Performance Standard 6

After 5 years, aerial cover of native woody species will be at least 45 percent in the buffer.

Performance Standard 7

Reed canarygrass will not exceed 30 percent aerial cover in the buffer areas. Other species identified as King County Class A noxious weeds, including non-native blackberries and Scot's broom, will not exceed 20 percent aerial cover in the buffer. If this cover threshold is exceeded, weed control measures will be implemented. If purple loosestrife or non-native knotweeds (Japanese, giant, Himalayan or related hybrid) are observed during monitoring, methods directed at eradicating these species will be implemented immediately (see Section 6.6, Contingency Plans).

Appendix 1 shows the planting plan (WSDOT 2007).

How were the performance standards evaluated?

To evaluate standards for vegetative cover in the scrub-shrub wetland, a 127 meter baseline was established through the center of the wetland (Figure 2). Thirteen sampling transects were randomly placed perpendicular to the baseline. The line intercept method was used to determine woody cover (Performance Standard 2). Twenty-nine 20-meter line-segment sample units were randomly positioned along the sampling transects in the wetland. To evaluate standards for vegetative cover in the upland buffer, a 135 meter baseline was established through the center of the buffer. Fourteen sampling transects were randomly placed perpendicular to the baseline. The line intercept method was used to determine woody cover (Performance Standard 5 and 6). Fourteen 10-meter line-segment sample units were randomly positioned along the sampling transects in the buffer. The cover of target invasive and noxious species in both wetland and upland buffer areas (Performance Standards 3 and 7) were estimated qualitatively with visual estimates. Habitat structures were counted to ensure that all snags and large woody debris installations were present according to plan (Performance Standard 4). WSDOT staff collected hydrology data using methods described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), *the Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (USACE 2010) (Performance Standard 1).

For additional details on the methods, see the [WSDOT Wetland Mitigation Site Monitoring Methods Paper](#) (WSDOT 2008).

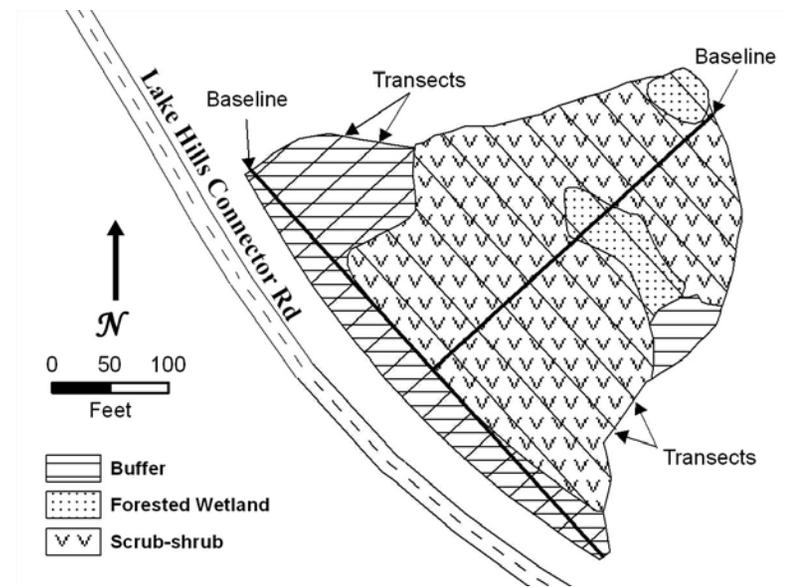


Figure 2 Site Sampling Design (2014)

How is the site developing?

This site is developing well despite slightly slower than anticipated growth of the woody plantings in the scrub-shrub wetland. Woody plantings in the upland buffer are well established and provide a high amount of cover. An emergent area has developed and appears to have become established in a wetter portion of the scrub-shrub wetland. This area is dominated by broadleaf cattail (*Typha latifolia*). Although woody cover in the scrub-shrub wetland fell just short of the performance standard target in 2014, monitoring results from previous years provide a dramatic trend of increasing cover.

Results for Performance Standard 1
(Wetland Hydrology):

Three shallow groundwater wells have been installed on this site and are the only hydrology monitoring wells that are currently being monitored. Two of these wells did not meet wetland hydrology criteria on all three visits, but were within two inches of having water within 12 inches of the soil surface. There was evidence of the presence of surface inundation across much of the site on all three visits (Photo 1). For complete results see Appendix 3 Tables 2 and 3.

Results for Performance Standard 2
(Aerial cover of the native woody species will be at least 50 percent in the forested and scrub-shrub wetland restoration area):

The cover of native woody vegetation in the scrub-shrub wetland is 45% cover ($CI_{80\%} = 41-49\%$). This cover value is slightly below the performance standard target. Dominant species observed in this zone are Nootka rose (*Rosa nutkana*), Sitka willow (*Salix sitchensis*), and red alder (*Alnus rubra*). Although the target was not met in 2014, woody cover this site has increased dramatically since 2013 when cover was estimated at 20-25 percent. If this trend continues, the site should easily achieve the year-10 performance standard in 2017. Supplemental willow planting occurred in April 2014.



