

Swift No. 2 Hydroelectric Project  
FERC No. 2213

March 21, 2019

**Wildlife Habitat Management Plan  
2019 (Year 11) Annual Plan  
For The  
Swift No. 2 Wildlife Management Area**



Prepared by  
Public Utility District No. 1 of  
Cowlitz County, Washington



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## Acronyms

BMPs	Best Management Practices
DB	Devil's Backbone
FERC	Federal Regulatory Energy Commission
HEP	Habitat Evaluation Procedures
HSI	Habitat Suitability Indexes
LWD	Large Woody Debris
MU	Management Unit
PUD	Public Utility District
PW	Project Works
SGD	Standards and Guidelines Document
SOPs	Standard Operating Procedures
TCC	Terrestrial Coordination Committee
WDFW	Washington Department of Fish and Wildlife
WHMP	Wildlife Habitat Management Plan
WMA	Wildlife Management Area

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**2019 (YEAR 11) Annual Plan  
for the  
Swift No. 2 Wildlife Management Area**

**1.0 INTRODUCTION**

Public Utility District No. 1 of Cowlitz County, Washington (Cowlitz PUD) owns the Swift No. 2 Hydroelectric Project (FERC No. 2213) on the Lewis River at River Mile 44 in Cowlitz and Skamania counties, Washington (Figure 1.0-1). The Swift No. 2 Project is one of four Lewis River Hydroelectric Projects. In 1999, Cowlitz PUD and PacifiCorp<sup>1</sup> began the Alternative Licensing Procedure (ALP) for the Lewis River Projects. In April of 2004, Cowlitz PUD filed with the Federal Energy Regulatory Commission (FERC) an Application for New License for Swift No. 2. In November 2004, Cowlitz PUD, PacifiCorp and 24 other Parties signed the Lewis River Settlement Agreement (SA) for the purpose of resolving all of the issues between the Licensees and the other Parties regarding the relicensing. The FERC issued a new 50-year License for Swift No. 2 on June 26, 2008 that incorporates without material modification Cowlitz PUD's obligations under the Settlement Agreement.

In accordance with License Article 403, Cowlitz PUD filed a Wildlife Habitat Management Plan (WHMP) with the Commission on December 23, 2008. The WHMP provides long-term guidance for management of 525 acres of Cowlitz PUD lands within the Swift No. 2 Wildlife Management Area (WMA). The WHMP includes the following:

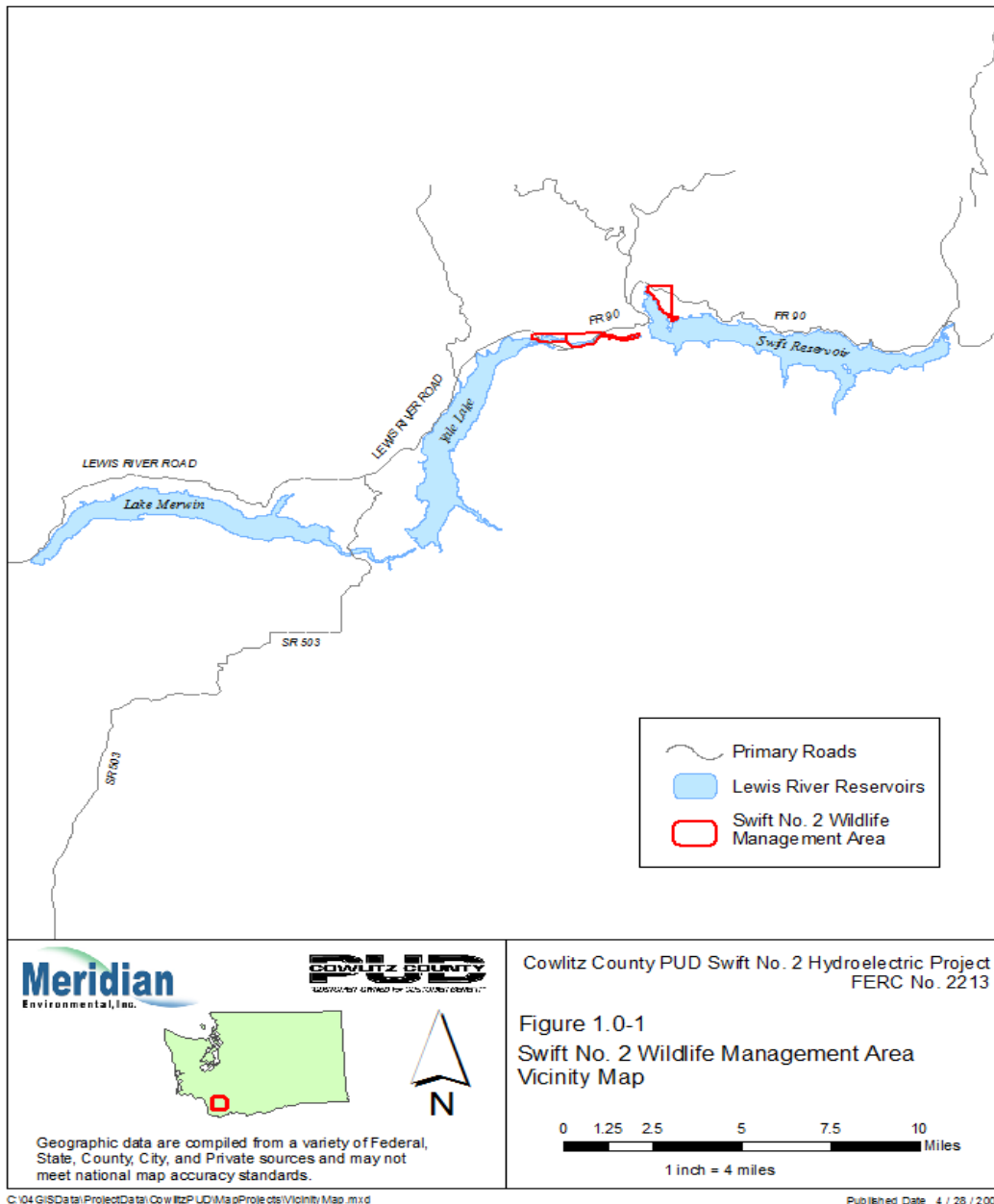
- Section 1 explains development of the WHMP through the relicensing process.
- Section 2 describes the Swift No. 2 WMA, which includes the Devil's Backbone and Project Works management units (MUs). It describes the vegetation cover types and baseline Habitat Suitability Indexes (HSI) for Habitat Evaluation Species (HEP) evaluation species, and provides maps and acreage tables for each MU.
- Section 3 summarizes the habitat-based and program-wide goals and objectives taken from the Standards and Guidelines Document (SGD) that apply to habitat types that occur in the Swift No. 2 WMA.
- Section 4 describes potential management activities designed to meet the SGD goals and objectives and provides a tentative timeframe for implementation.
- Section 5 includes Best Management Practices (BMPs) and Standard Operating Procedures (SOPs) that explain how each of the management prescriptions will be implemented. Section 5 also contains references for specific methods.
- Section 6 contains general references used in development of the WHMP.

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<sup>1</sup> PacifiCorp owns the Swift No. 1 (P-2111), Yale (P-2071) and Merwin (P-935) projects, also on the Lewis River. PacifiCorp filed the Application for New License for Yale in 1999 and filed Applications for Merwin and Swift No. 1 in April 2004.

Appendices attached to the WHMP include: A) 2018 Cowlitz and Skamania County Weed Lists, B) Annual Plan Consultation Record, and C) Devil’s Backbone Elk Forage Plot Treatment Prescription.

License Article 403 states that Cowlitz PUD should file an annual plan for implementation of the WHMP. On March 31, 2009, the Commission issued an order modifying and approving the WHMP, which specifies that Cowlitz PUD should file annual reports and annual plans with the Commission by April 30 of each year. In accordance with that order, this Year 11 Annual Plan outlines proposed wildlife measures and anticipated costs for work to be completed in 2019. The annual report is being filed under separate cover.



**Figure 1.0-1. Project area map, project vicinity inset.**



## 2.0 2019 (YEAR 11) MANAGEMENT ACTIVITIES

Management activities planned for 2019 (Year 11) include the following:

- *Conduct follow-up surveys at sites where weed control efforts have already been implemented, only if 5.8-acre patch cut is not completed.* Meridian Environmental, together with Cowlitz PUD staff, will conduct the invasive plant surveys in conjunction with the public access surveys.

Updated 2018 Cowlitz and Skamania County weed lists are attached to this Annual Plan as Appendix A.

- *Treat high priority weed infestations, only if 5.8-acre patch cut is not completed.* In 2017, Cowlitz PUD renewed its interlocal agreement with Skamania County to perform weed control in the WMA.
- *Inspect all accessible lands in the Project Works and Devil's Backbone MUs to evaluate public access activity and identify any habitat concerns or major changes in habitat conditions, only if 5.8-acre patch cut is not completed.* Meridian Environmental, together with Cowlitz PUD staff, will conduct the public access surveys in conjunction with the invasive plant species surveys.
- *Adaptively manage this 2019 WHMP Annual Plan.* At the December 10, 2014 meeting, The Terrestrial Coordination Committee (TCC) agreed to the following language regarding management of the WHMP funds:

*TCC members desire that Cowlitz PUD accrue funds in order to accomplish WHMP enhancement forestry actions on Cowlitz PUD's Devil's Backbone site. TCC members therefore request Cowlitz PUD defer 35% of Annual Plan spending, starting in 2015 and continuing in subsequent years, until the TCC agrees on the allocation of these accrued funds toward a WHMP action. During preparation of each year's Annual Plan by Cowlitz PUD, TCC may request more or less than a 35% deferral, based on expected needs of the next project year and changing circumstances. Cowlitz PUD shall manage these deferred funds in accordance with Section 10.8.2.3 of the Lewis River Settlement Agreement.*

It is anticipated that these accrued funds will be spent in 2019 or 2020, depending on the cost of timber management activities.

- *Complete bidding process, goshawk survey and harvesting for the agreed upon 5.8-acre patch cut in Devil's Backbone MU (DBMU-2) in 2019.* Forestland goals and objectives are described in Section 3.1.7 of the WHMP. Section 4.2.4 explains the purpose and approach to creating patch cuts. Patch cuts would be implemented in accordance with Forestland Management SOPs outlined in Section 5.7 of the WHMP, and in accordance with Invasive Plant Management SOPs (Section 5.8) and Raptor Management SOPs (Section 5.9). The two-year, phased approach to planning, implementing, and documenting the patch cuts is provided in Appendix C of this Annual Plan.

## **2.1 2019 (YEAR 11) ANNUAL PLAN BUDGET**

Consistent with the SA budget of \$27 per acre per year to manage 525.2 acres, the total WHMP budget is \$14,180 in 2003 dollars. Adjusting that base amount for inflation (using the formula specified in the Definitions section of the SA) yields a 2019 (Year 11) budget of \$19,158.

As provided in Section 10.8.2.3, WHMP funds shall accrue interest from the date the monies are due to be placed in the fund. Funds remaining from previous years, if any, are also added to the fund. At year end, \$43,759 remained in the WHMP fund and was carried forward from 2018, including \$1,984 accrued interest, \$14,903 2018 carry forward, and \$26,872 timber fund carry forward. For these reasons, the total budget for 2019 is \$62,917 (\$43,759 carry forward and \$19,158 annual payment).

Consistent with SA Section 10.8.3, the anticipated 2019 starting budget shown in Table 2.1-1 includes an estimate of the costs of Cowlitz PUD employees and contractors to implement all aspects of the WHMP in 2019, including overall management, administrative costs associated with specific management activities, and implementation costs for specific management activities. These budget numbers are very preliminary and the actual costs may be considerably lower or higher than those shown in Table 2.1-1. As mentioned above, monies not spent remain in the WHMP budget and could be used to implement additional management activities during the current plan year or during following years.

If during the course of implementing this Annual Plan, to the extent known and at such time as Cowlitz PUD identifies significant cost savings or identifies cost overruns, Cowlitz PUD will notify the TCC.

**Table 2.1-1. Anticipated 2019 (Year 11) Annual Plan Budget (2019 dollars).**

<b>2019 Budget</b>		
Dec 26, 2018 Annual Payment	\$19,158	
2018 Carry Forward	\$ 41,775	Includes 2015 - 2018 Timber Fund
Interest on 2018 Ending Balance	\$ 1,984	
Total 2019 Budget	\$ 62,917	
<b>WHMP Activity</b>	<b>Estimated 2019 Cost</b>	<b>Assumptions</b>
Administration	\$5,000	Includes general oversight and accounting, preparing Annual Report and Annual Plan, contracting, maintaining project files, participating in TCC meetings related to implementing Cowlitz PUD's WHMP.
Annual inspection to monitor and manage public access	\$0	Included in invasive plant surveys.
Invasive plant surveys at high priority sites	\$0	None in 2019.
Invasive plant species control	\$0	None in 2019.
Northern Goshawk Survey	\$3,500	Intensive Survey
Meridian Forester Oversight	\$3,000	Final prep and sale administration.
5.8-acre Devil's Backbone Patch Cut	\$89,000	Based on cost estimates in Appendix C. Have to complete public bidding process.
Estimated cost of management activities	<b>\$100,500</b>	
Estimated amount remaining in 2019 budget at year end	\$-37,583	Any funds not spent by year end, plus accrued interest, remain in the WHMP budget to be carried into the following year. <sup>2</sup>
<b>Grants Submitted</b>	<b>Amount Requested</b>	
RMEF PAC Grant	\$10,500	Determination by March 31, 2019.
Matching Funds from PacifiCorp	\$10,500	

<sup>2</sup> TCC members desire that any unspent monies/carry forward be designated for future timber management activities.

### **3.0 SITE MANAGEMENT PLANS**

As discussed in sections 4.2 and 4.3 of the WHMP, Cowlitz PUD delineated and mapped 12 management sites within the Devil’s Backbone MU and four within the Project Works MU. The site boundaries are based on vegetation cover type mapping, review of aerial photographs and site visits, but also take into account factors such as slope, soils, understory composition, and access that represent management opportunities and constraints.

Cowlitz PUD has developed a Site Management Plan for each site as a means of identifying management opportunities and needs, and tracking the implementation of management activities through the license period. Each Site Management Plan identifies the SGD goals and objectives, baseline HSI values, and analysis species associated with the cover type; summarizes baseline site conditions, including any apparent management constraints; identifies proposed management actions; and documents the actions that were implemented. The Site Management Plans will also serve as the basis for each Annual Report and the following year’s Annual Plan.

