SR 12 Peters Road Vicinity Slide Repair (Peters Road) Mitigation Site

USACE NWP 96-4-01135, 98-4-01341 & 94-4-02046

Southwest Region

2014 MONITORING REPORT

Wetlands Program

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SR 12 Peters Road Mitigation Site

USACE NWP 96-4-1135, 98-4-01341 & 94-4-02046

General Site Information	
USACE NWP Numbers	96-4-1135, 98-4-01341 & 94-4-02046
Mitigation Location	SR 131 to the Cowlitz River 1 mile south of Randle, Lewis County
LLID Number	1219553465232
Construction Date	1998-1999
Monitoring Period	1999-2008
Year of Monitoring	16 of 10
Area of Project Impact[1]	2.61 acres
Type of Mitigation	Floodplain Restoration
Planned Area of Mitigation	5.3 acres

[1] Impact and mitigation acreages sourced from SR 12 Peter's Road Vicinity Slide Repair Final Wetland Mitigation Plan (WSDOT 1998).

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Summary of Monitoring Results and Management Activities (2014)

Performance Standards	2014 Results[2]	Management Activities
At least 75% cover from woody plants alone for the entire site	24% cover ($CI_{80\%}$ = 18-29%)	
Combined cover of noxious or invasive non-native species throughout the site will not exceed 10%. These plants include: bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), rough cockleburr (*Xanthium strumarium*), and Himalayan blackberry (*Rubus armeniacus*).	5-7% cover	
At least 75% cover woody species in the bank stabilization area	22% cover ($CI_{80\%}$= 17-27%)	

Report Introduction

This report summarizes sixteenth-year (Year-16) monitoring activities at the State Route (SR) 12 Peters Road Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site success. Monitoring activities included vegetation surveys and photo-documentation that were performed on October 7 and 8, 2014.

[2] Estimated values are presented with their corresponding confidence interval. For example, 24% cover ($CI_{80\%}$= 18-29%) means we are 80% confident that the true cover value is between 18% and 29%.

What is the SR 12 Peters Road Mitigation Site?

This 5.3-acre mitigation site (Figure 1) is a restored forested floodplain adjacent to the Cowlitz River near the town of Randle in eastern Lewis County. This site was created to compensate for the loss of 2.61 acres of wetlands due to road improvements along SR 12 that were necessary due to a landslide. Twenty-four hundred feet of SR 12, including the intersection with Peter's Road, were realigned in order to minimize the impact of future landslides, to increase capacity, and to improve motorist safety.

