SR 503 Lewisville Park Vicinity Climbing Lane (Climbing Lane) Mitigation Site

USACE NWP (14) NWS-2008-704

Southwest Region

2014 MONITORING REPORT

Wetlands Program

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SR 503 Lewisville Park Vicinity Climbing Lane Project (Climbing Lane) Mitigation Site

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General Site Information			
USACE NWP 23 Number	NWS-2008-704		
Mitigation Location	Located north of Battle Ground, WA in Clark County near the intersection of NE 359th street and NE 111th Ave.		
LLID Number	1225610458813		
Construction Date	2010-2011		
Monitoring Period	2012-2022		
Year of Monitoring	3 of 10		
Type of Project Impact[1]	Permanent Wetland	Temporary Wetland	Buffer
Area of Project Impact	0.05 acre	0.02 acre	0.33 acre
Type of Mitigation	Wetland Establishment	Wetland Enhancement	Buffer Enhancement
Planned Area of Mitigation	0.40 acre	1.53 acres	60 feet wide

[1] Impact and mitigation acreage sourced from Final Wetland Mitigation Report SR-503 Lewisville Park Vicinity Climbing Lane Project (WSDOT 2008).

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Summary of Monitoring Results and Management Activities (2014)

Performance Standards	2014 Results[2]	Management Activities
Wetland hydrology	Partially present (See Appendix 3, Table 1)	
At least 400 living native trees per acre in the forested wetland	1,567 trees/acre ($CI_{80\%}$= 1,234-1,899)	
At least 4,000 living native shrubs per acre in the forested wetland	3,502 shrubs/acre ($CI_{80\%}$= 3,278-3,725)	Shrubs planted February 26-27, and March 3, 2014
At least two species of native trees and four species of native shrubs present in the forested wetland. No single species will provide more than 60% total cover.	Seven tree species and six shrub species present; 30% overall cover	
At least 4,000 living native shrubs per acre in the scrub-shrub wetland.	Scrub-shrub wetland combined with forested wetland; See above	
At least 4 species of native shrubs in the scrub-shrub wetland. No single species will provide more than 60% cover.	Scrub-shrub wetland combined with forested wetland; See above	
At least 400 living native trees per acre in the upland buffer.	3,087 trees/acre	
At least 4,000 living native shrubs per acre in the upland buffer.	4,706 shrubs/acre	
At least two species of native trees and four species of native shrubs will be present in the forested buffer. No single species will provide more than 60% total cover.	Six tree species and seven shrub species present	
At least 50% cover native facultative wet and wetter species in the emergent zone.	98% ($CI_{80\%}$= 96-99%) cover	
At least five species of native herbaceous facultative wet and wetter species present in the emergent area. No single species will provide more than 70%	24 species, each < 70% cover	

[2] Estimated values are presented with their corresponding statistical confidence interval. For example, 1,567 trees/acre ($CI_{80\%}$ = 1,234-1,899) means we are 80% confident that the true cover value is between 1,234 and 1,899 trees/acre.

total aerial cover.		
Less than 15% cover blackberry species and Class A noxious weeds in the combined emergent, scrub-shrub, forest, and buffer planting areas	< 5% cover	Weed control performed April 8, May 20, August 6, and August 28, 2013, and July 29, 2014
Japanese knotweed (*Reynoutria japonica*), shall not be present in any amount within the mitigation site	None observed	
Less than 20% cover reed canarygrass in the combined emergent, scrub-shrub, foreset, and buffer planting areas of the creation zones.	< 5% cover across entire site	
Cover of reed canarygrass in enhancement areas < 10% of baseline conditions	No baseline established; < 5% cover across entire site	

Report Introduction

This report summarizes third-year (Year-3) monitoring activities at the State Route (SR) 503 Climbing Lane Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site development. Monitoring activities included photo-documentation and vegetation surveys performed on August 4-6, and assessments of wetland hydrology performed on March 11, and April 2 and 15.

What is the SR 503 Climbing Lane Mitigation Site?

This 6.38-acre mitigation site (Figure 1) is a combination of new and enhanced wetland established north of Battleground, WA in upper Mason Creek watershed. This site was created to compensate for the loss of 0.05 acre of wetlands due to road improvements along SR 503. This site is anticipated to provide flood flow attenuation, nutrient and sediment removal, and general habitat functions.