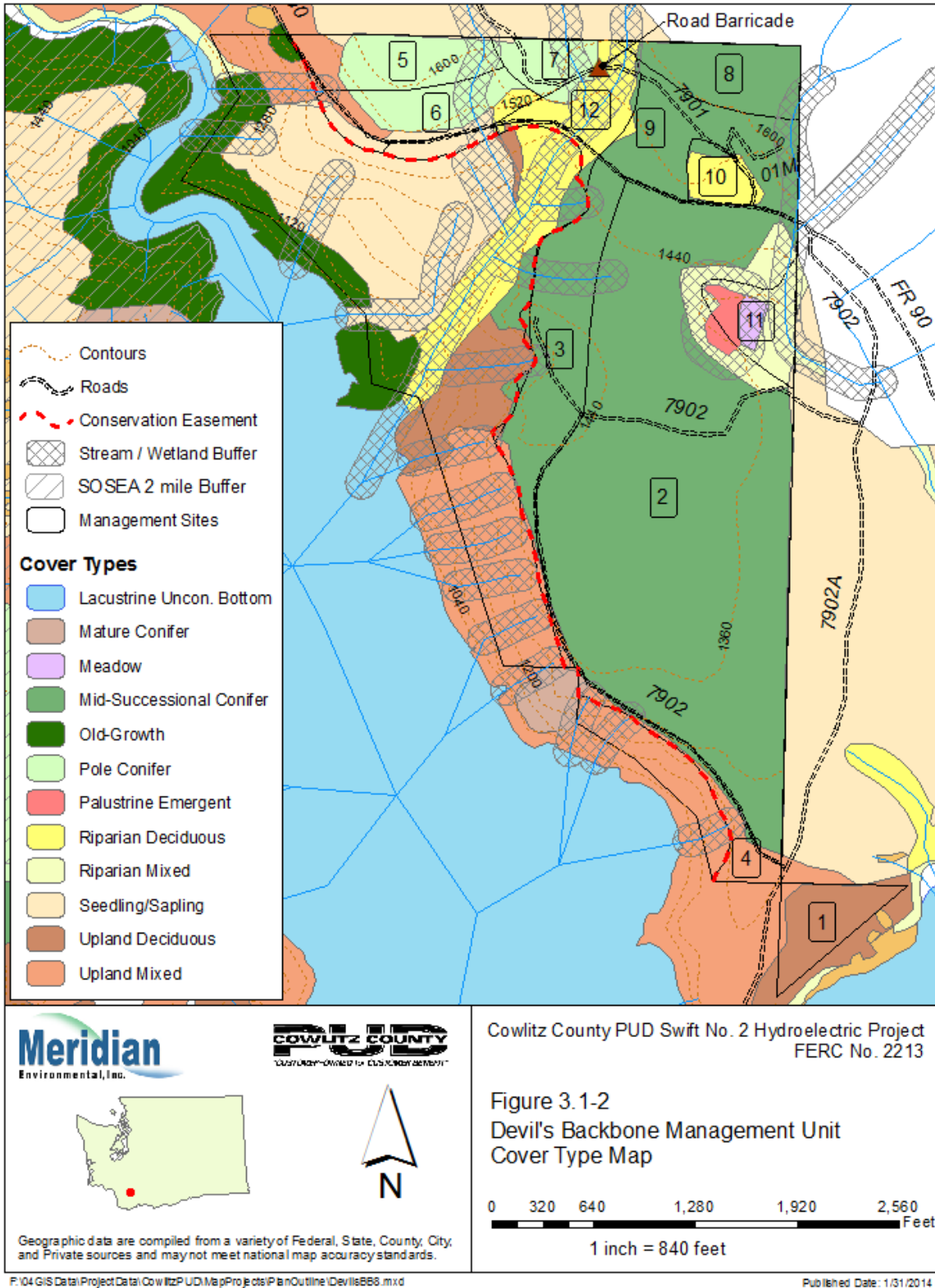
Each Site Management Plan is part of a Site File in the Swift No. 2 WMA database. Site Files are the “home” for the documentation associated with each site’s management. In addition to the Site Management Plan, each Site File includes a site map and all photos and field forms that record the results of inspections, treatments, and follow-up activities.

### 3.1 DEVIL'S BACKBONE MANAGEMENT UNIT

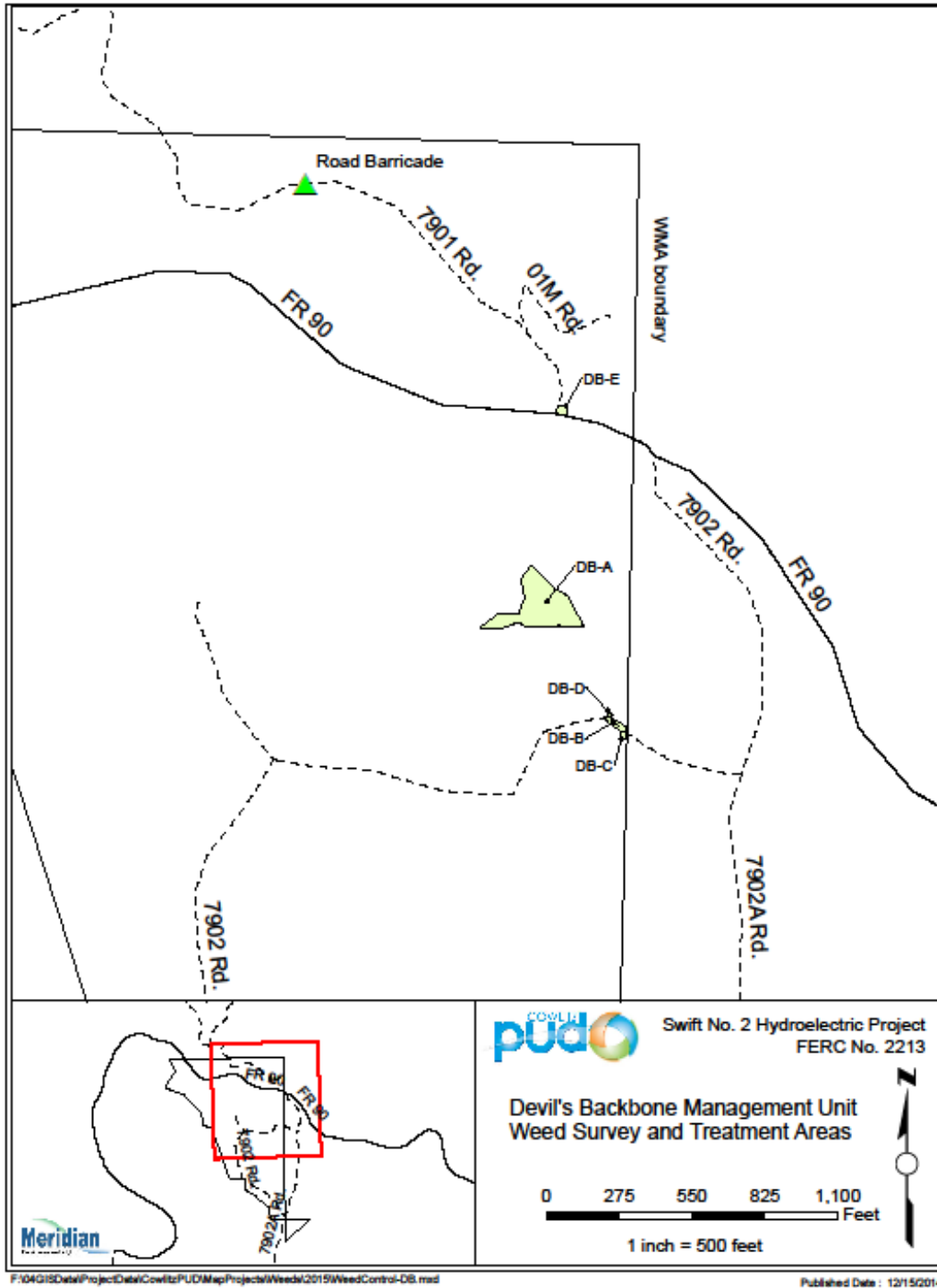
The following section provides an aerial photo of the Devil's Backbone MU (Figure 3.1-1), cover type map showing management sites (Figures 3.1-2), and Site Management Plans for sites 1 through 12. No management sites were delineated in the Devil's Backbone Conservation Covenant area because no management activities are planned, other than protection of existing habitat values.



**Figure 3.1-1. Devil's Backbone Management Unit.**



**Figure 3.1-2. Devil's Backbone Management Unit Cover Type Map.**



<b>Site Management Plan: DBMU-1</b>		
Cover type	Upland deciduous forest	
Acres	6.6	
SGD Management Goals	Forestlands: Promote forestland species composition and structures that benefit wildlife and provide an appropriate mosaic of big game hiding cover and forage.	
SGD Management Objectives	Forestland-c: At the MU level, promote habitat diversity by increasing or maintaining minor native tree species composition.	
HEP Evaluation Species and Baseline HSI	Pileated woodpecker: 0.28 Black-capped chickadee : 0.80 Elk: 0.43 in Unit S-1	
Analysis Species	Forestland: Northern flying squirrel, northern spotted owl	
Site Description	Mix of deciduous trees and conifers, including some western red cedars > 24 in. dbh.	
Site Constraints	None	
Access	FR 90 to 7902 Rd (gated near FR 90); 7902A Rd. crosses corner of site. Cowlitz PUD has easement on 7902 Rd.	
Management Strategies	Maintain as mixed stand. Manage for species and habitat diversity. Monitor and manage invasive plants and public access.	
Implementation		
Year	Planned Management Activity	Implemented Management Activity/Documentation
2009	Monitor and manage public access.	Surveys conducted May 13. No access concerns identified.
2009	Conduct invasive plant survey at 7902 Rd./7902A Rd. in May and control invasive plants as needed.	Surveys conducted May 13. No invasive plants observed within the site, but invasive plants were documented along the 7902A Rd. on adjacent property near the entrance to the Devil's Backbone MU
2010	Monitor and manage public access.	Survey conducted May 28. No access concerns identified.
2010	Contact adjacent landowner to evaluate invasive plant treatment options	Survey conducted May 28. Scotch broom documented in 2009 has been effectively treated by adjacent landowner.
2011	Monitor and manage public access.	Survey conducted June 8. No access concerns identified.
2011	Monitor invasive plants on adjacent property in conjunction with public access surveys.	Survey conducted June 8. No re-growth of Scotch broom on adjacent ownership was noted.
2012	Monitor and manage public access.	Survey conducted on July 2, 2012. Vehicular access noted on the 7902 Road, likely related to the illegal squatter's cabin on BLM land at the south end of the 7902 Rd. No access concerns noted in DBMU-1.
2012	Monitor invasive plants on adjacent property in conjunction with public access surveys.	Not done due to safety concerns related to the illegal squatter's cabin on BLM land at the south end of the 7902 Rd.
2013	Monitor and manage public access.	Survey conducted on June 28, 2013. No evidence of motorized access or other access concerns noted.
2013	Monitor invasive plants on adjacent property in conjunction with public access surveys.	Survey conducted on June 28, 2013. No re-growth of Scotch broom noted on property adjacent to DBMU-1.
2014	Monitor and manage public access.	Survey conducted on June 30, 2014. No evidence of motorized access or other access concerns noted.
2014	Monitor invasive plants on adjacent property in conjunction with public access surveys.	Survey conducted on June 30, 2014. No re-growth of Scotch broom noted on property adjacent to DBMU-1.



<b>Site Management Plan: DBMU-1</b>		
2015	Monitor and manage public access.	Survey conducted on June 24, 2015. No evidence of motorized access or other access concerns noted.
2015	Monitor invasive plants on adjacent property in conjunction with public access surveys.	Survey conducted on June 24, 2015. No re-growth of Scotch broom noted on property adjacent to DBMU-1.
2016	Monitor and manage public access.	Survey conducted on May 25, 2016. No evidence of motorized access or other access concerns noted. Squatter's cabin on BLM land at the south end of the 7902 Rd was removed December 1, 2015.
2016	Monitor invasive plants on adjacent property in conjunction with public access surveys.	Survey conducted on May 25, 2016. No re-growth of Scotch broom noted on property adjacent to DBMU-1.
2017	Monitor and manage public access.	Survey conducted on May 30, 2017. No evidence of motorized access or other access concerns noted.
2017	Monitor invasive plants on adjacent property in conjunction with public access surveys.	Survey conducted on May 30, 2017. No re-growth of Scotch broom noted on property adjacent to DBMU-1.
2018	Monitor and manage public access.	Survey conducted on May 30, 2018. No evidence of motorized access or other access concerns noted.
2018	Monitor invasive plants on adjacent property in conjunction with public access surveys.	Survey conducted on May 30, 2018. No re-growth of Scotch broom noted on property adjacent to DBMU-1.
2019	No monitoring of public access or invasive plants, to put all resources towards DBMU-2 Patch Cut.	



**Swift No. 2 WMA wildlife tree, June 2013**

<b>Site Management Plan: DBMU-2</b>		
Cover type	Mid-successional conifer forest	
Acres	104.5	
SGD Management Goals	<p><b>Old-growth:</b> Promote the development, maintenance, and connectivity of old-growth coniferous forest and/or associated habitat components for wildlife species that use old-growth habitat.</p> <p><b>Forestlands:</b> Promote forestland species composition and structures that benefit wildlife and provide an appropriate mosaic of big game hiding cover and forage.</p>	
SGD Management Objectives	<p><b>Old-growth-c:</b> Protect and manage forested buffers to promote development of large trees where appropriate. <b>Old-growth-e:</b> Within areas to be thinned to develop old-growth characteristics, leave LWD. <b>Forestland-a:</b> At the MU level, provide a range of alternatives for developing and maintaining a mix of forage and hiding cover for elk. <b>Forestland-b:</b> Maintain or create at least 8 snags, green retention trees, or wildlife reserve trees per acre, if available; retain larger trees and snags, and retain or create 4 logs/acre if possible. <b>Forestland-c:</b> At the MU level, promote habitat diversity by increasing or maintaining minor native tree species composition.</p>	
HEP Evaluation Species and Baseline HSIs	<p>Black-capped chickadee: 0.85</p> <p>Pileated woodpecker: 0.47</p> <p>Elk: 0.43 in Unit S-1</p>	
Analysis Species	<p><b>Old-growth:</b> Northern flying squirrel, marten, Larch Mountain salamander, northern spotted owl, bald eagle</p> <p><b>Forestland:</b> Northern flying squirrel, northern spotted owl</p>	
Site Description	<p>Flat site dominated by Douglas-fir and western hemlock from 8 to 18 in. dbh, with a quadratic mean diameter of 11.6 in. Stand age = 35 yrs in 2006; crown closure = 100%; canopy height = 80 ft., trees per acre = 266. Few small diameter snags, no large diameter snags, moderate LWD. Variable understory; dominated by Oregon grape and swordfern. Patchy herbaceous cover includes oxalis, inside-out flower, bedstraw, vanilla leaf.</p>	
Site Constraints	None	
Access	<p>Good: FR 90 to 7092 Rd. (gated near FR 90); 7092A Rd. crosses through stand. Cowlitz PUD has easement on 7092 Rd.</p>	
Management Strategies	<p>Consider patch cuts to mimic canopy gaps in old-growth stands and increase number of vegetation layers. Consider thinning to accelerate development of large diameter live trees and potential snags, and increase shrub and herbaceous cover that will improve elk forage. Seed disturbed soils with elk forage mix. Consider establishing and maintaining elk forage plots. Monitor and manage snags/LWD to meet target densities as trees mature. Monitor and manage invasive plants and public access.</p>	
Implementation		
Year	Planned Management Activity	Implemented Management Activity/Documentation
2009	Monitor and manage public access.	Surveys conducted on May 13. No access concerns identified.
2009	Conduct invasive plant survey at 7902 Rd. in May and control invasive plants as needed.	Surveys conducted on May 13. Invasive plants documented within project boundary along 7902 Rd. were treated with herbicide in July and September. Invasive plants also observed on adjacent property along the MU boundary.

Site Management Plan: DBMU-2 cont.		
2010	Monitor and manage public access.	Survey conducted on May 28. No access concerns identified.
2010	Conduct follow-up invasive plant surveys in May and re-treat as necessary. Contact adjacent landowner to evaluate treatment options.	Survey conducted on May 28. Scattered Canada thistle and common cat's ear remain within previously treated areas. Scotch broom treatment 100 percent effective.
2011	Monitor and manage public access.	Survey conducted on June 8. No access concerns identified.
2011	Conduct follow-up invasive plant survey in May and re-treat as necessary.	Scattered common cat's ear remains; one large, well-established Scotch broom plant observed inside WMA boundary that was overlooked in 2010 survey. Scotch broom re-sprouting vigorously on adjacent ownership, outside WMA boundary.
2012	Monitor and manage public access.	Survey conducted on July 2, 2012. Vehicular access noted on the 7902 Road, likely related to the illegal squatter's cabin on BLM land at the south end of the 7902 Rd. No access concerns noted in DBMU-2.
2012	Conduct follow-up invasive plant survey in conjunction with public access survey; remove Scotch broom inside WMA boundary using hand tools; coordinate with adjacent landowner regarding re-treatment.	Not done due to safety concerns related to the illegal squatter's cabin on BLM land at the south end of the 7902 Rd.
2013	Monitor and manage public access.	Survey conducted on June 28, 2013. No evidence of non-motorized access or other access concerns noted.
2013	Conduct follow-up invasive plant survey in conjunction with public access survey; remove Scotch broom inside WMA boundary using hand tools; coordinate with adjacent landowner regarding re-treatment.	Survey conducted on June 28, 2013. Scattered Scotch broom plants observed within the WMA boundary were sprayed in conjunction with herbicide application in DBMU-11 (DB-A) in July and September, 2013. Dense patches of Scotch broom and scattered individual plants were observed along the 7902 Road outside the WMA boundary; coordination with the adjacent landowner has been deferred until plans for forest management activities in DBMU-1 are finalized and needs for road improvements, if any, are identified.
2013	Complete planning for patch cuts, as described in Appendix B (Patch Cut Implementation Plan)	Patch cuts laid out as planned on June 20-21, 2013, and site visit with the TCC conducted on September 11, 2013. Based on TCC recommendations, the PUD requested non-binding quotes for three different forest management alternatives (patch cuts, thinning, and a combination of the two) from 12 logging firms. No firms provided quotes.
2014	Monitor and manage public access.	Survey conducted on June 30, 2014. No evidence of motorized access or other access concerns noted.
2014	Conduct follow-up invasive plant survey in conjunction with public access survey; continue to treat Scotch broom inside WMA boundary; coordinate with adjacent landowner regarding Scotch broom treatment as forest management plans are finalized.	Survey conducted on June 30, 2014. On December 10, 2014, the TCC agreed to defer forest management actions until sufficient WHMP funds have accrued.