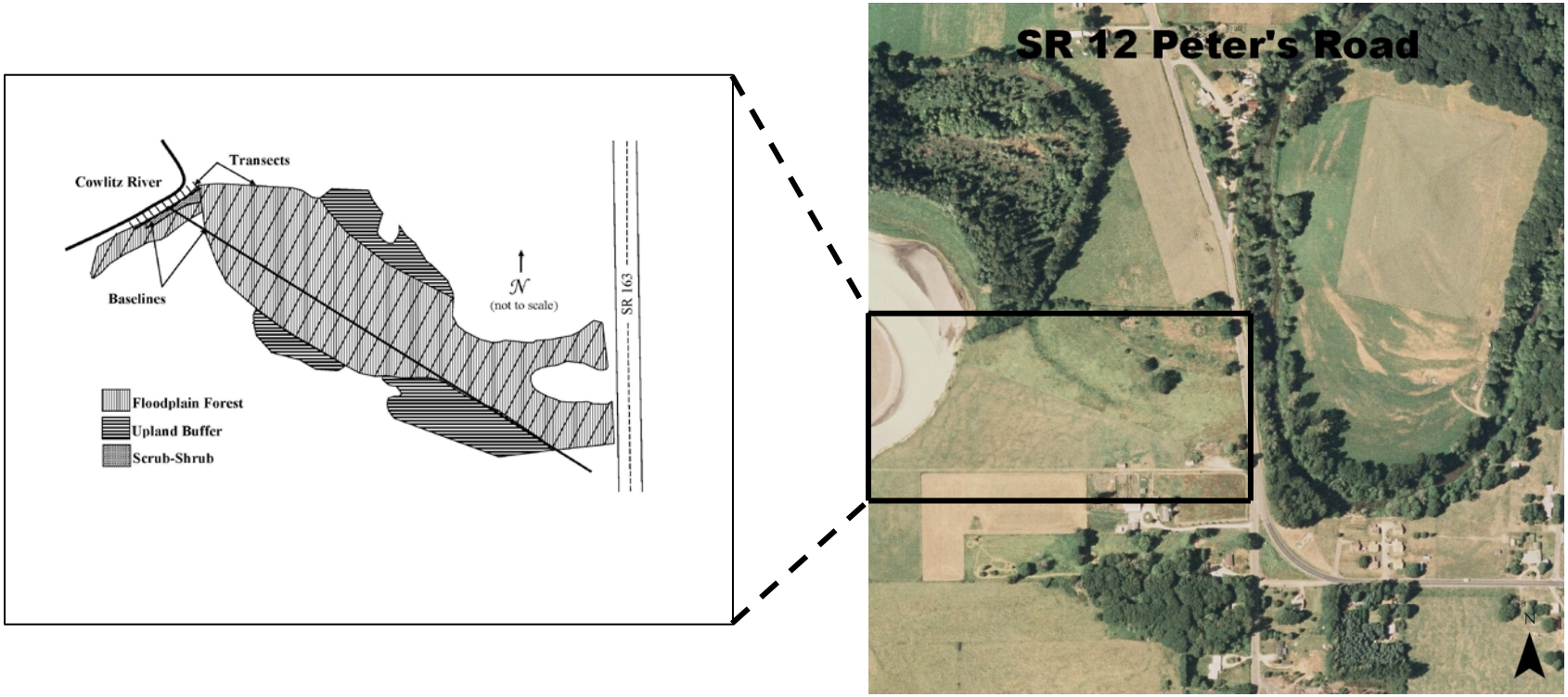


Figure 1 Site Sketch

The SR 12 Peter's Road Slide Repair Mitigation Site contains a floodplain restoration area, an upland buffer, and a bank stabilization zone adjacent to the Cowlitz River. Appendix 1 includes site directions.

What are the performance standards for this site?

Year 10

Performance Standard 1
In the tenth year following construction, the site (all communities) will have at least 75 percent aerial vegetative cover from woody plants alone.

Performance Standard 2
In any monitoring year except year ten [final-year], the combined aerial cover of noxious or invasive non-native species throughout the site will not exceed 15 percent. In year ten [final-year], this combined aerial cover will not exceed 10 percent. These plants include the following: bull thistle, Canada thistle, rough cocklebur, and Himalayan blackberry.

Performance Standard 3
In the tenth year following construction, the bank stabilization area will have at least 75 percent aerial vegetative cover from woody plants alone. Signs of erosion will be minimal to none.

Appendix 1 shows the as-built planting plan (Corlett 1997).

How were the performance standards evaluated?

To evaluate standards for vegetative cover in the forested floodplain restoration area, a baseline was established through the center of the site (Figure 2). Twenty sampling transects were systematically placed 20 meters apart perpendicular to the baseline in this zone. The line intercept method was used to estimate woody cover with 43 10-meter-long sample units (Performance Standard 1). Cover of invasive species was visually estimated (Performance Standard 2). To evaluate standards for vegetative cover in the bank stabilization area, a baseline was established along the top of the bank. Thirteen sampling transects were systematically placed two meters apart perpendicular to the baseline in this zone. The line intercept method was used to estimate woody cover in this zone with 13 18-meter-long sample units (Performance Standard 3).

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

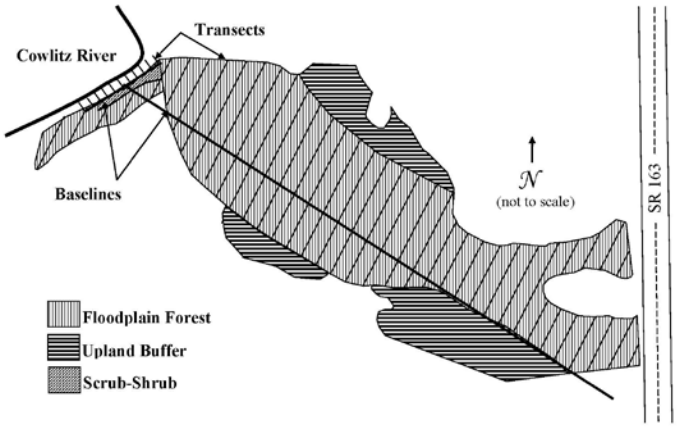


Figure 2 Site Sampling Design (2014)

Is this site a success?