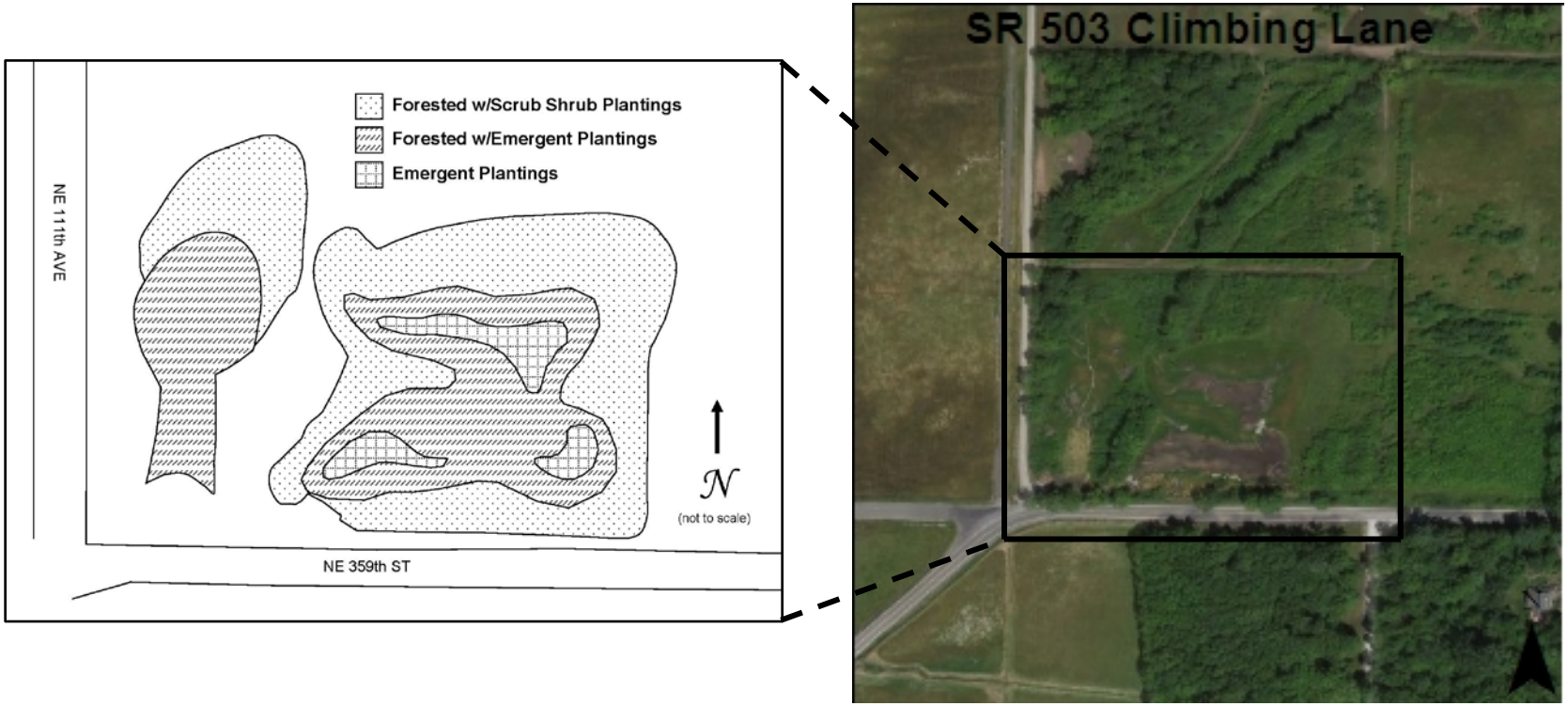


Figure 1 Site Sketch

The SR 503 Climbing Lane Mitigation Site consists of seasonally saturated and seasonally inundated areas, with forested, scrub-shrub, and emergent communities as well as upland buffer and wetland enhancement areas. 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% of the growing season in years when rainfall meets or exceeds the 30-year precipitation average.

Performance Standard 2
There will be a minimum density of 400 living native trees per acre in the forested wetland.

Performance Standard 3
There will be a minimum density of 4,000 living native shrubs per acre in the forested wetland.

Performance Standard 4
At least two species of native trees and four species of native shrubs will be present in the forested area. No single species will provide more than 60 percent total aerial cover.