Site Management Plan: DBMU-2, cont.		
2015	Monitor and manage public access.	Survey conducted on June 24, 2015. Observed motorcycle track, but no evidence of off-road activity.
2015	Monitor invasive plants in conjunction with public access surveys.	Survey conducted on June 24, 2015. Good control of weeds within project boundary. Scotch broom observed outside boundary. Herbicides applied to DB-A in August 2015.
2016	Monitor and manage public access.	Survey conducted on May 25, 2016. Blowdown trees continue to encroach into 7902 Road at the south end.
2016	Monitor invasive plants in conjunction with public access surveys.	Survey conducted on May 25, 2016. Scotch broom on land just east of project boundary has been treated recently and is under better control. No Scotch broom observed inside boundary.
2017	Monitor and manage public access.	Survey conducted on May 30, 2017. One patch of broken glass on 7902 Road at west end. Blowdown trees continue to encroach into 7902 Road at the south end.
2017	Monitor invasive plants in conjunction with public access surveys.	Survey conducted on May 30, 2017. A few Scotch broom on adjacent property are regenerating, but none observed inside boundary.
2018	Monitor and manage public access.	Survey conducted on May 30, 2018. Some additional blowdown along the 7902 Road at the south end, which assists in preventing public access.
2018	Monitor invasive plants in conjunction with public access surveys.	Survey conducted on May 30, 2018. Scotch broom on adjacent property was treated successfully, none observed inside boundary.
2018	Complete planning for patch cuts, as described in Appendix C – Patch Cut Implementation Plan.	Planning activities were completed along with the submission of a RMEF PAC Project Proposal. On December 4, 2018, Washington State Department of Natural Resources approved the submitted Alternative Plan for the 5.8-acre patch cut with no additional conditions.
2019	No monitoring of public access or invasive plants, to put all resources towards Patch Cut.	
2019	Complete bidding process, goshawk survey and harvesting, as described in Appendix C – Elk Forage Plot Treatment Prescription.	

<b>Site Management Plan: DBMU-3</b>		
Cover type	Mid-successional conifer forest	
Acres	17.2	
SGD Management Goals	<p><b>Old-growth:</b> Promote the development, maintenance, and connectivity of old-growth coniferous forest and/or associated habitat components for wildlife species that use old-growth habitat.</p> <p><b>Forestlands:</b> Promote forestland species composition and structures that benefit wildlife and provide an appropriate mosaic of big game hiding cover and forage.</p>	
SGD Management Objectives	<p><b>Old growth-c:</b> Protect and manage forested buffers to promote development of large trees where appropriate. <b>Old-growth-e:</b> Within areas to be thinned to develop old-growth characteristics, leave LWD. <b>Forestland-a:</b> At the MU level, provide a range of alternatives for developing and maintaining a mix of forage and hiding cover for elk. <b>Forestland-b:</b> Maintain or create at least 8 snags, green retention trees, or wildlife reserve trees per acre, if available; retain larger trees and snags, and retain or create 4 logs/acre if possible. <b>Forestland-c:</b> At the MU level, promote habitat diversity by increasing or maintaining minor native tree species composition.</p>	
HEP Evaluation Species and Baseline HSIs	<p>Black-capped chickadee: 0.85</p> <p>Pileated woodpecker: 0.47</p> <p>Elk: 0.43 in Unit S-1</p>	
Analysis Species	<p><b>Old-growth:</b> Northern flying squirrel, marten, Larch Mountain salamander, northern spotted owl, bald eagle</p> <p><b>Forestland:</b> Northern flying squirrel, northern spotted owl</p>	
Site Description	Flat site dominated by Douglas-fir and western hemlock from 8 to 18 in. dbh.	
Site Constraints	None	
Access	Good: FR 90 to 7902 Rd. (gated near FR 90), which crosses through stand. Cowlitz PUD has easement on 7902 Rd.	
Management Strategies	<p>Consider 1) patch cuts to mimic canopy gaps in old-growth stands and increase number of vegetation layers; 2) thinning to accelerate development of large diameter live trees and potential snags, and increase shrub and herbaceous cover that will improve elk forage, and seed disturbed soils with elk forage mix; and 3) establishing and maintaining elk forage plots. Monitor and manage snags/LWD to meet target densities as trees mature. Monitor and manage invasive plants and public access.</p>	
<b>Implementation</b>		
Year	Planned Management Activity	Implemented Management Activity/Documentation
2009	Monitor and manage public access.	Surveys conducted on May 13. No access concerns identified.
2009	Conduct invasive plant survey at 7902 Rd. in May and control invasive plants as needed.	Surveys conducted on May 13. No invasive plants observed. Low priority for additional weed surveys.
2010	Monitor and manage public access.	Survey conducted on May 28. No access concerns identified.
2011	Monitor and manage public access.	Survey conducted on June 8. No access concerns identified.
2012	Monitor and manage public access.	Survey conducted on July 2, 2012. Vehicular access noted on the 7902 Road, likely related to the illegal squatter's cabin on BLM land at the south end of the 7902 Rd. No access concerns noted in DBMU-3.

<b>Site Management Plan: DBMU-3, cont.</b>		
2013	Monitor and manage public access.	Survey conducted on June 28, 2013. No evidence of non-motorized access or other access concerns noted.
2013	Complete planning for patch cuts, as described in Appendix B (Patch Cut Implementation Plan)	No patch cuts were sited in DBMU-3 (see above, DBMU-2).
2014	Monitor and manage public access.	Survey conducted on June 30, 2014. No evidence of non-motorized access or other access concerns noted.
2015	Monitor and manage public access.	Survey conducted on June 24, 2015. Observed motorcycle track, but no evidence of off-road activity.
2016	Monitor and manage public access.	Survey conducted on May 25, 2016. No evidence of non-motorized access or other access concerns noted.
2017	Monitor and manage public access.	Survey conducted on May 30, 2017. No evidence of non-motorized access or other access concerns noted.
2018	Monitor and manage public access.	Survey conducted on May 30, 2018. No evidence of non-motorized access or other access concerns noted.
2019	No monitoring of public access or invasive plants, to put all resources towards DBMU-2 Patch Cut.	

<b>Site Management Plan: DBMU-4</b>		
Cover type	Upland mixed forest	
Acres	4.3	
SGD Management Goal	Forestlands: Promote forestland species composition and structures that benefit wildlife and provide an appropriate mosaic of big game hiding cover and forage.	
SGD Management Objectives	Forestland-a: At the MU level, provide a range of alternatives for developing and maintaining a mix of forage and hiding cover for elk. Forestland-b: Maintain or create at least 8 snags, green retention trees, or wildlife reserve trees per acre, if available; retain larger trees and snags, and retain or create 4 logs/acre if possible. Forestland-c: At the MU level, promote habitat diversity by increasing or maintaining minor native tree species composition.	
HEP Evaluation Species and Baseline HSI	Black-capped chickadee: 0.71 Pileated woodpecker: 0.19 Elk: 0.43 in Unit S-1	
Analysis Species	Northern flying squirrel, northern spotted owl	
Site Description	Primarily Douglas-fir and hemlock, 8 to 18" dbh, with some big-leaf maple and alder growing on western edge.	
Site Constraints	Narrow, linear configuration between project road and steep slope down to the Conservation Easement boundary. One intermittent stream/stream buffer.	
Access	Good: adjacent to 7902 Rd. (gated near FR 90). Cowlitz PUD has easement on 7902 Rd.	
Management Strategies	Maintain as buffer between road and Conservation Easement. Manage for species and habitat diversity. Monitor and manage invasive plants and public access.	
Implementation		
Year	Planned Management Activity	Implemented Management Activity/Documentation
2009	Monitor and manage public access.	Surveys conducted on May 13. No access concerns identified.
2009	Conduct invasive plant survey at 7902 Rd. in May and control invasive plants as needed.	Surveys conducted May 13. No invasive plants observed within the site boundary, but documented on adjacent property.
2010	Monitor and manage public access.	Survey conducted on May 28. No access concerns identified.
2010	Contact adjacent landowner to evaluate invasive plant treatment options.	Survey conducted on May 28 indicated Scotch broom effectively treated by adjacent landowner.
2011	Monitor and manage public access.	Survey conducted on June 8. No access concerns identified.
2011	Monitor Scotch broom in conjunction with public access surveys.	Survey conducted on June 8 indicated no re-growth of Scotch broom on adjacent land ownership.
2012	Monitor and manage public access.	Survey conducted on July 2, 2012. Vehicular access noted on the 7902 Road, likely related to the illegal squatter's cabin on BLM land at the south end of the 7902 Rd. No access concerns noted in DBMU-4.
2012	Monitor Scotch broom in conjunction with public access surveys.	Not noted during July access survey.
2013	Monitor and manage public access.	Survey conducted on June 28, 2013. No evidence of motorized access or other access concerns noted.
2013	Monitor Scotch broom in conjunction with public access surveys.	Survey conducted on June 28, 2013. No re-growth of Scotch broom noted on property adjacent to DBMU-4.

<b>Site Management Plan: DBMU-4</b>		
2014	Monitor and manage public access.	Survey conducted on June 30, 2014. One tree was cut and bucked but there is no evidence of motorized access.
2014	Monitor invasive plants in conjunction with public access surveys.	Survey conducted on June 30, 2014. No re-growth of Scotch broom noted on property adjacent to DBMU-4.
2015	Monitor and manage public access.	Survey conducted on June 24, 2015. Observed motorcycle track, but no evidence of off-road activity.
2015	Monitor invasive plants in conjunction with public access surveys.	Survey conducted on June 24, 2015.
2016	Monitor and manage public access.	Survey conducted on May 25, 2016. Blowdown trees continue to encroach into 7902 Road at the south end.
2016	Monitor invasive plants in conjunction with public access surveys.	Survey conducted on May 25, 2016. No Scotch broom observed inside property boundary.
2017	Monitor and manage public access.	Survey conducted on May 30, 2017. Blowdown trees continue to encroach into 7902 Road at the south end.
2017	Monitor invasive plants in conjunction with public access surveys.	Survey conducted on May 30, 2017. No invasive species observed inside property boundary.
2018	Monitor and manage public access.	Survey conducted on May 30, 2018. Some additional blowdown along the 7902 Road at the south end, which assists in preventing public access.
2018	Monitor invasive plants in conjunction with public access surveys.	Survey conducted on May 30, 2018. No invasive species observed inside property boundary.
2019	No monitoring of public access or invasive plants, to put all resources towards DBMU-2 Patch Cut.	



<b>Site Management Plan: DBMU-5</b>		
Cover type	Pole conifer forest	
Acres	8.8	
SGD Management Goal	<b>Forestlands:</b> Promote forestland species composition and structures that benefit wildlife and provide an appropriate mosaic of big game hiding cover and forage.	
SGD Management Objectives	<b>Forestland-b:</b> Maintain or create at least 8 snags, green retention trees, or wildlife reserve trees per acre, if available; retain larger trees and snags, and retain or create 4 logs/acre if possible. <b>Forestland-c:</b> At the MU level, promote habitat diversity by increasing or maintaining minor native tree species composition.	
HEP Evaluation Species and Baseline HSI	Black-capped chickadee: 0.43 Pileated woodpecker: 0.18 Elk: 0.43 in Unit S-1	
Analysis Species	<b>Forestland:</b> Northern flying squirrel, northern spotted owl	
Site Description	Primarily Douglas-fir and western hemlock	
Site Constraints	Steep slopes, possible wet soils.	
Access	Bordered by FR 90 on the west. 7901 Rd. does not pass through site.	
Management Strategies	Manage for species and habitat diversity. Monitor and manage snags/LWD to meet target densities as trees mature. Monitor and manage invasive plants and public access.	
Implementation		
Year	Planned Management Activity	Implemented Management Activity/Documentation
2009	Monitor and manage public access.	Surveys conducted on May 13. No access concerns identified.
2010	Monitor and manage public access.	No survey conducted; 7901 Rd. does not pass through site and access from FR 90 is difficult. Low priority for additional survey.
2011	No survey planned.	No survey conducted.
2012	No survey planned.	No survey conducted.
2013	No survey planned.	No survey conducted.
2014	Monitor and manage public access.	No survey conducted; 7901 Rd. does not pass through site. Barrier in 7901 Rd intact and working well. Access from FR 90 is difficult. Low priority for additional survey.
2015	No survey planned.	No survey conducted.
2016	No survey planned.	No survey conducted.
2017	No survey planned.	No survey conducted.
2018	No survey planned.	No survey conducted.
2019	No survey planned.	

<b>Site Management Plan: DBMU-6</b>		
Cover type	Pole conifer forest	
Acres	8.2	
SGD Management Goal	<b>Forestlands:</b> Promote forestland species composition and structures that benefit wildlife and provide an appropriate mosaic of big game hiding cover and forage.	
SGD Management Objectives	<b>Forestland-b:</b> Maintain or create at least 8 snags, green retention trees, or wildlife reserve trees per acre, if available; retain larger trees and snags, and retain or create 4 logs/acre if possible. <b>Forestland-c:</b> At the MU level, promote habitat diversity by increasing or maintaining minor native tree species composition.	
HEP Evaluation Species and Baseline HSI	Black-capped chickadee: 0.43 Pileated woodpecker: 0.18 Elk: 0.43 in Unit S-1	
Analysis Species	<b>Forestland:</b> Northern flying squirrel, northern spotted owl	
Site Description	Primarily Douglas-fir and western hemlock	
Site Constraints	Steep slopes, possible wet soils.	
Access	Bordered by FR 90 on the west and south. 7901 Rd. does not pass through site.	
Management Strategies	Manage for species and habitat diversity. Monitor and manage snags/LWD to meet target densities as trees mature. Monitor and manage invasive plants and public access.	
Implementation		
Year	Planned Management Activity	Implemented Management Activity/Documentation
2009	Monitor and manage public access.	Survey conducted on May 13. No access concerns identified.
2010	Monitor and manage public access.	No survey conducted; 7901 Rd. does not pass through site and access from FR 90 is difficult. Low priority for additional survey.
2011	No survey planned.	No survey conducted.
2012	No survey planned.	No survey conducted.
2013	No survey planned.	No survey conducted.
2014	Monitor and manage public access.	No survey conducted; 7901 Rd. does not pass through site. Barrier in 7901 Rd intact and working well. Access from FR 90 is difficult. Low priority for additional survey.
2015	No survey planned.	No survey conducted.
2016	No survey planned.	No survey conducted.
2017	No survey planned.	No survey conducted.
2018	No survey planned.	No survey conducted.
2019	No survey planned.	