This forested floodplain restoration site is developing a diverse community of native upland and riparian woody vegetation. Vegetative cover in all planting zones is significantly lower than performance standard targets. In the forested floodplain planting area, the dominant woody species *Fraxinus latifolia* (Oregon ash) has been slow to develop a canopy. Reasons for this are uncertain, but competition from herbaceous vegetation for water may be a significant factor. Cover has been trending upward over the years despite the slow pace (Table 1, Appendix 2).

The bank stabilization area has experienced significant erosion over the course of the monitoring period due to the migration of the Cowlitz River. Performance standards that apply to this area were predicated on the zone not being destroyed by a major flood event. Due to a major slope failure over the winter of 2003/2004, aerial cover of planted vegetation in the bank stabilization area is unlikely to meet performance standard targets. However, this area is almost completely vegetated, primarily by grasses, which are aiding in the stabilization of this slope.

Results for Performance Standard 1
(75% cover woody vegetation across the site):

Cover of woody plant species across the site is 24% ($CI_{80\%}$ = 18-29%). This value is below the performance standard target. Cover in the buffer is higher with Douglas-fir (*Pseudotsuga menziesii*), tall oregongrape (*Mahonia aquifolium*), and snowberry (*Symphoricarpos albus*). The floodplain is dominated by Oregon ash (*Fraxinus latifolia*), which remain slow growing, but are still present and surviving (Photos 1 and 2).

Results for Performance Standard 2
(Less than 10% cover invasive species):

Cover of invasive plant species is visually estimated at five to seven percent. This is below the performance standard threshold. Species observed during 2014 monitoring activities include: Himalayan blackberry, cutleaf blackberry (*Rubus laciniatus*), Canada thistle, reed canarygrass (*Phalaris arundinacea*), and Scotch broom (*Cytisus scoparius*).

Photo 1
Woody cover in the flood plain area (October 2014)

Photo 2
Cover in the buffer (October 2014)