Performance Standard 5
There will be a minimum density of 4,000 living native shrubs per acre in the scrub-shrub wetland.

Performance Standard 6
At least four species of native shrubs will be present in the scrub-shrub area. No single species will provide more than 60 percent total aerial cover.

Performance Standard 7
There will be a minimum density of 400 living native trees per acre in the buffer.

Performance Standard 8
There will be a minimum density of 4,000 living native shrubs per acre in the buffer.

Performance Standard 9
At least two species of native trees and four species of native shrubs will be present in the forested buffer area. No single species will provide more than 60% total aerial cover.

Performance Standard 10
There will be a minimum of 50 percent aerial cover of native facultative wet and wetter species within the emergent zone.

Performance Standard 11
At least five species of native herbaceous facultative wet and wetter species will be present in the emergent area. No single species will provide more than 70 percent total aerial cover.

Performance Standard 12
The aerial extent of Blackberry Species and Class A noxious weeds will not exceed 15 percent in the combined emergent, scrub-shrub, forest and buffer planting areas of the [Climbing Lane] mitigation site.

Performance Standard 13
Japanese knotweed shall not be present in any amount within the mitigation site.

Performance Standard 14
The aerial extent of reed canarygrass will not exceed 20 percent in the combined emergent, scrub-shrub, forest, and buffer planting areas in the creation areas of the [Climbing Lane] mitigation site.

Performance Standard 15
The aerial extent of reed canarygrass in the enhancement areas of the [Climbing Lane] mitigation site will be managed at a threshold 10% below the existing baseline conditions.

Year 10

Performance Standard 1
There will be a minimum density of 300 living native trees per acre in the forested wetland.

Performance Standard 2
At least two species of native trees and four species of native shrubs will be present in the forested area. No single species will provide more than 60 percent total aerial cover.

Performance Standard 3
At least four species of native shrubs will be present in the scrub-shrub area. No single species will provide more than 60 percent total aerial cover.

Performance Standard 4
There will be a minimum density of 300 living native trees per acre in the buffer.

Performance Standard 5
There will be a minimum density of 3,000 living native shrubs per acre in the buffer.

Performance Standard 6
At least two species of native trees and four species of native shrubs will be present in the forested buffer area. No single species will provide more than 60 percent total aerial cover.

Performance Standard 7
There will be a minimum of 75 percent aerial cover of native facultative wet and wetter species within the emergent zone.

Performance Standard 8
At least five species of native herbaceous facultative wet and wetter species will be present in the emergent area. No single species will provide more than 70 percent total aerial cover.

Performance Standard 9
The aerial extent of Blackberry Species and Class A noxious weeds will not exceed 15 percent in the combined emergent, scrub-shrub, forest and buffer planting areas of the [Climbing Lane] mitigation site.

Performance Standard 10
Japanese knotweed shall not be present in any amount within the mitigation site.

Performance Standard 11
Reed canarygrass will exist as an understory component that does not outcompete the dominant native tree and shrub species or exceed existing baseline conditions.

Appendix 1 shows the as-built planting plan (WSDOT 2008).

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), the Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE 2010) (Performance Standard 1). Four permanent hydrology monitoring pit locations were established and recorded on a map (Table 1, Appendix 3). During each monitoring visit, visual observations are made to determine the extent of inundation and surface saturation. Depth and location of standing water is recorded. At each pit location, in the absence of inundation or surface saturation, subsurface observations are made.

To evaluate standards for woody vegetative density in the combined forested and scrub-shrub zone, a two-segmented 115 meter baseline was established through the middle of the site (Figure 2). Twenty sampling transects were placed perpendicular to the baseline using the systematic random method. The unequal area belt-transect method with twenty one-meter wide sample units was used to estimate tree and shrub density (Performance Standards 2, 3, and 5). Woody cover in the forested and scrub-shrub wetland was visually estimated (Performance Standards 4 and 6). A total count was used to calculate tree and shrub density in the 0.16 acre buffer (Performance Standards 7 and 8), and woody cover was visually estimated (Performance Standard 9). To evaluate standards for cover in the emergent wetland, an 82 meter baseline was established across the middle of the site (Performance Standards 10 and 11). The point intercept method was used to estimate cover with 12 10-meter long sample units that had 20 points per sample unit spaced 0.5 meters apart.