<b>Site Management Plan: DBMU-7</b>		
Cover type	Pole conifer forest	
Acres	4.3	
SGD Management Goal	<b>Forestlands:</b> Promote forestland species composition and structures that benefit wildlife and provide an appropriate mosaic of big game hiding cover and forage.	
SGD Management Objectives	<b>Forestland-b:</b> Maintain or create at least 8 snags, green retention trees, or wildlife reserve trees per acre, if available; retain larger trees and snags, and retain or create 4 logs/acre if possible. <b>Forestland-c:</b> At the MU level, promote habitat diversity by increasing or maintaining minor native tree species composition.	
HEP Evaluation Species and Baseline HSI	Black-capped chickadee: 0.43 Pileated woodpecker: 0.18 Elk: 0.43 in Unit S-1	
Analysis Species	<b>Forestland:</b> Northern flying squirrel, northern spotted owl	
Site Description	Primarily Douglas-fir and western hemlock	
Site Constraints	Steep slopes, possible wet soils.	
Access	FR 90 to 7901 Rd.	
Management Strategies	Manage for species and habitat diversity. Monitor and manage snags/LWD to meet target densities as trees mature. Monitor and manage invasive plants, public access, and erosion along 7901 Rd.	
Implementation		
Year	Planned Management Activity	Implemented Management Activity/Documentation
2009	Monitor and manage public access.	Survey conducted on May 13. No access concerns identified.
2009	Monitor and manage invasive plant species in conjunction with public access surveys.	No invasive plant species observed during survey along 7901 Rd. Low priority for additional survey.
2010	Monitor and manage public access.	Survey conducted on May 28. No access concerns identified. Low priority for additional survey.
2011	Monitor and manage public access.	Survey conducted on June 8. Kelly humps have been repaired, small diameter trees removed from road margin, and unauthorized access is possible via 4-wheel drive.
2011	Monitor and manage invasive plant species in conjunction with public access surveys.	Survey conducted on June 8. Scattered Scotch broom along both road margins near Kelly hump repair site.
2012	Monitor effectiveness of gate or barricade planned for installation in spring of 2012.	Survey conducted on May 17, 2012. Unauthorized access, dispersed camping, and littering continue to occur. Barricade completed in July, 2012.
2012	Monitor and manage invasive plant species in conjunction with public access surveys.	No survey done. Barricade completed in July, 2012.
2013	Monitor and manage public access, including evaluation of barricade effectiveness.	Survey conducted on June 28, 2013. Barricade and road closure signs in good repair; no evidence of attempts to bypass the barricade.
2013	Monitor and manage invasive plant species in conjunction with public access surveys.	Survey conducted on June 28, 2013. A few Scotch broom plants both north and south of the barricade.
2014	Monitor and manage public access, including evaluation of barricade effectiveness.	Survey conducted on June 30, 2014, Barrier in 7901 Rd intact and working well. No evidence of attempts to drive over or around it.
2014	Monitor and manage invasive plant species in conjunction with public access surveys.	Survey conducted on June 30, 2014. No Scotch broom observed, but a few bull thistles at the barrier, and a few tansy

<b>Site Management Plan: DBMU-7</b>		
		ragwort, oxeye daisy, St. John's wort individuals and scattered common cats'-ear above the barrier.
2015	Monitor and manage public access, including evaluation of barricade effectiveness.	Survey conducted on June 24, 2015. Barrier in 7901 Rd intact and working well. No evidence of attempts to drive over or around it.
2015	Monitor and manage invasive plant species in conjunction with public access surveys.	Survey conducted on June 24, 2015. No tansy or St John's wort observed above the barrier. Cut the single bull thistle above the barrier.
2016	Monitor and manage public access, including evaluation of barricade effectiveness.	Survey conducted on May 25, 2016. Barrier in 7901 Rd intact and working well. No evidence of attempts to drive over or around it.
2016	Monitor and manage invasive plant species in conjunction with public access surveys.	Survey conducted on May 25, 2016. No invasive species observed.
2017	Monitor and manage public access, including evaluation of barricade effectiveness.	Survey conducted on May 30, 2017. Barrier in 7901 Rd intact and working well. Truck tire tracks present before barrier and slope failure blowdown. One campfire present near barrier.
2017	Monitor and manage invasive plant species in conjunction with public access surveys.	Survey conducted on May 30, 2017. No invasive species observed.
2018	Monitor and manage public access, including evaluation of barricade effectiveness.	Survey conducted on May 30, 2018. Barrier in 7901 Rd intact and working well. Slope failure blowdown downhill of barricade has been cut and wood has been removed, so road is no longer blocked. New blowdown across road uphill of barricade. Two new campfires present before barrier.
2018	Monitor and manage invasive plant species in conjunction with public access surveys.	Survey conducted on May 30, 2018. One foxglove rosette hand pulled during survey.
2019	No monitoring of public access or invasive plants, to put all resources towards DBMU-2 Patch Cut.	

<b>Site Management Plan: DBMU-8</b>		
Cover type	Mid-successional conifer forest	
Acres	8.6	
SGD Management Goal	<b>Forestlands:</b> Promote forestland species composition and structures that benefit wildlife and provide an appropriate mosaic of big game hiding cover and forage.	
SGD Management Objectives	<b>Forestland-b:</b> Maintain or create at least 8 snags, green retention trees, or wildlife reserve trees per acre, if available; retain larger trees and snags, and retain or create 4 logs/acre if possible. <b>Forestland-c:</b> At the MU level, promote habitat diversity by increasing or maintaining minor native tree species composition.	
HEP Evaluation Species and Baseline HSI	Black-capped chickadee: 0.85 Pileated woodpecker: 0.47 Elk: 0.43 in Unit S-1	
Analysis Species	<b>Forestland:</b> Northern flying squirrel, northern spotted owl	
Site Description	Primarily Douglas-fir and western hemlock, 8 to 18" dbh.	
Site Constraints	Possible wet soils.	
Access	FR 90 to 7901 Rd. 7901 Rd. does not pass through site.	
Management Strategies	Manage for species and habitat diversity. Monitor and manage snags/LWD to meet target densities as trees mature. Monitor and manage invasive plants and public access.	
Implementation		
Year	Planned Management Activity	Implemented Management Activity/Documentation
2009	Monitor and manage public access.	Surveys conducted on May 13. No access concerns identified.
2009	Conduct invasive plant survey at 7901 Rd. in May and control invasive plants as needed.	7901 Rd. does not pass through DBMU-8, so invasive plant survey did not cover this site.
2010	Monitor and manage public access.	Survey conducted on May 28. No access concerns identified. Low priority for additional survey.
2011	No survey planned	No survey conducted.
2012	No survey planned.	No survey conducted.
2013	No survey planned.	No survey conducted.
2014	Monitor and manage public access.	No survey conducted; 7901 Rd. does not pass through site. Barrier in 7901 Rd intact and working well. Access from FR 90 is difficult. Low priority for additional survey.
2015	No survey planned.	No survey conducted.
2016	No survey planned.	No survey conducted.
2017	No survey planned.	No survey conducted.
2018	No survey planned.	No survey conducted.
2019	No survey planned.	

<b>Site Management Plan: DBMU-9</b>		
Cover type	Mid-successional conifer forest	
Acres	13.2	
Site Review Type	Vegetation cover typing, aerial photo review	
SGD Management Goal	<b>Forestlands:</b> Promote forestland species composition and structures that benefit wildlife and provide an appropriate mosaic of big game hiding cover and forage.	
SGD Management Objectives	<b>Forestland-b:</b> Maintain or create at least 8 snags, green retention trees, or wildlife reserve trees per acre, if available; retain larger trees and snags, and retain or create 4 logs/acre if possible. <b>Forestland-c:</b> At the MU level, promote habitat diversity by increasing or maintaining minor native tree species composition.	
HEP Evaluation Species and Baseline HSIs	Black-capped chickadee: 0.85 Pileated woodpecker: 0.47 Elk: 0.43 in Unit S-1	
Analysis Species	<b>Forestland:</b> Northern flying squirrel, northern spotted owl	
Site Description	Primarily Douglas-fir and western hemlock, 8 to 18" dbh.	
Site Constraints	Possible wet soils.	
Access	Bordered by FR 90 on the south; 7901 Rd. and 01M Rd. pass through site.	
Management Strategies	Manage for species and habitat diversity. Monitor and manage snags/LWD to meet target densities as trees mature. Monitor and manage invasive plants, public access, and erosion.	
<b>Implementation</b>		
Year	Planned Management Activity	Implemented Management Activity/Documentation
2009	Monitor and manage public access.	Survey conducted on May 13. No access concerns identified. Erosion in the road cut at intersection of 7901 Rd. and 01M roads, but no soil disturbance or loss of vegetation within the site itself. Erosion within 7901 Rd. roadbed between 01M Rd. and FR 90.
2009	Monitor and manage invasive plant species.	Survey conducted on May 13. No invasive plant species observed. Low priority for future surveys.
2010	Monitor and manage public access; monitor erosion.	Survey conducted on May 28. A few signs of unauthorized (motorized) access (dishwasher dumped over the side of the road, and some litter observed). No change in erosion, no soil disturbance or loss of vegetation within DBMU-9.
2011	Monitor and manage public access; monitor erosion.	Survey conducted on June 8. Kelly humps have been repaired, small diameter trees removed from road margin, and unauthorized access is possible via 4-wheel drive. No change in erosion noted at broken culvert upslope of the 7901 Rd. near the junction with the 01M Rd.; no soil disturbance or loss of vegetation within DBMU-9.
2011	Monitor and manage invasive plant species in conjunction with public access surveys.	No invasive plant species observed inside WMA boundary. Scotch broom along both road margins near Kelly hump repair site.
2012	Monitor effectiveness of gate or barricade planned for installation in spring of 2012. Continue to monitor erosion.	Survey conducted on May 17, 2012. Unauthorized access, dispersed camping and littering continue to occur. Barricade completed in July, 2012.
2012	Monitor and manage invasive plant species in conjunction with public access surveys.	No survey done. Barricade completed in July, 2012.

<b>Site Management Plan: DBMU-9</b>		
2013	Monitor and manage public access, including evaluation of barricade effectiveness.	Survey conducted on June 28, 2013. Barricade and road closure signs in good repair; no evidence of attempts to bypass the barricade.
2013	Monitor and manage invasive plant species in conjunction with public access surveys.	Survey conducted on June 28, 2013. A few Scotch broom plants both north and south of the barricade.
2014	Monitor and manage public access, including evaluation of barricade effectiveness.	Survey conducted on June 30, 2014. Barrier in 7901 Rd intact and working well, no evidence of attempts to drive over or around it. No evidence of human activity on 01M Rd.
2014	Monitor and manage invasive plant species.	Survey conducted on June 30, 2014; no invasives noted in DBMU-9.
2015	Monitor and manage invasive species and public access	Survey conducted on June 24, 2015; no invasives noted. One road closed sign needs repair.
2016	Monitor and manage invasive species and public access.	Survey conducted on May 25, 2016. No invasive species observed. Vehicle tracks visible in a couple spots.
2017	Monitor and manage invasive species and public access. Replace one "Road Closed" sign and re-install one sign.	Survey conducted May 30, 2017. No invasive species observed. Tracks on road and campfires indicate motorized and non-motorized access. Signs installed.
2018	Monitor and manage invasive species and public access. Check leaning "Road Closed" sign and re-install if needed.	Survey conducted May 30, 2018. No invasive species observed. Tracks on road and campfires indicate motorized and non-motorized access. Sign is still in place.
2019	No monitoring of public access or invasive plants, to put all resources towards DBMU-2 Patch Cut.	

<b>Site Management Plan: DBMU-10</b>		
Cover type	Riparian Deciduous Forest	
Acres	3.1	
Site Review Type	Vegetation cover typing, aerial photo review, visual walk-through 9/1/05 and 6/14/06	
SGD Management Goal	<b>Riparian:</b> Protect, maintain, and/or enhance riparian areas to include a diversity of native plant species and vegetation structures to benefit wildlife species that use riparian habitats.	
SGD Management Objectives	<b>Riparian-a:</b> Identify and establish buffers. <b>Riparian d:</b> Protect existing large snags. <b>Riparian-e:</b> As part of implementation of WHMP, identify riparian sites damaged by anthropogenic processes and prepare restoration plans within 5 years, if feasible.	
HEP Evaluation Species and Baseline HSIs	Black-capped chickadee: 0.19 Pileated woodpecker: 0.32 Yellow warbler: 0.65 Elk: 0.43 in Unit S-1	
Analysis Species	Cascade torrent salamander, papillose tail-dropper	
Site Description	Red alder overstory, sparse mid-story shrub and understory forb component, bisected by an unnamed stream. Western Hemlock/Coolwort Foamflower PA, with several old, large diameter hemlock stumps, but no snags and little LWD.	
Site Constraints	Seasonal flooding, wet soils, stream buffer.	
Access	Bordered by FR 90 on the south; 7901 on the east.	
Management Strategies	Manage for species and habitat diversity. Monitor and manage invasive plants, public access and erosion along 7901/01M Rd.	
Implementation		
Year	Planned Management Activity	Implemented Management Activity/Documentation
2009	Monitor and manage public access.	Survey conducted May 13, 2009. No access concerns identified. Erosion within 7901 Rd. roadbed between intersection with 01M Rd. and FR 90.
2009	Conduct invasive plant survey at 7901 Rd. in May and control invasive plants as needed.	Survey conducted May 13, 2009. Invasive plant species documented at intersection of 7901 Rd. and FR 90.
2010	Monitor and manage public access; monitor erosion.	Survey conducted May 28. A few signs of unauthorized (motorized) access (dishwasher dumped over the side of the road, and some litter observed). No change in erosion, no soil disturbance or loss of vegetation within DBMU-10.
2010	Treat invasive plant species, as needed.	Weeds growing at the intersection of the 7901 Rd. and FR 90 are within the FR 90 right-of-way. Weeds at this site appear to have been sprayed in 2009.
2011	Monitor and manage public access.	Survey conducted on June 8. Kelly humps have been repaired, small diameter trees removed from road margin, and unauthorized access is possible via 4-wheel drive. No change in roadbed erosion near junction with FR 90.
2011	Monitor invasive plants adjacent to project boundary.	No invasive plant species observed inside WMA boundary. Scotch broom along both road margins near Kelly hump repair site, outside WMA boundary.



<b>Site Management Plan: DBMU-10</b>		
2012	Monitor effectiveness of gate or barricade planned for installation in spring of 2012. Continue to monitor erosion.	Survey conducted on May 17, 2012. Unauthorized access, dispersed camping and littering continue to occur. Barricade completed in July, 2012. An increase in public access and littering south of the barricade was observed during fall 2012 site visits.
2012	Monitor and manage invasive plant species in conjunction with public access surveys.	No survey done. Barricade completed in July, 2012.
2013	Monitor and public access, including evaluation of barricade effectiveness.	Survey conducted on June 28, 2013. Barricade and road closure signs in good repair; no evidence of attempts to bypass the barricade.
2013	Monitor and manage invasive plant species.	Survey conducted on June 28, 2013. A few Scotch broom plants both north and south of the barricade.
2014	Monitor and manage public access.	Survey conducted on June 30, 2014. Barrier in 7901 Rd intact and working well, no evidence of attempts to drive over or around it.
2014	Monitor and manage invasive plant species.	Survey conducted on June 30, 2014; no invasives noted
2014	Evaluate habitat conditions, including riparian habitat and conifer regeneration within alder-dominated stand, and wildlife use.	Signs of elk use; no evidence of other disturbance. Conifer regeneration scattered, with numerous saplings but few seedlings observed.
2015	Monitor and manage public access.	Survey conducted on June 24, 2015. Old erosion on 7901 Rd healing. One Road Closed sign missing, one needs repair.
2015	Monitor and manage invasive plant species.	Conducted Initial Invasive Species Survey on June 24, 2015. No invasive species observed, no vectors for spread, low priority for monitoring,
2016	Monitor and manage public access.	Survey conducted on May 25, 2016. Vehicle tracks visible in a couple spots.
2017	Monitor and manage public access. Replace one "Road Closed" sign and re-install one sign.	Survey conducted May 30, 2017. Tracks on road and campfires indicate motorized and non-motorized access. Signs installed.
2018	Monitor and manage public access. Check leaning "Road Closed" sign and re-install if needed.	Survey conducted May 30, 2018. Tracks on road and campfires indicate motorized and non-motorized access. Sign is still in place.
2019	No monitoring of public access or invasive plants, to put all resources towards DBMU-2 Patch Cut.	