Photo 1
Shallow inundation in the scrub-shrub wetland
(March 2014)

Results for Performance Standard 3

(Reed canarygrass will not exceed 30 percent aerial cover in the wetland restoration areas. Other species identified as King County Class A noxious weeds, including non-native blackberries and Scot's broom, will not exceed 20 percent aerial cover in the wetland restoration areas):

The cover of target invasive species in the wetland restoration areas is qualitatively estimated at three percent. This cover value is below the performance standard threshold. Species observed included reed canarygrass (*Phalaris arundinacea*), Scotch broom (*Cytisus scoparius*), and purple loosestrife (*Lythrum salicaria*). Weed control has occurred 11 times in 2014.

Results for Performance Standard 4

(The snags and large woody debris will be in-place and functional):

Installed snags and large woody debris (Photo 2) are in-place and functional as shown on the planting plan.

Results for Performance Standard 5

(At least three native, non-invasive plant species will achieve a minimum of 5 percent relative cover for each species in the buffer):

Six species including snowberry (*Symphoricarpos albus*), beaked hazelnut (*Corylus cornuta*), Douglas-fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), lodgepole pine (*Pinus contorta*), and Nootka rose (*Rosa nutkana*) each provide greater than five percent relative cover in the upland buffer (Photo 3).



Photo 2
Habitat structures in scrub-shrub wetland (July 2014)



Photo 3
Woody species in upland buffer (July 2014)

Results for Performance Standard 6

(After 5 years, aerial cover of native woody species will be at least 45 percent in the buffer):

The cover of native woody species in the upland buffer is 82% cover (CI80% = 76-88%). This cover value exceeds the performance standard target. Dominant species observed in this zone included snowberry, Douglas-fir (*Pseudotsuga menziesii*), and western red cedar (*Thuja plicata*).

Results for Performance Standard 7

(Reed canarygrass will not exceed 30 percent aerial cover in the buffer areas. Other species identified as King County Class A noxious weeds, including non-native blackberries and Scot's broom, will not exceed 20 percent aerial cover in the buffer):

The cover of target invasive species in the upland buffer was qualitatively estimated at one percent. This cover value is below the performance standard threshold. The only target species observed was reed canarygrass. Eleven weed control visits occurred in 2014.

What is planned for this site?

Weed control will continue in 2015.

Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on July 8, 2014 and document current site development.



Photo Point 1



Photo Point 2



Photo Point 3



Photo Point 4

Driving Directions:

From I-405 N take Exit at 8th Street SE and turn right, following to Lake Hills Connector. Turn right. Follow passed Richards Road (near site) and continue on to 134th Street. At 134th Street, perform a U-turn. Go back to the site and park on the rip-rap parking pad.

Appendix 3 – Data Tables

Table 1. Project Impacts and Mitigation Summary from the Kelsey Creek Wetland Mitigation Plan Addendum Numbers 3 and 4 and 5 (WSDOT 2008, 2009, and 2011).

Project	USACE Permit Number	Wetland Impacts (acres)	Restoration Needed per Implementing Agreement (acres)	Additional Mitigation Provided (acres) ³	Total Restoration Applied (acres)
SE 8th to I-90	NWP (14) 200501405	0.228	0.377	-	0.377
112th Ave SE to I-90	NWP (14) 200600524	0.098	0.122	0.124	0.246
NE 195 th St to SR 527	NWP (14) 200900396	0.078 ⁴	0.125		0.125
Bellevue to Lynwood	NWP (14) 2007-1711	0.39	0.660		0.660
Totals		0.404	1.284	0.124	1.408
				Total Proposed Restoration (acres)	2.452
				Excess Available as Advance Mitigation for Future Impacts (acres)	1.044

³ Additional mitigation provided for forested buffer impacts per Ecology recommendation

⁴ The USACE permit lists this impact as 0.08 acre.

Table 2. Hydrology Observations.

Date	Surface Observations	Well ID #	Water Level (inches below soil surface unless otherwise noted)
March 3, 2014	Saturated w/pockets of inundated throughout PFO	1	2.5
		4	4
		5	2.5
March 24, 2014	Shallow inundation and surface saturation scattered throughout the PSS covering about 2/3 of the intended wetland area.	1	11.5
		4	12.5
		5	7.5
April 14, 2014	Scattered areas of inundation and surface saturation covering about 1/4 of the wetland.	1	13
		4	14
		5	10.5

Table 3. Comparison of Observed and Normal Precipitation (NRCS 1997)

Monthly precipitation data for Seattle Tacoma International Airport, Washington.

	Long-term rainfall records ^a			Rain fall ^a	Condition dry, wet, normal ^b	Condition Value	Month weight value	Product of previous two columns	
	Month	3 yrs. in 10 less than	Average						3 yrs. in 10 more than
1 st prior month	March	2.71	3.75	4.42	9.44	W	3	3	9
2 nd prior month	Feb	2.65	4.18	5.04	6.11	W	3	2	6
3 rd prior month	Jan	3.50	5.13	6.12	3.7	N	1	1	1
							Sum	16	

^aNRCS 2014

^bConditions 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 hydrology monitoring visits.

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