Cover of invasive and noxious species was visually estimated (Performance Standards 12-15).

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

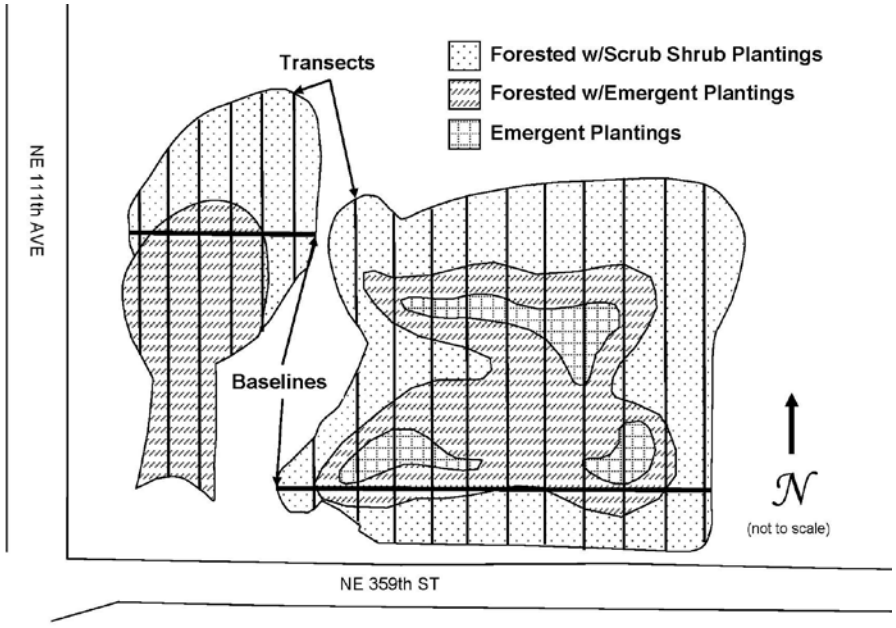


Figure 2 Site Sampling Design (2014)

How is the site developing?

This site is continuing to develop as planned. Woody planting density is typical for a Year-3 site; they are not yet taller than the grass and herbaceous community, though likely developing robust root systems. Canopy is expected to begin emerging above the herbaceous plants following this root establishment period. The emergent community is thriving with high cover and a diverse native plant community. A few weeds are present on site in isolated patches. Continuing weed control will benefit the site as the desirable plant community continues to establish.

Wildlife is active on this site. Shrews are observed throughout the underbrush. Mammal scat and deer tracks/bedding and grazing are evident. Pacific chorus frogs are present in the emergent area. Plenty of grasshoppers and orb-web weaver spiders, a rabbit, and birds (Red-tailed hawk, Black-capped Chickadee, Swainson's Thrush, American Robin, Willow Flycatcher, American Goldfinch, Evening grosbeak, and Mourning dove) are also present.

Hydrology is present on site for at least 10 percent of the growing season, aside from the area around Well 2 which is located on a berm.

The Climbing Lane Mitigation site has met nine of the Year-10 performance standards in 2014 (Appendix 3, Table 2). Minimum values for the Year-10 woody density performance standards are lower than the Year-3 standards. This site, however, exceeds the minimum standards for years three through 10.

Results for Performance Standard 1
(Hydrology):

Saturation or inundation was present in three of the four wells on the first two hydrology visits in the spring 2014 (Appendix 3, Table 1) (Photo 1). Well 2 is located on a high area in between two emergent areas and did not meet the standard. On the third visit, saturation was present within 12 inches of the soil surface in two of the four wells.

Results for Performance Standard 2
(400 trees/acre in the forested wetland):

1,567 trees/acre ($CI_{80\%}$= 1,234-1,899) were found in the forested and scrub-shrub areas combined (Photo 2). This value exceeds the performance standard target.

Results for Performance Standard 3
(4,000 shrubs/acre in the forested wetland):

3,502 shrubs/acre ($CI_{80\%}$= 3,278-3,725) were found in the combined forested and scrub-shrub wetland (Photo 2). This value is below the performance standard target.