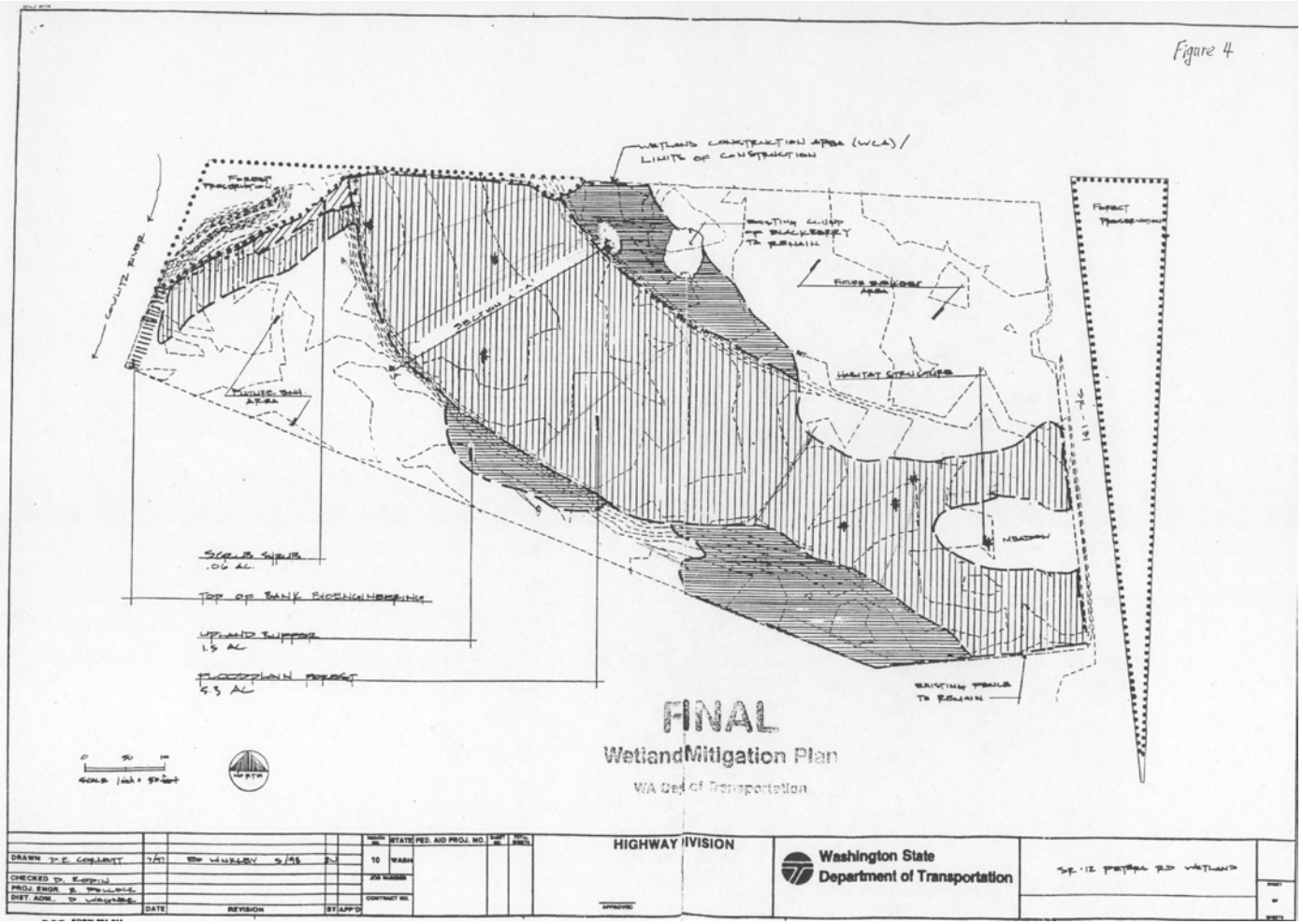
Results for Performance Standard 3
(75 cover woody vegetation in the bank stabilization area):

Cover of woody plant species in the bank stabilization area is 22% ($CI_{80\%}$= 17-27%). The hillside has remained mostly stable with willows (*Salix* species) and red alder (*Alnus rubra*) surviving in the slide area. Snowberry, redosier dogwood (*Cornus alba*), and Pacific ninebark (*Physocarpus capitatus*) persist in a strip a meter or two back from the edge (Photo 3).

Photo 3
Cover in the bank stabilization area (October 2014)

Appendix 1 – As-built Planting Plan

(from Corlett 1997)



Driving Directions:

From I-5 south, exit onto SR 12. Turn left (east) on SR 12 and proceed to Randle (about 50 miles). In Randle turn right (south) on SR 131. The mitigation site is on the right after MP 155 where the Cowlitz bends toward SR 131.

Appendix 2 – Data Tables

Table 1 Woody Cover in the Floodplain during Monitoring Years

Year of Monitoring	Calendar Year	Cover
2	2000	2% ($CI_{0.90}$+/- 0.20)
3	2001	Replanted in the spring
4	2002	Minimal
5	2003	< 5%
10	2008	9% ($CI_{80\%}$= 7-11%)
13	2011	17%
14	2012	20-25%
16	2014	24% ($CI_{80\%}$= 17-27%)

Literature Cited

1. [USACE] US Army Corps of Engineers. 1994. Department of the Army Individual Permit Number 94-4-02046.

2. [USACE] US Army Corps of Engineers. 1996. Department of the Army Individual Permit Number 96-4-01135.

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4. Corlett, D. 1997. SR 12 Peter's Road Planting Plan. Washington State Department of Transportation, Southwest Region, Vancouver, WA.

5. Null, W., S. Zaske, and D. Corlett. 1998. SR 12 Peter's Road Vicinity Slide Repair Final Wetland Mitigation Plan. Washington State Department of Transportation, Environmental Affairs Office, Olympia, WA.

6. [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