<b>Site Management Plan: DBMU-11</b>		
Cover type	Palustrine Emergent Marsh/Meadow/Riparian Mixed Forest	
Acres	PEM 1.8 ac.; MD 1.0 ac.; RM 3.4 ac.	
Review Type	Vegetation cover typing, aerial photo review, walk-throughs 9/1/05, 6/14/06, 9/9/08, and 4/16/09	
SGD Management Goals	<b>Wetland:</b> Protect, maintain, and/or enhance wetlands to provide a diversity of habitat types for native amphibians, waterfowl, and other wildlife species. <b>Meadow:</b> Perpetuate and enhance to benefit elk and other species that use open habitats. <b>Forestland:</b> Promote forestland species composition and structures that benefit wildlife and provide an appropriate mosaic of big game hiding cover and forage.	
SGD Management Objectives	<b>Wetland-e:</b> Identify and establish buffers to maintain and protect wetland habitat and functions. <b>Meadow-c:</b> Manage select meadows and old fields over the license periods to prevent shrub/tree encroachment, and maintain a diverse composition and structure of desirable grasses and forbs for birds and mammals. <b>Forestland-c:</b> At the MU level, promote forest habitat diversity for wildlife by increasing or maintaining minor native tree species composition where appropriate site conditions exist over the life of the licenses.	
HEP Evaluation Species and Baseline HSIs	Black-capped chickadee: 0.58 Pileated woodpecker: 0.46 Elk: 0.43 in Unit S-1 No suitable habitat for yellow warbler (wetland, riparian mixed forest) or Savannah sparrow (meadow)	
Analysis Species	<b>Wetland:</b> No suitable habitat for wetland associated analysis species (beaver, great blue heron (rookeries), wood duck). <b>Meadow:</b> elk (no suitable habitat for Savannah sparrow). <b>Forestland:</b> Northern flying squirrel, northern spotted owl.	
Site Description	Sedge and grass wetland/meadow with 100% herbaceous cover within narrow band of mixed riparian forest. Scattered snowberry and vine maple shrub in meadow shows signs of heavy browsing. Several small diameter standing snags and small diameter woody debris. Non-native invasive plants observed, that may provide elk forage (e.g., clovers), but Canada thistle also abundant in 2008.	
Site Constraints	Wetland buffer.	
Access	Good. FR 90 to 7902 (gated) to 7902A. Cowlitz PUD has easement on 7902 Rd.	
Management Strategies	Control conifer encroachment to maintain wetland/meadow characteristics over time. Thin forest edges to promote shrub development to improve elk forage. Monitor and manage invasive plants and public access. Consider establishing elk forage plot(s) near meadow.	
Implementation		
Year	Planned Management Activity	Implemented Management Activity/Documentation
2009	Monitor and manage public access.	Survey conducted on May 13. No access concerns identified.
2009	Flag wetland buffer boundary in May.	Weed treatment areas flagged; all were considered within wetland or riparian boundary, so wetland buffers not flagged.
2009	Conduct invasive plant survey in wetland and meadow in May and control invasive plants as needed.	Survey conducted on May 13. Weed treatments applied in July and September.
2010	Monitor and manage public access.	Survey conducted on May 28. No public access concerns identified.

<b>Site Management Plan: DBMU-11</b>		
2010	Conduct follow-up invasive plant survey of treated areas in May.	Survey conducted on May 28. Canada thistle abundance somewhat reduced.
2010	Mark the perimeter of the meadow.	Perimeter marked with 20 steel tent pegs, points GPS'd and mapped in GIS.
2011	Monitor and manage public access.	Survey conducted on June 8. No public access concerns identified.
2011	Re-treat Canada thistle and conduct follow-up survey.	Survey conducted on June 8. Canada thistle abundance similar to 2010. Herbicide applied on June 15.
2012	Monitor and manage public access.	Survey conducted on July 2, 2012. Vehicular access noted on the 7902 Road, likely related to the illegal squatter's cabin on BLM land at the south end of the 7902 Rd. No access concerns noted in DBMU-11.
2012	Conduct follow-up invasive plant survey in June; consider re-treatment in both summer and fall as budget allows.	No survey done due to safety issues. Solicited bids for weed control twice; first call resulted in 0 bidders, second call resulted in 1 bid that was deemed too costly. In August, Cowlitz PUD employees clipped seed heads off Canada thistle and tansy ragwort.
2013	Monitor and manage public access.	Survey conducted on June 28, 2013. No evidence of unauthorized access.
2013	Conduct follow-up invasive plant survey in June; consider re-treatment in both summer and fall as budget allows.	Survey conducted on June 28, 2013 indicated increasing cover of Canada thistle and tansy ragwort. Herbicide applications completed in July and September, 2013.
2014	Monitor and manage public access.	Survey conducted on June 30, 2014, No evidence of motorized access.
2014	Conduct follow-up invasive plant survey in June; evaluate success of 2013 treatments and continue to treat invasive plant species.	Survey conducted on June 30, 2014, Overall cover of Canada thistle and tansy ragwort was significantly less than observed in 2013. Site treated with Transline in June 2014.
2015	Monitor and manage public access.	Survey conducted on June 24, 2015. No evidence of motorized access.
2015	Conduct follow-up invasive plant survey in June; evaluate success of 2014 treatments and continue to treat invasive plant species.	Survey conducted on June 24, 2015. Canada thistle treatment appears effective. No tansy ragwort observed. Grasses and forbs look great.
2016	Monitor and manage public access.	Survey conducted on May 25, 2016. No evidence of motorized access.
2016	Conduct follow-up invasive plant survey in June; evaluate success of 2015 treatments, continue to treat invasive plant species.	Survey conducted on May 25, 2016. Thistle under good control – improvement from 2014 combined with 2015 treatment. Grasses and forbs look great. Foxglove and birdsfoot trefoil increasing.
2017	Monitor and manage public access.	Survey conducted on May 30, 2017. No evidence of motorized access.
2017	Conduct follow-up invasive plant survey in June; evaluate success of 2016 treatments, continue to treat invasive plant species.	Survey conducted on May 30, 2017. Thistle under good control. Foxglove much less than last year, under good control. Birdsfoot trefoil (good forage) increased from last year. One patch of hairy cat's-ear.
2018	Monitor and manage public access.	Survey conducted on May 30, 2018. No evidence of motorized access.

<b>Site Management Plan: DBMU-11</b>		
2018	Monitor and manage invasive plant species.	Survey conducted on May 30, 2018. Thistle and foxglove need treated again. Birdsfoot trefoil (good forage) is less than last year, likely due to browsing. Hairy cat's-ear patches are spreading, along with new patches.
2019	No monitoring of public access or invasive plants, to put all resources towards DBMU-2 Patch Cut.	



**Sedge in the Palustrine Emergent Marsh located next to the meadow.**

<b>Site Management Plan: DBMU-12</b>		
Cover type	Riparian deciduous forest	
Acres	6.1	
Review Type	Vegetation cover typing, aerial photo review	
SGD Management Goals	<b>Riparian:</b> Protect, maintain, and/or enhance riparian areas to include a diversity of native plant species and vegetation structures to benefit wildlife species that use riparian habitats.	
SGD Management Objectives	<b>Riparian-a:</b> Identify and establish buffers. <b>Riparian d:</b> Protect existing large snags. <b>Riparian-e:</b> As part of implementation of WHMP, identify riparian sites damaged by anthropogenic processes and prepare restoration plans within 5 years, if feasible.	
HEP Evaluation Species and Baseline HSIs	Black-capped chickadee: 0.19 Pileated woodpecker: 0.32 Yellow warbler: 0.65 Elk: 0.43 in Unit S-1	
Analysis Species	Cascade torrent salamander, papillose tail-dropper	
Site Description	Red alder overstory. Permanent stream/stream buffer in steep canyon.	
Site Constraints	Steep slopes, stream/stream buffer.	
Access	Bordered by FR 90 on the south; 7901 Rd. crosses north edge.	
Management Strategies	Maintain cover on steep slopes. Manage for species and habitat diversity. Monitor and manage public access, invasive plants, and erosion.	
Implementation		
Year	Planned Management Activity	Implemented Management Activity/Documentation
2009	Monitor and manage public access.	Survey conducted on May 13. No access concerns identified.
2010	Monitor and manage public access.	Survey conducted on May 28. No access concerns identified.
2011	Monitor and manage public access.	Survey conducted on June 8. Kelly humps have been repaired, small diameter trees removed from road margin, and unauthorized access is possible via 4-wheel drive.
2011	Monitor and manage invasive plant species in conjunction with public access surveys.	No invasive plant species observed inside WMA boundary. Scotch broom along both road margins near Kelly hump repair site.
2012	Monitor effectiveness of gate or barricade planned for installation in spring of 2012.	Survey conducted on May 17, 2012. Unauthorized access, dispersed camping and littering continue to occur. Barricade completed in July, 2012.
2012	Monitor and manage invasive plant species in conjunction with public access surveys.	No survey done. Barricade completed in July, 2012.
2013	Monitor and manage invasive plant species in conjunction with public access surveys, including evaluation of barrier effectiveness.	Survey conducted on June 28, 2013. Barricade and road closure signs in good repair; no evidence of unauthorized access. A few Scotch broom plants both north and south of the barricade.
2014	Monitor and manage invasive plant species in conjunction with public access surveys, including evaluation of barrier effectiveness	Survey conducted on June 30, 2014. Barrier in 7901 Rd intact and working well, no evidence of attempts to drive over or around it. A few bull thistle plants observed at barrier.

<b>Site Management Plan: DBMU-12</b>		
2015	Monitor and manage invasive plant species in conjunction with public access surveys, including evaluation of barrier effectiveness	Survey conducted on June 24, 2015. Barrier in 7901 Rd intact and working well, no evidence of attempts to drive over or around it. Well-established deer trails around barrier.
2016	Monitor and manage invasive plant species in conjunction with public access surveys, including evaluation of barrier effectiveness.	Survey conducted on May 25, 2016. Slope failure just south of barrier led to several trees falling across road and has exposed new soil. Elk/deer trails around the barrier also expose soil locally. No invasive plant species observed.
2017	Monitor and manage invasive plant species in conjunction with public access surveys, including evaluation of barrier effectiveness.	Survey conducted on May 30, 2017. Slope failure area contains exposed soil. Elk/deer trails around barrier are causing some soil erosion. Most of the road surface was not disturbed. No invasive plant species observed.
2018	Monitor and manage invasive plant species in conjunction with public access surveys, including evaluation of barrier effectiveness.	Survey conducted on May 30, 2018. Barrier on 7901 Rd intact and working well. Slope failure blowdown downhill of barricade has been cut and wood has been removed, so road is no longer blocked. New blowdown across road uphill of barricade. Two new campfires present before barrier. One foxglove rosette hand pulled during survey.
2019	No monitoring of public access or invasive plants, to put all resources towards DBMU-2 Patch Cut.	



**Looking south from the barrier to the slope failure along 7901 Rd.**

### 3.2 PROJECT WORKS MANAGEMENT UNIT

The following section provides an aerial photo of the Project Works MU (Figure 3.2-1), a cover type map of the Project Works MU (Figure 3.2-2), and Site Management Plans for four management classifications. These include areas that were revegetated following reconstruction of the canal in 2002 (PWMU-REV); a constructed wetland within the revegetated area (PWMU-PUB); forested areas that were not disturbed during reconstruction activities (PWMU-FOR); and the transmission line right-of-way (PWMU-ROW).



**Figure 3.2-1. Project Works Management Unit (Google Earth, August, 2012).**

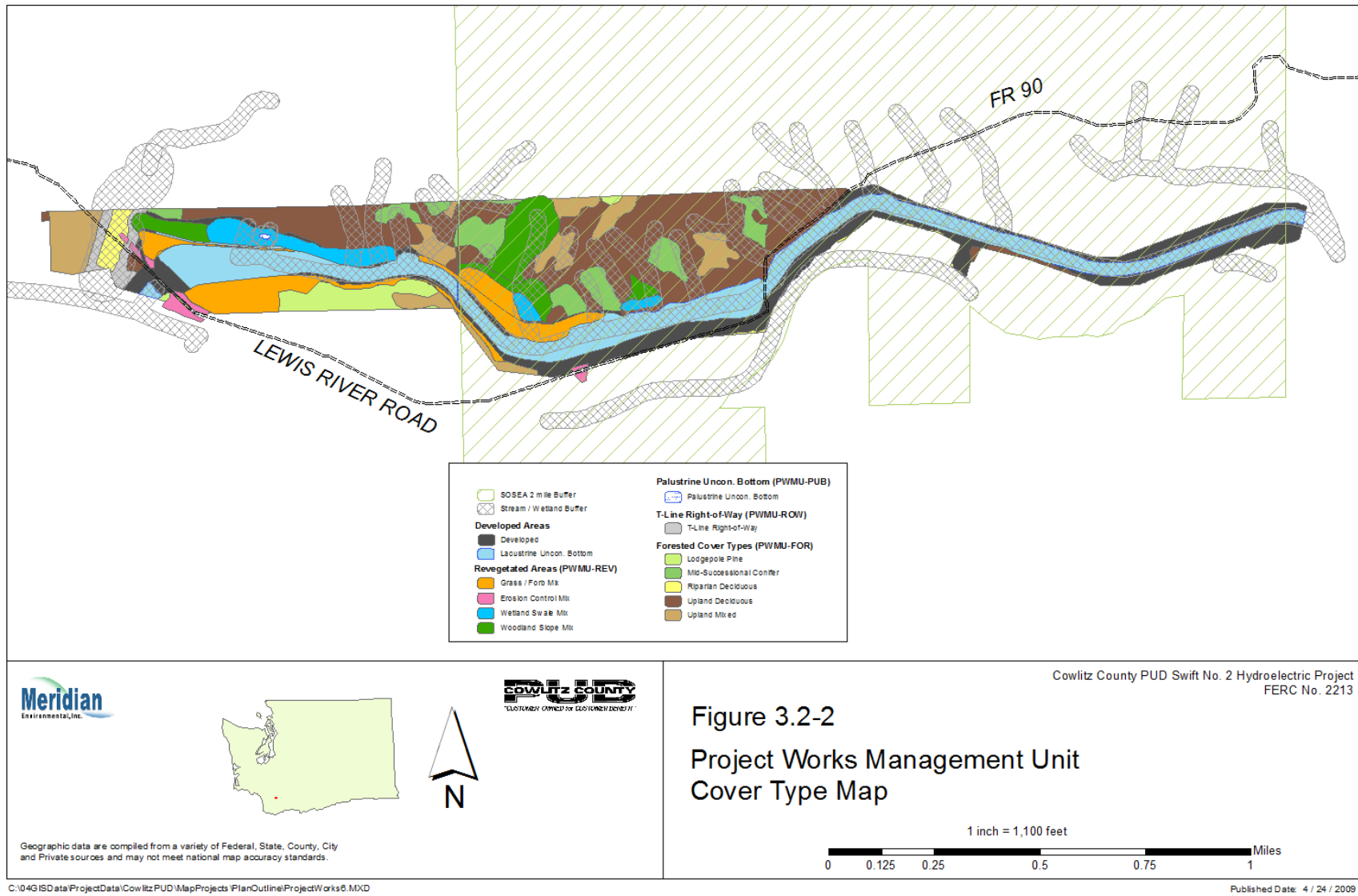


Figure 3.2-2. Project Works Management Unit Cover Type Map.



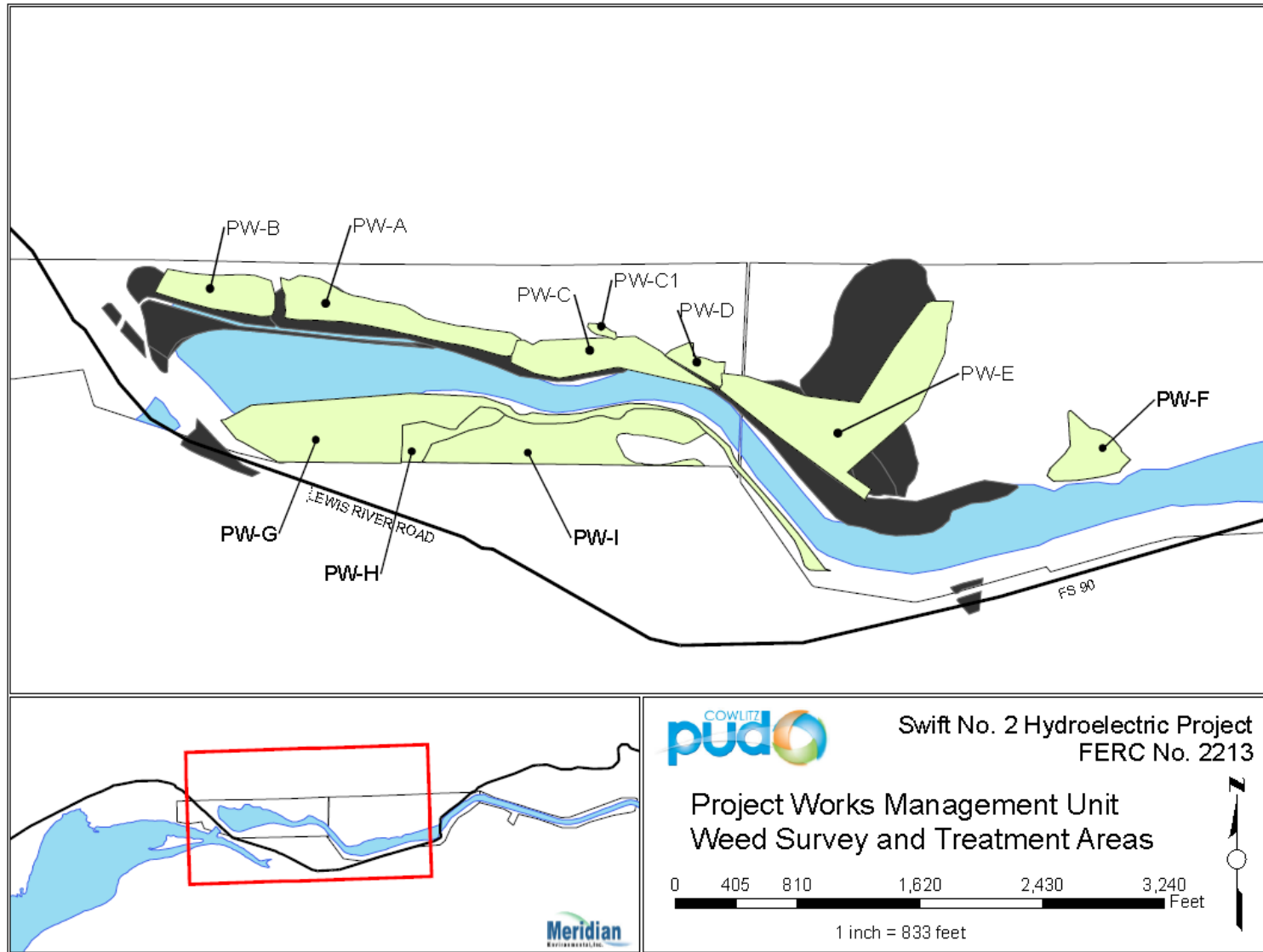


Figure 3.2-3. Project Works Management Unit Weed Survey and Treatment Areas.