Photo 1
Inundation in the wetland (March 2014)

Photo 2
Density in the forested and scrub-shrub wetland (August 2014)

Results for Performance Standard 4
(At least two species of native trees and four species of native shrubs present in the forested area. No single species will provide more than 60% total cover):

Dominant trees in the combined forested and scrub-shrub wetland include: Pacific crabapple (*Malus fusca*) and Oregon ash (*Fraxinus latifolia*). Other species include: Cascara buckthorn (*Frangula purshiana*), Scouler's willow (*Salix scouleriana*), strapleaf willow (*Salix ligulifolia*), Sitka willow (*Salix sitchensis*), and black cottonwood (*Populus balsamifera*).

Dominant shrubs in the combined forested and scrub-shrub wetland include: redosier dogwood (*Cornus alba*), cluster rose (*Rosa pisocarpa*), hardhack (*Spiraea douglasii*), and western serviceberry (*Amelanchier alnifolia*). Other species include: snowberry (*Symphoricarpos albus*) and other roses (*Rosa* species).

Overall cover of both trees and shrubs across the site was visually estimated at 30 percent, indicating that no single species is exceeding the cover threshold.

Results for Performance Standard 5
(4,000 shrubs per acre in the scrub-shrub wetland):

See Performance Standard 3 above (Photo 2).

Results for Performance Standard 6
(At least four species of native shrubs in the scrub-shrub wetland. No single species will provide more than 60% total cover):

See Performance Standard 4 above.

Results for Performance Standard 7
(400 trees/acre in the buffer):

3,087 trees per acre were found in the buffer area. This value exceeds the performance standard target.

Results for Performance Standard 8
(4,000 shrubs/acre in the buffer):

4,706 shrubs per acre were found in the buffer area. This value exceeds the performance standard target.

Results for Performance Standard 9
(At least two species of native trees and four species native shrubs in the buffer. No single species will provide more than 60% total cover):

Dominant tree species in the buffer include: bigleaf maple (*Acer macrophyllum*), and Cascara buckthorn. Other species include black cottonwood, red alder (*Alnus rubra*), Sitka willow, and Oregon ash.

Dominant shrub species in the buffer include: snowberry and Oregon grape (*Mahonia aquifolium*). Other species include: western serviceberry, Indian plum (*Oemleria cerasiformis*), oceanspray (*Holodiscus discolor*), thimbleberry (*Rubus parviflorus*), and salmonberry (*Rubus spectabilis*).

No single species exceeds the 60 percent cover threshold.

Photo 3 Cover in the emergent wetland (August 2014)

Results for Performance Standard 10
(At least 50% cover native facultative wet and wetter species within the emergent zone):

Cover is 98 percent ($CI_{80\%}$= 96-99%) in the emergent wetland (Photo 3). This value exceeds the performance standard target.

Results for Performance Standard 11
(At least five species of native herbaceous facultative wet and wetter species in the emergent area. No single species will provide more than 70% total aerial cover.):

More than 25 native emergent species were observed during monitoring activities, each visually estimated to be providing less than 70 percent total cover. Dominant species include: blunt spikerush (*Eleocharis obtusa*), slough sedge (*Carex obnupta*), soft rush (*Juncus effusus*), common spikerush (*Eleocharis palustris*), and broadleaf cattail (*Typha latifolia*).

Results for Performance Standard 12
(Less than 15% cover blackberry species and Class A noxious weeds in the combined emergent, scrub-shrub, forest, and buffer planting areas):

Non-native invasive species were visually estimated to be providing less than five percent cover across the entire site. This value is below the performance standard threshold. Invasive species include: reed canarygrass (*Phalaris arundinacea*), meadow knapweed (*Centaurea X moncktonii*), cutleaf blackberry (*Rubus laciniatus*), bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), and climbing nightshade (*Solanum dulcamara*). No Class A weeds were observed during 2014 monitoring activities.

Results for Performance Standard 13
(Japanese knotweed shall not be present in any amount within the mitigation site):

No Japanese knotweed was observed during 2014 monitoring activities.

Results for Performance Standard 14
(Less than 20% cover reed canarygrass in the combined emergent, scrub-shrub, forest, and buffer planting areas of the creation zones):

Cover of reed canarygrass was not estimated in the creations zones alone. Cover of all noxious weeds was visually estimated across the entire site to be less than five percent. See results for Performance Standard 12.

Results for Performance Standard 15
(Cover of reed canarygrass in enhancement areas < 10% of baseline conditions):

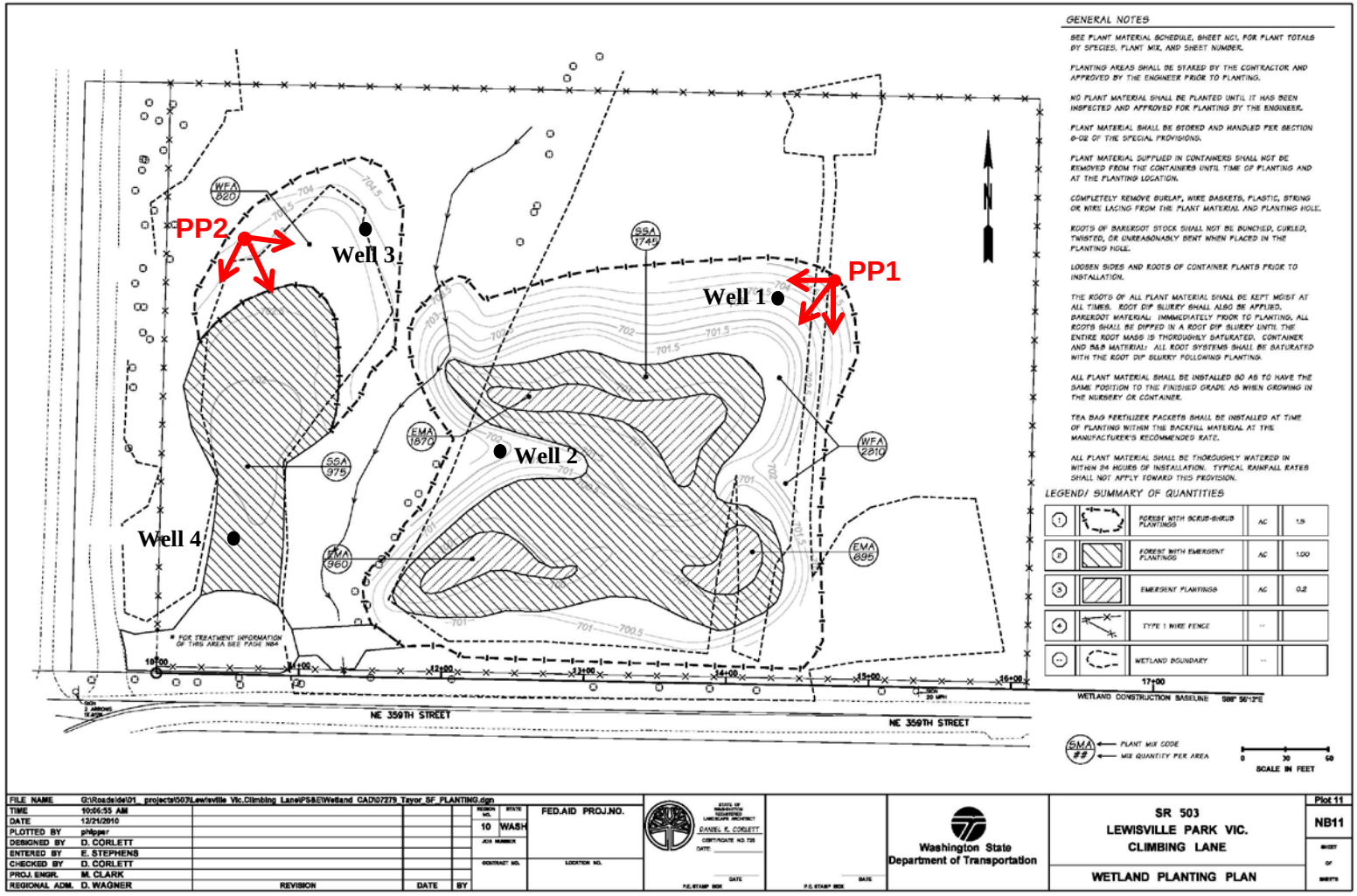
No baseline conditions for reed canarygrass in the enhancement areas were established. Cover of all noxious weeds was visually estimated across the entire site to be less than five percent. See results for Performance Standard 12.

What is planned for this site?

Continuation of weed control efforts will benefit the site.