<b>Site Management Plan: PWMU-REV</b>		
Cover type	Revegetated: wetland swale, woodland, forage, roadside areas	
Acres	61.82 (seeded with following mixes: 14.65 wetland; 10.54 woodland; 33.34 forage; 3.29 roadside)	
SGD Management Goals	NA	
SGD Management Objectives	NA	
HEP Evaluation Species and Baseline HSIs	NA	
Analysis Species	NA	
Site Description	Areas cleared or exposed during Swift No. 2 reconstruction, revegetated and stabilized. Areas around the wetland (PWMU-PUB) were covered with soil and large woody debris from natural slides on January 8, 2009. As a result, Cowlitz PUD reconfigured site drainage (ditches and culverts) during the summer of 2009 to minimize the risk that future landslides would interfere with project operation.	
Site Constraints	Some accessible flat areas, some very steep inaccessible areas with unstable slopes.	
Access	Good: Gated project maintenance roads.	
Management Strategies	Manage for species and habitat diversity. Monitor and manage invasive plants. <i>Note: public access is not allowed.</i>	
Implementation		
Year	Management Activity Planned	Management Activity Implemented/Documentation
2009	Flag wetland and riparian buffer boundaries in May.	Weed treatment areas flagged; all were considered within wetland or riparian boundary, so buffers not flagged.
2009	Conduct invasive plant survey in May and control invasive plants as needed.	Survey conducted May 13. Some Scotch broom hand-cut in June. Weed treatment applied (herbicides and hand-pulling) in August and September.
2009	Seed exposed soils with pasture mix in April; evaluate management needs and opportunities in May.	Exposed soils seeded in April.
2010		Planted 370 Douglas fir seedlings randomly between the transmission line and the west debris basin. Low survival due to frost damage to the seedlings in the nursery prior to planting.
2010	In May, conduct follow-up invasive plant survey of treated areas and high priority areas not yet surveyed. Control invasive plants as needed.	Follow-up survey on May 28 indicated effective Scotch broom treatment with 2009 herbicide applications. Mixed results where hand tools used for removal in February 2010; these areas re-treated by hand-pulling and digging in November, 2010. Three new areas surveyed, mapped and treated by hand-pulling and digging Himalayan blackberry, Scotch broom, and a few Canada thistle plants in November 2010.

<b>Site Management Plan: PWMU-REV</b>		
2011	Conduct initial invasive plant survey of borrow areas and follow-up invasive plant survey of treated areas in May, and control invasive plants as needed.	Survey on June 8 indicated varying levels of success in the five Weed Treatment Areas mapped and surveyed to date, i.e., good control of Scotch broom in PW-A and PW-B; incomplete treatment of Himalayan blackberry in PW-C, with new invasive species appearing; incomplete treatment of Scotch broom in PW-D, and scattered Canada thistle remaining in PW-E. Herbicide applied to Himalayan blackberry and Scotch broom on June 14.
2012	Conduct follow-up invasive plant surveys of all treated areas in June. Re-evaluate treatment approach to manage Himalayan blackberry in PW-C; re-treat Scotch broom in PW-D; use hand tools to remove Canada thistle in PW-E.	Survey not done.
2013	Conduct follow-up invasive plant surveys of all treated areas in June. Re-evaluate treatment approach to manage Himalayan blackberry in PW-C; re-treat Scotch broom in PW-D; use hand tools to remove Canada thistle in PW-E.	Herbicides were applied to weeds in PW-A, PW-B, PW-C, PW-D, and the lower section of PW-E on June 11 and 12, 2013. Weed survey conducted on June 27, 2013. Mix of natives and non-natives, including tansy ragwort and Canada thistle, growing in PW-C where Himalayan blackberry cover has been reduced, and no change observed in broom cover in PW-D.
2014	Conduct follow-up invasive plant surveys of all treated areas in June. In late fall, plant Douglas fir seedlings where Himalayan blackberry cover has been reduced in PW-C. Re-treat Scotch broom in PW-A, PW-B, and PW-D. Use hand tools or spot-spray to control weeds (primarily Canada thistle and tansy ragwort) in PW-E and PW-F.	Survey conducted on June 30, 2014. Re-growth of Scotch broom in northwest portion of PW-B, along with new observations of tansy ragwort. Occurrences of Himalayan blackberry and a few bull thistle, Canada thistle, and tansy ragwort individuals present in PW-C. Survey area of PW-C expanded, and infestation of Robert's geranium documented. A few Scotch broom in PW-D remain after fairly successful treatment in 2011. No Douglas fir seedlings planted, TCC agreed to discontinue this project. Some areas treated with herbicides in 2014, but daily pesticide application reports did not distinguish between Areas A through F and herbicide spraying for project maintenance.
2014	Install four bluebird boxes.	No bluebird boxes installed. TCC agreed to discontinue this project
2015	Conduct follow-up invasive plant surveys of all treated areas in June. Apply herbicides as appropriate.	Survey conducted on June 24, 2015. Scotch broom increasing in 2 patches on the northern side of PW-A. Areas previously treated in PW-B responded well, but high densities of Scotch broom along the forest edge above the upper maintenance road could serve as a seed source for re-infestation. Scotch broom increasing in PW-D. Applied herbicide to PW-A, B,C, C-1, D, E and F.
2016	Conduct follow-up invasive plant surveys of all treated areas in June. Apply herbicides as appropriate, particularly north of the upper maintenance road.	Survey conducted on May 25, 2016. Good control of Scotch broom in PW-A, only three live plants observed scattered within alder north of pond. Good control of Scotch broom throughout PW-B, including NW corner surveyed in 2015. Robert's geranium increasing in PW-C. Scotch broom still scattered throughout PW-D, some plants are partially treated and some growing within other shrub species. Applied herbicide to PW-A, B,C, C-1, D, E and F.

<b>Site Management Plan: PWMU-REV</b>		
2017	Conduct follow-up invasive plant surveys of all treated areas in June. Apply herbicides as appropriate, particularly north of the upper maintenance road.	Survey conducted on May 30, 2017. Good control of Scotch broom in PW-A, but Himalayan blackberry establishing around wetland and north of dirt road. Good control of Scotch broom and Himalayan blackberry throughout PW-B. In PW-C, Robert's geranium is reduced but growing back throughout the site, and Himalayan blackberry is reduced but recovering in places. Common cat's-ear and Tansy ragwort have sprouted along the access road. Scotch broom control has been successful in PW-D, but Common cat's-ear is increasing throughout the site. Applied herbicide to PW-A, B,C, C-1, D, E and F.
2018	Conduct follow-up invasive plant surveys of all treated areas in June. Apply herbicides as appropriate.	Survey conducted on May 30, 2018. Himalayan blackberry in PW-A was treated but is regenerating and also expanding around the pond. Common cat's-ear is expanding densely around the pond. PW-B was not surveyed in 2018. In PW-C, Robert's geranium has again been reduced but growing back throughout the site, and Himalayan blackberry is reduced but regenerating within treated clumps. No Tansy ragwort found and Common cat's-ear individuals remain along roadside. Foxglove and Bracken fern increasing in PW-D, but Common cat's-ear appears stable throughout the site.
2019	No monitoring of public access or invasive plants, to put all resources towards DBMU-2 Patch Cut.	



**Rough-skinned newts filled the ditch located in PW-C, May 2018.**

<b>Site Management Plan: PWMU-PUB</b>		
Cover type	Palustrine unconsolidated bottom (may develop PEM and/or PSS characteristics)	
Acres	0.1 (may be expanding)	
SGD Management Goals	NA	
SGD Management Objectives	NA	
HEP Evaluation Species and Baseline HSIs	NA. In the future, pond breeding amphibians, yellow warbler, and black-capped chickadee may apply.	
Analysis Species	NA	
Site Description	New open-water wetland developing in regraded, revegetated soils on the north side of the canal. Hydrology supplied by upslope surface flows and subsurface drainage. Wetland was partially covered with soil and large woody debris from slides that occurred following a severe rainstorm on January 8, 2009. As a result, Cowlitz PUD re-configured site drainage (ditches and culverts) during the summer of 2009 to minimize the risk that any future landslides would interfere with project operation.	
Site Constraints	None	
Access	Good: Lewis River Rd., gated project maintenance roads.	
Management Strategies	Manage for species and habitat diversity. Monitor and manage and invasive plants. <i>Note: Public access is not allowed.</i>	
Implementation		
Year	Management Activity Planned	Management Activity Implemented/Documentation
2009	Conduct invasive plant survey in May and control invasive plants as needed.	Survey conducted on May 13. Some Scotch broom removed by hand-cutting in June. Herbicide applied in August and September.
2009	Evaluate enhancement opportunities in May.	TCC developed site design in June. Berm constructed in September, soils re-seeded using a wetland mix and willow stakes planted around the margin of the pond.
2010		Site Inspection in April evaluated survival of willow stakes and effectiveness of Scotch broom removal.
2010	Conduct follow-up survey of weed treatment areas. Control invasive plants as needed.	Survey conducted on May 28 to evaluate the results of Scotch broom removal using hand tools in February 2010. Results were mixed, and WCC crews re-treated Scotch broom around the wetland in November 2010, again by hand-pulling or digging.
2010	Plant approximately 200 shrubs or cuttings.	WCC crews planted 450 shrubs (mix of cuttings and rooted stock of willow, Nootka rose, snowberry, ninebark and dogwood) around the wetland in November.
2011	Conduct invasive plant survey in May.	Survey conducted on June 8. Good control of Scotch broom.
2011	Concurrent with invasive plant survey, evaluate survival of shrubs planted in 2010.	Survey conducted on June 8. Results are described in the Annual Report. Overall survival was about 56 percent, but surviving shrubs appeared healthy, with little browse damage.
2012	Evaluate shrub status in conjunction with invasive plant survey.	No survey conducted.

<b>Site Management Plan: PWMU-PUB</b>		
2013	Evaluate shrub status in conjunction with invasive plant survey.	Survey conducted on June 27, 2013. Several live willows observed. Scattered occurrences of invasive plants and one small pocket of Scotch broom remaining.
2014	Conduct invasive plant survey in June and treat weed occurrences in July and September.	Survey conducted on June 30, 2014. No live Scotch broom observed. Some areas treated with herbicides in 2014 but daily pesticide application reports did not distinguish between Areas A through F and herbicide spraying for project maintenance.
2014	Plant shrubs in wetland/upland transition areas in late October/November (See Appendix C).	No shrubs planted. TCC agreed to discontinue this project.
2015	Conduct invasive plant survey in June and treat weed occurrences in July and September.	Survey conducted on June 24, 2015. Herbicides applied as necessary to surrounding area in August 2015. Open water decreasing as soft rush increases.
2016	Conduct invasive plant survey in June and treat as necessary.	Survey conducted on May 25, 2016. Open water continues to decrease. No invasive plant species observed.
2017	Conduct invasive plant survey in June and treat as necessary.	Survey conducted on May 30, 2017. Open water continues to decrease. Himalayan blackberry is beginning to establish northwest and west of pond.
2018	Conduct invasive plant survey in June and treat as necessary.	Survey on May 30, 2018. Pond is regenerating very well with native vegetation. Himalayan blackberry was treated but is regenerating and also expanding around the pond. Common cat's-ear is expanding densely around the pond.
2019	No monitoring of public access or invasive plants, to put all resources towards DBMU-2 Patch Cut.	



**Open water continues to decrease at PW-PUB wetland, May 2018.**

<b>Site Management Plan: PWMU-FOR</b>																									
Cover types	Mid-successional conifer (MS), lodgepole pine (LP), riparian deciduous (RD), upland deciduous (UD) , upland mixed (UM)																								
Acres	177.7 (MS 24.5; LP 11.9; RD 4.0; UD105.0; UM 32.3)																								
SGD Management Goals	<b>Forestlands:</b> Promote forestland species composition and structures that benefit wildlife and provide an appropriate mosaic of big game hiding cover and forage. <b>Unique Habitats/Areas:</b> Protect unique habitats, including lava flow, and areas of culturally sensitive plant species identified as important to the Tribes.																								
SGD Management Objectives	<b>Forestland-a:</b> At the MU level, provide a range of alternatives for developing and maintaining a mix of forage and hiding cover for elk. <b>Forestland-c:</b> At the MU level, promote forest habitat diversity for wildlife by increasing or maintaining minor native tree species composition where appropriate site conditions exist over the life of the licenses. <b>Unique Habitat-d:</b> Identify and implement appropriate measures to protect and maintain important areas of ethnobotanically significant plants, as identified by the Tribes, over the life of the licenses.																								
HEP Evaluation Species and Baseline HSIs	<table border="1"> <thead> <tr> <th></th> <th><u>MS</u></th> <th><u>LP</u></th> <th><u>RD</u></th> <th><u>UD</u></th> <th><u>UM</u></th> </tr> </thead> <tbody> <tr> <td>Black-capped chickadee:</td> <td>0.60</td> <td>0.92</td> <td>0.68</td> <td>0.27</td> <td>0.89</td> </tr> <tr> <td>Pileated woodpecker:</td> <td>0.62</td> <td>0.00</td> <td>0.29</td> <td>0.27</td> <td>0.71</td> </tr> <tr> <td>Elk:</td> <td colspan="5">0.43 in Unit S-1.</td> </tr> </tbody> </table>		<u>MS</u>	<u>LP</u>	<u>RD</u>	<u>UD</u>	<u>UM</u>	Black-capped chickadee:	0.60	0.92	0.68	0.27	0.89	Pileated woodpecker:	0.62	0.00	0.29	0.27	0.71	Elk:	0.43 in Unit S-1.				
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Pileated woodpecker:	0.62	0.00	0.29	0.27	0.71																				
Elk:	0.43 in Unit S-1.																								
Analysis Species	Forestlands: Northern flying squirrel, northern spotted owl Lodgepole: Pacific western big-eared bat, Larch Mountain salamander, Van Dyke's salamander. Riparian: Cascade torrent salamander, papillose tail-dropper																								
Site Description	Very steep with potentially unstable slopes north of the canal; flat between canal and Lewis River Rd.																								
Site Constraints	Proximity to project facilities																								
Access	Good: Lewis River Rd.; gated project roads. <i>No public access allowed.</i>																								
Management Strategies	Manage for species and habitat diversity. Monitor and manage invasive plants.																								
<b>Implementation</b>																									
Year	Planned Management Activity	Implemented Management Activity/Documentation																							
2009	Monitor and manage invasive plants.	Low-priority (no public access, good ground cover without soil disturbance); not included in invasive plant survey area.																							
2010	Monitor and manage invasive plants as budget allows.	No survey conducted.																							
2011	Monitor and manage invasive plants as budget allows.	No survey conducted.																							
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2013	Monitor and manage invasive plants as budget allows.	No survey conducted.																							
2014	Monitor and manage invasive plants as budget allows.	No survey conducted.																							
2015	Monitor and manage invasive plants as budget allows.	No survey conducted.																							
2016	No surveys planned.	Initial invasive plant survey for PW-G, PW-H, and PW-I conducted on May 25, 2016. Only common cat's-ear																							

<b>Site Management Plan: PWMU-FOR</b>		
		observed in PW-G. This area is maintained as project maintenance so there is no need to monitor. Scotch broom has invaded the upland mixed forest (PW-H) and is beginning to enter the lodgepole pine (PW-I).
2017	Conduct follow-up invasive plant survey for PW-H & PW-I. Evaluate potential spread into lodgepole/talus area before determining whether to treat.	Survey conducted on May 30, 2017 and it was decided to treat invasives. Applied herbicide to Scotch broom in PW-H and PW-I.
2018	Conduct follow-up invasive plant surveys of all treated areas in June. Apply herbicides as appropriate.	Survey conducted on May 30, 2018. Flowering Scotch broom appears eradicated as no regeneration seen on treated plants. A few isolated sprouts present. Himalayan blackberry and Evergreen blackberry treated along road, but there is regeneration. Applied herbicide to Scotch broom and blackberry in PW-H and PW-I.
2019	No monitoring of public access or invasive plants, to put all resources towards DBMU-2 Patch Cut.	