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

(from WSDOT 2008)



Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on August 5, 2014 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 south, take Exit 16 for NW La Center Rd toward La Center. Turn left onto NW 319th St/NW La Center Rd/NW Pekin Ferry Rd. In about 2 miles, turn right onto W 4th Street, then continue onto NE Lockwood Creek Rd. After 3.3 miles, continue onto NE 339th St. Turn left onto NE Gable Ave and then a slight right onto NE 359th street. The site is on the corner in less than a mile. A key should be obtained from region personnel.

Appendix 3 – Data Tables

Table 1 Hydrology Observations

Date	Surface Observations	Well ID #	Water Level (inches below soil surface unless otherwise noted)
March 11, 2014	Three quarters of the intended areas were inundated or saturated to the surface. The area around well 2 was dry on the berm and areas on the upper edges were not saturated to the surface or inundated, but the wells checked out.	1	2
		2	**15**
		3	6.5
		4	4
April 2, 2014	Water flowing through the middle of the site and widespread saturation.	1	0
		2	**13**
		3	2.5
		4	3
April 15, 2014	Water-stained leaves, algal mat/crust, and drainage patterns present.	1	0
		2	**15**
		3	9
		4	**14**

Table 2. Year 10 performance standards met in year 5

Performance Standards (Year-10)	2014 Results
At least 300 living native trees per acre in the forested wetland	1,567 trees/acre ($CI_{80\%}$= 1,234-1,899)
At least two species of native trees and four species of native shrubs will be present in the forested area. No single species will provide more than 60 % total aerial cover.	Seven tree species and six shrub species present; 30% overall cover
At least four species of native shrubs will be present in the scrub-shrub area. No single species will provide more than 60% total aerial cover.	Scrub-shrub wetland combined with forested wetland; See above
At least 300 living native trees per acre in the buffer	3,087 trees/acre
At least 3,000 living native shrubs per acre in the buffer	4,706 shrubs/acre
At least two species of native trees and four species of native shrubs will be present in the forested buffer area. No single species will provide more than 60% total aerial cover.	Six tree species and seven shrub species present
There will be a minimum of 75% aerial cover of native facultative wet and wetter species within the emergent zone.	98% ($CI_{80\%}$= 96-99%) cover
At least five species of native herbaceous facultative wet and wetter species will be present in the emergent area. No single species will provide more than 70% total aerial cover.	24 species, each < 70% cover
Less than 15% cover blackberry species and Class A noxious weeds in the combined emergent, scrub-shrub, forest, and buffer planting areas	< 5% cover
Japanese knotweed (*Reynoutria japonica*), shall not be present in any amount within the mitigation site	None observed
Less than 20% cover reed canarygrass in the combined emergent, scrub-shrub, foreset, and buffer planting areas of the creation zones	< 5% cover across the entire site
Cover of reed canarygrass in enhancement areas < 10% of baseline conditions	No baseline established; < 5% cover across the entire site

Literature Cited

1. Clark County. 2008. Type 1 Development Review Staff Report & Decision for Project SR 503 Climbing Lane. Case Number HAB2008-00051.
2. Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Vicksburg (MS): US Army Engineer Waterways Experiment Station. Technical Report Y-87-1. Available at: http://el.erdc.usace.army.mil/wetlands/pdfs/wlman87.pdf
3. [USACE] US Army Corps of Engineers. 2008. Department of the Army Nationwide Permit Number (14) NWS-2008-704.
4. [USACE] US Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), Wakeley JS, Lichvar RW, Noble CV, editors. Vicksburg (MS): US Army Engineer Research and Development Center. ERDC/EL TR-10-3. Available at: http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/west_mt_finalsupp.pdf
5. [WSDOT] Washington State Department of Transportation. 2008. Final Wetland Mitigation Report SR-503 Lewisville Park Vicinity Climbing Lane Project. Vancouver (WA): Washington State Department of Transportation, Southwest Region.
6. [WSDOT] Washington State Department of Transportation. 2008. SR 503 Lewisville Park Vic. Climbing Lane Mitigation Site As-built Planting Plan.
7. [WSDOT] Washington State Department of Transportation. 2008. WSDOT Wetland Mitigation Site Monitoring Methods. http://www.wsdot.wa.gov/NR/rdonlyres/C211AB59-D5A2-4AA2-8A76-3D9A77E01203/0/MethodsWhitePaper052004.pdf