**Treated Scotch broom located in PW-H.**



<b>Site Management Plan: PWMU-ROW</b>		
Cover type	Transmission line right-of-way	
Acres	3.6	
SGD Management Goals	While allowing for safe and reliable transmission, promote establishment and maintenance of desirable vegetation to provide habitat for wintering deer and elk and a diverse mix of shrub and other early-successional vegetation.	
SGD Management Objectives	ROW-c: Identify and provide screening cover for deer and elk, where needed, where public roads cross ROW.	
HEP Evaluation Species and Baseline HSIs	Elk: 0.43 in Unit S-1. No suitable habitat for Savannah sparrow.	
Analysis Species	None identified.	
Site Description	Tall, dense shrub cover.	
Site Constraints	Proximity to traffic on Lewis River Rd. and project facilities	
Access	Good: Lewis River Rd. <i>Note: Public access not allowed.</i>	
Management Strategies	Monitor and manage invasive plants; evaluate need for visual screening. <i>Public access not allowed</i>	
Implementation		
Year	Planned Management Activity	Implemented Management Activity/Documentation
2009	Monitor and manage public access; evaluate need for visual screening.	Public access not allowed. Visual screening at Lewis River Rd. assessed; no concerns identified.
2010	Monitor invasive plant species.	Monitoring deferred to higher priority sites.
2011	Monitor invasive plant species as budget allows.	No survey conducted.
2012	Monitor invasive plant species as budget allows.	No survey conducted.
2013	Monitor and manage invasive plants as budget allows.	No survey conducted.
2014	Monitor and manage invasive plants as budget allows.	No survey conducted.
2015	Monitor and manage invasive plants as budget allows.	No survey conducted.
2016	No surveys planned.	No survey conducted.
2017	No surveys planned.	No survey conducted.
2018	No surveys planned.	No survey conducted.
2019	No surveys planned.	



## **Appendix A**

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*2018 Cowlitz and Skamania County Weed Lists*



**Noxious Weeds** are non-native plants introduced to Washington State that can be highly destructive, competitive, and difficult to control. These plants invade our croplands, rangeland, forests, parks, rivers, lakes, wetlands, and estuaries causing both ecological and economical damage that affects us all. Noxious weeds can:

- Lower crop yields
- Reduce forage quality
- Destroy plant and animal habitat
- Displace native plants
- Reduce recreational opportunities (*e.g.*, fishing, hunting, swimming and hiking)
- Clog waterways
- Decrease land values
- Increase erosion and wildfire risk
- And some are toxic to humans and livestock

To help protect the State's resources and economy, the Washington State Noxious Weed Control Board adopts a State Noxious Weed List each year (WAC 16-750). This list classifies weeds into three major classes – A, B, and C – based on the stage of invasion of each species and the seriousness of the threat they pose to Washington State. This classification system is designed to:

- Prevent small infestations from expanding by eradicating them when they are first detected
- Restrict already established weed populations to regions of the state where they occur and prevent their movement to un-infested areas
- Allow flexibility of weed control at the local level for weeds that are already widespread.

**Class A Weeds:** Non-native species whose distribution in Washington is still limited. Preventing new infestations and eradicating existing infestations are the highest priority. **Eradication of all Class A plants is required by law.**

**Class B Weeds:** Non-native species presently limited to portions of the State. Species are **designated** for control in regions where they are not yet widespread. Preventing new infestations in these areas is a high priority. In regions where a Class B species is already abundant, control is decided at the local level, with containment as the primary goal. **Please contact your County Noxious Weed Control Coordinator to learn which species are designated in your area.**

**Class C Weeds:** These are noxious weeds typically widespread in WA State or are of special interest to the state's agricultural industry. The Class C status allows counties to require control if locally desired. Other counties may choose to provide education or technical consultation.



To learn more about noxious weeds and noxious weed control in Washington State, Please contact:

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**Noxious Weed Control Board  
Of Cowlitz County**

207 Fourth Ave. N.  
Kelso, WA 98628-4124  
Tel. (360)577-3117

Email: [noxiousweeds@co.cowlitz.wa.us](mailto:noxiousweeds@co.cowlitz.wa.us)

Website: <http://co.cowlitz.wa.us>

Or

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**WA State Noxious Weed Control Board**

P.O. Box 42560  
Olympia, WA 98504-2560  
(360) 725-5764

Email: [noxiousweeds@agr.wa.gov](mailto:noxiousweeds@agr.wa.gov)

Website: <http://nwcb.wa.gov>

Or

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**WA State Department of Agriculture**

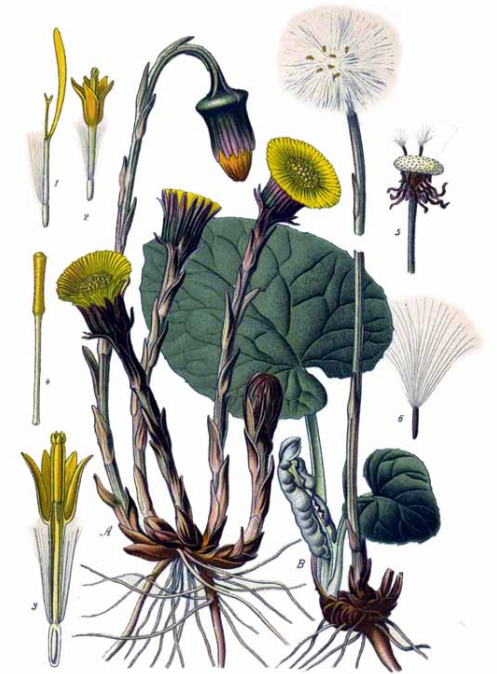
Natural Resource Building  
P.O. Box 42560  
1111 Washington St. SE  
Olympia, WA 98504-2560  
Tel. (360)902-1800

Website: <http://agr.wa.gov>

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2018

# Noxious Weed List for Cowlitz County



Pl. 170. *Tussilago Farfara* (Pas d'âne). *Tussilago Farfara* L.

*Tussilago farfara* L.

Atlas des plantes de France. 1891 by Amédée Mascléf.

Public domain.

List arranged alphabetically by:

**COMMON NAME**

**\*Class A Weeds**

**Eradication is required**

common crupina	<i>Crupina vulgaris</i>
cordgrass, common	<i>Spartina anglica</i>
cordgrass, dense-flowered	<i>Spartina densiflora</i>
cordgrass, saltmeadow	<i>Spartina patens</i>
cordgrass, smooth	<i>Spartina alterniflora</i>
dyer's woad	<i>Isatis tinctoria</i>
eggleaf spurge	<i>Euphorbia oblongata</i>
false brome	<i>Brachypodium sylvaticum</i>
floating primrose-willow	<i>Ludwigia peploides</i>
flowering rush	<i>Butomus umbellatus</i>
French broom	<i>Genista monspessulana</i>
garlic mustard	<i>Alliaria petiolata</i>
giant hogweed	<i>Heracleum mantegazzianum</i>
goatsrue	<i>Galega officinalis</i>
hydrilla	<i>Hydrilla verticillata</i>
Johnsongrass	<i>Sorghum halepense</i>
knapweed, bighead	<i>Centaurea macrocephala</i>
knapweed, Vochin	<i>Centaurea nigrescens</i>
kudzu	<i>Pueraria montana var. lobata</i>
meadow clary	<i>Salvia pratensis</i>
oriental clematis	<i>Clematis orientalis</i>
purple starthistle	<i>Centaurea calcitrapa</i>
reed sweetgrass	<i>Glyceria maxima</i>
ricefield bulrush	<i>Schoenoplectus mucronatus</i>
sage, clary	<i>Salvia sclarea</i>
sage, Mediterranean	<i>Salvia aethiops</i>
silverleaf nightshade	<i>Solanum elaeagnifolium</i>
Spanish broom	<i>Spartium junceum</i>
Small-flowered jewelweed	<i>Impatiens parviflora</i>
Syrian beancaper	<i>Zygophyllum fabago</i>
Texas blueweed	<i>Helianthus ciliaris</i>
thistle, Italian	<i>Carduus pycnocephalus</i>
thistle, milk	<i>Silybum marianum</i>
thistle, slenderflower	<i>Carduus tenuiflorus</i>
variable-leaf milfoil	<i>Myriophyllum heterophyllum</i>
wild four-o'clock	<i>Mirabilis nyctaginea</i>

**Class B Weeds- Required Control**

*blueweed	<i>Echium vulgare</i>
*Brazilian elodea	<i>Egeria densa</i>
*bugloss, annual	<i>Anchusa arvensis</i>
*bugloss, common	<i>Anchusa officinalis</i>
*butterfly bush	<i>Buddleja davidii</i>
*camellthorn	<i>Alhagi maurorum</i>
*common fennel, (except bulbing fennel)	<i>Foeniculum vulgare</i> (except <i>F. vulgare</i> var. <i>azoricum</i> )
*common reed (nonnative genotypes only)	<i>Phragmites australis</i>
Dalmatian toadflax	<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>
*Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
*European coltsfoot	<i>Tussilago farfara</i>
fanwort	<i>Cabomba caroliniana</i>
*gorse	<i>Ulex europaeus</i>
*grass-leaved arrowhead	<i>Sagittaria graminea</i>
*hairy willowherb	<i>Epilobium hirsutum</i>
*hawkweed, oxtongue	<i>Picris hieracioides</i>
*hawkweed, orange	<i>Hieracium aurantiacum</i>
hawkweeds: All nonnative species and hybrids of the meadow subgenus	<i>Hieracium</i> , subgenus <i>Pilosella</i>
*hawkweeds: All nonnative species and hybrids of the wall subgenus	<i>Hieracium</i> , subgenus <i>Hieracium</i>
herb-Robert	<i>Geranium robertianum</i>
*hoary alyssum	<i>Berteroa incana</i>
*houndstongue	<i>Cynoglossum officinale</i>
indigobush	<i>Amorpha fruticosa</i>
*knapweed, black	<i>Centaurea nigra</i>
*knapweed, brown	<i>Centaurea jacea</i>
knapweed, diffuse	<i>Centaurea diffusa</i>
knapweed, meadow	<i>Centaurea x moncktonii</i>
*knapweed, Russian	<i>Acroptilon repens</i>
knapweed, spotted	<i>Centaurea stoebe</i>
knotweed, Bohemian	<i>Polygonum x bohemicum</i>
knotweed, giant	<i>Polygonum sachalinense</i>
*knotweed, Himalayan	<i>Polygonum polystachyum</i>
knotweed, Japanese	<i>Polygonum cuspidatum</i>

*kochia	<i>Kochia scoparia</i>
lesser celandine	<i>Ficaria verna</i>
*loosestrife, garden	<i>Lysimachia vulgaris</i>
loosestrife, purple	<i>Lythrum salicaria</i>
loosestrife, wand	<i>Lythrum virgatum</i>
*Malta starthistle	<i>Centaurea melitensis</i>
parrotfeather	<i>Myriophyllum aquaticum</i>
perennial pepperweed	<i>Lepidium latifolium</i>
poison hemlock	<i>Conium maculatum</i>
*policeman's helmet	<i>Impatiens glandulifera</i>
*puncturevine	<i>Tribulus terrestris</i>
*Revenna grass	<i>Saccharum revennae</i>
*rush skeletonweed	<i>Chondrilla juncea</i>
*saltcedar	<i>Tamarix ramosissima</i>
Scotch broom	<i>Cytisus scoparius</i>
*shiny geranium	<i>Geranium lucidum</i>
Spurge flax	<i>Thymelaea passerina</i>
*spurge laurel	<i>Daphne laureola</i>
*spurge, leafy	<i>Euphorbia esula</i>
*spurge, myrtle	<i>Euphorbia myrsinites</i>
*sulfur cinquefoil	<i>Potentilla recta</i>
tansy ragwort	<i>Senecio jacobaea</i>
*thistle, musk	<i>Carduus nutans</i>
*thistle, plumeless	<i>Carduus acanthoides</i>
*thistle, Scotch	<i>Onopordum acanthium</i>
*velvetleaf	<i>Abutilon theophrasti</i>
water primrose	<i>Ludwigia hexapetala</i>
*white bryony	<i>Bryonia alba</i>
wild chervil	<i>Anthriscus sylvestris</i>
yellow archangel	<i>Lamium galeobdolon</i>
yellow floatingheart	<i>Nymphoides peltata</i>
*yellow nutsedge	<i>Cyperus esculentus</i>
*yellow starthistle	<i>Centaurea solstitialis</i>

**Class C Weeds**

buffalobur	<i>Solanum rostratum</i>
nonnative cattail species and hybrids	<i>Typha</i> spp.
common groundsel	<i>Senecio vulgaris</i>
common St. Johnswort	<i>Hypericum perforatum</i>
common tansy	<i>Tanacetum vulgare</i>
common teasel	<i>Dipsacus fullonum</i>
English hawthorn	<i>Crataegus monogyna</i>
English ivy - four cultivars only	<i>Hedera helix</i> 'Baltica', 'Pittsburgh', and 'Star';

	<i>H. hibernica</i> 'Hibernica'
*Eurasian watermilfoil hybrid	<i>Myriophyllum spicatum</i> X <i>M. sibiricum</i>
evergreen blackberry	<i>Rubus laciniatus</i>
field bindweed	<i>Convolvulus arvensis</i>
Himalayan blackberry	<i>Rubus armeniacus</i>
Italian arum	<i>Arum italicum</i>
Jubata grass	<i>Cortaderia jubata</i>
old man's beard	<i>Clematis vitalba</i>
oxeye daisy	<i>Leucanthemum vulgare</i>
Pampas grass	<i>Cortaderia selloana</i>
Russian olive	<i>Elaeagnus angustifolia</i>
scentless mayweed	<i>Matricaria perforata</i>
spiny cocklebur	<i>Xanthium spinosum</i>
*Spotted jewelweed	<i>Impatiens capensis</i>
Swainsonpea	<i>Sphaerophysa salsula</i>
thistle, bull	<i>Cirsium vulgare</i>
thistle, Canada	<i>Cirsium arvense</i>
tree-of-heaven	<i>Ailanthus altissima</i>
white cockle	<i>Silene latifolia</i> ssp. <i>alba</i>
wild carrot (except where commercially grown)	<i>Daucus carota</i>
yellowflag iris	<i>Iris pseudacorus</i>
yellow toadflax	<i>Linaria vulgaris</i>

Change to the 2018 List

\* State designated high priority for control and enforcement = Required control

Control required specially along transportation right-of-ways, near residential communities (fire danger), areas where plants create a significant impact to managed pastures or farmland.

Bold listings – documented plant species in Cowlitz Co.

Highlighted listings – County select class B and C high priority weeds for control and enforcement action.

Please help protect Washington's economy and environment from noxious weeds!

### Class C Weeds

<i>Aegilops cylindrica</i>	jointed goatgrass
<i>Ailanthus altissima</i>	tree-of-heaven
<i>Alopecurus myosuroides</i>	blackgrass
<i>Artemisia absinthium</i>	absinth wormwood
<i>Arum italicum</i>	Italian arum
<i>Berberis vulgaris</i>	common barberry
<i>Cenchrus longispinus</i>	longspine sandbur
<i>Centromadia pungens</i>	spikeweed
<i>Cirsium arvense</i>	thistle, Canada
<i>Cirsium vulgare</i>	thistle, bull
<i>Clematis vitalba</i>	old man's beard
<i>Convolvulus arvensis</i>	field bindweed
<i>Cortaderia jubata</i>	jubata grass
<i>Cortaderia selloana</i>	Pampas grass
<i>Crataegus monogyna</i>	English hawthorn
<i>Cuscuta approximata</i>	smoothseed alfalfa dodder
<i>Daucus carota</i>	wild carrot (except where commercially grown)
<i>Dipsacus fullonum</i>	common teasel
<i>Elaeagnus angustifolia</i>	Russian olive
<i>Gypsophila paniculata</i>	babysbreath
<i>Hedera helix</i> 'Baltica', 'Pittsburgh', and 'Star', and <i>H. hibernica</i> 'Hibernica'	English ivy - four cultivars only
<i>Hyoscyamus niger</i>	black henbane
<i>Hypericum perforatum</i>	common St. Johnswort
<i>Hypochaeris radicata</i>	common catsear
<i>Impatiens capensis</i>	spotted jewelweed
<i>Iris pseudacorus</i>	yellowflag iris
<i>Lepidium appelianum</i>	hairy whitetop
<i>Lepidium draba</i>	hoary cress
<i>Leucanthemum vulgare</i>	oxeye daisy
<i>Linaria vulgaris</i>	yellow toadflax
<i>Matricaria perforata</i>	scentless mayweed
<i>Myriophyllum spicatum</i> x <i>Myriophyllum sibiricum</i>	Eurasian watermilfoil hybrid
<i>Nymphaea odorata</i>	fragrant waterlily
<i>Phalaris arundinacea</i>	reed canarygrass
<i>Potamogeton crispus</i>	curlleaf pondweed
<i>Rorippa austriaca</i>	Austrian fieldcress
<i>Rubus armeniacus</i>	Himalayan blackberry
<i>Rubus laciniatus</i>	evergreen blackberry
<i>Secale cereale</i>	cereal rye
<i>Senecio vulgaris</i>	common groundsel

### Class C Weeds continued

<i>Silene latifolia</i> ssp. <i>alba</i>	white cockle
<i>Solanum rostratum</i>	buffalobur
<i>Soliva sessilis</i>	lawnweed
<i>Sonchus arvensis</i>	perennial sowthistle
<i>Sphaerophysa salsula</i>	Swainsonpea
<i>Taeniatherum caput-medusae</i>	medusahead
<i>Tanacetum vulgare</i>	common tansy
<i>Typha</i> species	nonnative cattail species and hybrids (reminder, does not include the native common cattail, <i>Typha latifolia</i> )
<i>Ventenata dubia</i>	ventenata
<i>Xanthium spinosum</i>	spiny cocklebur
<i>Zostera japonica</i>	Japanese eelgrass

To learn more about noxious weeds and noxious weed control in Washington State, please contact:

#### **WA State Noxious Weed Control Board**

P.O. Box 42560  
Olympia, WA 98504-2560  
(360)-725-5764

Email: [noxiousweeds@agr.wa.gov](mailto:noxiousweeds@agr.wa.gov)  
Website: <http://www.nwcb.wa.gov>

Or

#### **WA State Department of Agriculture**

21 North First Avenue #103  
Yakima, WA 98902  
(509) 249-6973

Or

**Please help protect Washington's economy and environment from noxious weeds!**

2018

## Washington State Noxious Weed List



Image by Bud Hardwick

Malta starthistle, *Centaurea melitensis*, is a new Class B noxious weed for 2018.

**List arranged alphabetically by:  
SCIENTIFIC NAME**



**Class A Weeds:** Non-native species whose distribution in Washington is still limited. Preventing new infestations and eradicating existing infestations are the highest priority. **Eradication of all Class A plants is required by law.**

**Class B Weeds:** Non-native species presently limited to portions of the State. Species are **designated** for required control in regions where they are not yet widespread. Preventing new infestations in these areas is a high priority. In regions where a Class B species is already abundant, control is decided at the local level, with containment as the primary goal. Please contact your County Noxious Weed Control Board to learn which species are designated for control in your area.

**Class C Weeds:** Noxious weeds that are typically widespread in WA or are of special interest to the state's agricultural industry. The Class C status allows county weed boards to require control if locally desired, or they may choose to provide education or technical consultation.

### **Class A Weeds Eradication is required**

<i>Alliaria petiolata</i>	garlic mustard
<i>Brachypodium sylvaticum</i>	false brome
<i>Butomus umbellatus</i>	flowering rush
<i>Carduus pycnocephalus</i>	thistle, Italian
<i>Carduus tenuiflorus</i>	thistle, slenderflower
<i>Centaurea calcitrapa</i>	purple starthistle
<i>Centaurea macrocephala</i>	knawweed, bighead
<i>Centaurea nigrescens</i>	knawweed, Vochin
<i>Clematis orientalis</i>	oriental clematis
<i>Crupina vulgaris</i>	common crupina
<i>Euphorbia oblongata</i>	eggleaf spurge
<i>Galega officinalis</i>	goatsrue
<i>Genista monspessulana</i>	French broom
<i>Glyceria maxima</i>	reed sweetgrass
<i>Helianthus ciliaris</i>	Texas blueweed
<i>Heraclium mantegazzianum</i>	giant hogweed
<i>Hydrilla verticillata</i>	hydrilla
<i>Impatiens parviflora</i>	small-flowered jewelweed
<i>Isatis tinctoria</i>	dyer's woad
<i>Ludwigia peploides</i>	floating primrose-willow
<i>Mirabilis nyctaginea</i>	wild four-o'clock
<i>Myriophyllum heterophyllum</i>	variable-leaf milfoil

<i>Pueraria montana</i> var. <i>lobata</i>	kudzu
<i>Salvia aethiopsis</i>	sage, Mediterranean
<i>Salvia pratensis</i>	meadow clary
<i>Salvia sclarea</i>	sage, clary
<i>Schoenoplectus mucronatus</i>	ricefield bulrush
<i>Silybum marianum</i>	thistle, milk
<i>Solanum elaeagnifolium</i>	silverleaf nightshade
<i>Sorghum halepense</i>	Johnsongrass
<i>Spartina alterniflora</i>	cordgrass, smooth
<i>Spartina anglica</i>	cordgrass, common
<i>Spartina densiflora</i>	cordgrass, dense-flowered
<i>Spartina patens</i>	cordgrass, saltmeadow
<i>Spartium junceum</i>	Spanish broom
<i>Zygophyllum fabago</i>	Syrian beancaper

### **Class B Weeds**

<i>Abutilon theophrasti</i>	velvetleaf
<i>Acroptilon repens</i>	knawweed, Russian
<i>Alhagi maurorum</i>	camelthorn
<i>Amorpha fruticosa</i>	indigobush
<i>Anchusa arvensis</i>	bugloss, annual
<i>Anchusa officinalis</i>	bugloss, common
<i>Anthriscus sylvestris</i>	wild chervil
<i>Berteroa incana</i>	hoary alyssum
<i>Bryonia alba</i>	white bryony
<i>Buddleja davidii</i>	butterfly bush
<i>Cabomba caroliniana</i>	fanwort
<i>Carduus acanthoides</i>	thistle, plumeless
<i>Carduus nutans</i>	thistle, musk
<i>Centaurea diffusa</i>	knawweed, diffuse
<i>Centaurea jacea</i>	knawweed, brown
<i>Centaurea melitensis</i>	Malta starthistle
<i>Centaurea nigra</i>	knawweed, black
<i>Centaurea solstitialis</i>	yellow starthistle
<i>Centaurea stoebe</i>	knawweed, spotted
<i>Centaurea x moncktonii</i>	knawweed, meadow
<i>Chondrilla juncea</i>	rush skeletonweed
<i>Conium maculatum</i>	poison hemlock
<i>Cynoglossum officinale</i>	houndstongue
<i>Cyperus esculentus</i>	yellow nutsedge
<i>Cytisus scoparius</i>	Scotch broom
<i>Daphne laureola</i>	spurge laurel
<i>Echium vulgare</i>	blueweed
<i>Egeria densa</i>	Brazilian elodea

<i>Epilobium hirsutum</i>	hairy willowherb
<i>Euphorbia esula</i>	spurge, leafy
<i>Euphorbia myrsinites</i>	spurge, myrtle
<i>Ficaria verna</i>	lesser celandine
<i>Foeniculum vulgare</i> except <i>F. vulgare</i> var. <i>azoricum</i> )	common fennel, (except bulbing fennel)
<i>Geranium lucidum</i>	shiny geranium
<i>Geranium robertianum</i>	herb-Robert
<i>Hieracium aurantiacum</i>	hawkweed, orange
<i>Hieracium</i> , subgenus <i>Hieracium</i>	hawkweeds: All nonnative species and hybrids of the wall subgenus
<i>Hieracium</i> , subgenus <i>Pilosella</i>	hawkweeds: All nonnative species and hybrids of the meadow subgenus
<i>Impatiens glandulifera</i>	policeman's helmet
<i>Kochia scoparia</i>	kochia
<i>Lamium galeobdolon</i>	yellow archangel
<i>Lepidium latifolium</i>	perennial pepperweed
<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	Dalmatian toadflax
<i>Ludwigia hexapetala</i>	water primrose
<i>Lysimachia vulgaris</i>	loosestrife, garden
<i>Lythrum salicaria</i>	loosestrife, purple
<i>Lythrum virgatum</i>	loosestrife, wand
<i>Myriophyllum aquaticum</i>	parrotfeather
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil
<i>Nymphoides peltata</i>	yellow floatingheart
<i>Onopordum acanthium</i>	thistle, Scotch
<i>Phragmites australis</i>	common reed (nonnative genotypes only)
<i>Picris hieracioides</i>	hawkweed, oxtongue
<i>Polygonum cuspidatum</i>	knotweed, Japanese
<i>Polygonum polystachyum</i>	knotweed, Himalayan
<i>Polygonum sachalinense</i>	knotweed, giant
<i>Polygonum x bohemicum</i>	knotweed, Bohemian
<i>Potentilla recta</i>	sulfur cinquefoil
<i>Saccharum ravennae</i>	Ravenna grass
<i>Sagittaria graminea</i>	grass-leaved arrowhead
<i>Senecio jacobaea</i>	tansy ragwort
<i>Tamarix ramosissima</i>	saltcedar
<i>Thymelaea passerina</i>	spurge flax
<i>Tribulus terrestris</i>	puncturevine
<i>Tussilago farfara</i>	European coltsfoot
<i>Ulex europaeus</i>	gorse



## **Appendix B**

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*Annual Plan Consultation Record*



**2019 ANNUAL PLAN CONSULTATION RECORD**

As required by License Article 403, this section documents Cowlitz PUD's consultation with the TCC regarding the development of the Annual Plan for the Swift No. 2 Wildlife Management Area. The 30-day Review Draft of this Annual Plan was emailed to the TCC on January 31, 2019 and discussed at the February 13, 2019 TCC meeting. Comments were due on March 15, 2019 and written comments were received from Washington Department of Fish & Wildlife. The table below summarizes the comments from the WDFW and provides Cowlitz PUD's response.

**Cowlitz PUD's Response to TCC Comments on the Draft 2019 WHMP Annual Plan**

<b>Comment Number</b>	<b>Comment</b>	<b>Cowlitz PUD Response</b>
1	<p><i>WDFW has reviewed the Wildlife Habitat Management Plan 2019 (Year 11) Annual Plan For The Swift No. 2 Wildlife Management Area.</i></p> <p><i>We eagerly anticipate the fruition of the Devil's Backbone patch cut to increase the habitat value in this management unit. It's been a long process and WDFW appreciates all the work you've done to move this effort forward. The patch cut would not be possible without your dedication. Thank you.</i></p>	<p><i>Thank you for your review of the 2019 Annual Plan.</i></p>



## **Appendix C**

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### *Devil's Backbone Elk Forage Plot Treatment Prescription*



<b>Elk Forage Plot Treatment Prescription: DBMU-2</b>	
<b>Cover type</b>	Mid-successional conifer forest
<b>Acres</b>	DBMU-2 is 104.5. The proposed treatment area within DBMU-2 is 5.8 acres.
<b>SGD Management Goals</b>	<b>Forestlands:</b> Promote forestland species composition and structures that benefit wildlife and provide an appropriate mosaic of big game hiding cover and forage.
<b>SGD Management Objectives</b>	<b>Forestland-a:</b> At the MU level, provide a range of alternatives for developing and maintaining a mix of forage and hiding cover for elk. <b>Forestland-b:</b> Maintain or create at least 8 snags, green retention trees, or wildlife reserve trees per acre, if available; retain larger trees and snags, and retain or create 4 logs/acre if possible. <b>Forestland-c:</b> At the MU level, promote habitat diversity by increasing or maintaining minor native tree species composition.
<b>Site Description</b>	DBMU-2 is a south facing, gently sloping (5-20 percent) site that is accessible from existing roads immediately south of the paved FR90 Road. The overstory forest is comprised of approximately 77 percent Douglas-fir and 23 percent western hemlock, with approximately 367 trees per acre. Stand age is approximately 45 years, the average canopy height is 95 feet, and crown closure is 100 percent. There are few small-diameter snags present as a result of overstory suppression, and no large diameter snags. There are few large diameter logs scattered throughout the area, with most in an advanced state of decay. The understory vegetation is mostly sparse, although with some patchy distribution. Understory species are dominated by Oregon grape and swordfern, with some patches of vine maple. Patchy herbaceous cover includes oxalis, inside-out-flower, bedstraw, vanilla-leaf.
<b>Site or Resource Constraints</b>	No steep slopes. No sensitive soils. No streams. No sensitive species of concern (vegetation or wildlife). Invasive weeds present along access road have been treated. No visible forest health issues (insect or disease).
<b>Access</b>	Existing access to the site is good. Paved FR 90 road is immediately adjacent to DBMU-2. The 7092 road (gated near FR 90) provides access to the site with spur 7092A road. Cowlitz PUD has an easement for use of the 7092 road.
<b>Site Objective</b>	Create an approximately 5.8-acre patch cut within DBMU-2, that will be maintained as a grass/forb meadow in perpetuity, to provide forage for large ungulates (deer and elk).
<b>Site Prescription</b>	A location near the southern end of DBMU-2 was identified for the patch cut that has good access for logging equipment and vehicles, is distant from existing open roads, and has limited understory vegetation (see map).  The harvest unit is identified at the site with a perimeter of pink flagging, and red paint on trees immediately outside the unit boundary. Harvest will consist of removing all overstory trees within the 5.8 acre unit, except trees within the two designated wildlife retention areas. The total number of trees removed from the site is estimated at 2,127 trees (77 percent Doug-fir, 23 percent western hemlock). The diameter range of the trees in the unit are from 5 inches to 21 inches, with 33 percent of the trees less than 10 inches dbh, 66 percent of the trees between 10 and 18 inches dbh, and only 1 percent of the trees greater than 18 inches dbh. The total estimated harvest volume is 247 mbf, approximately 71 percent Douglas-fir and 29 percent western hemlock.  The trees will be harvested using a ground-based (tracked or tired) harvesting system with all logs forwarded to a single landing location for loading onto trucks. Following removal of the overstory trees, the stumps will be pulled from the ground and the stumps and unmerchantable slash will be burned in piles on-site. The purpose of stump removal is to maximize the area to be seeded for forage production. The use of ground-based harvesting equipment will scarify the soil and reduce the understory shrub

## Elk Forage Plot Treatment Prescription: DBMU-2

competition. Soil scarification should occur throughout the unit sufficient to provide a good seed germination bed for establishment of a seeded grass forage mix. The site will not be replanted with commercial tree species, but will instead be seeded with a native grass forage mix to provide forage for desired big game species. The forage seed mix to be used was recommended by PacifiCorp and approved by the TCC.

Forage Seed Mix (common name / variety)	Lbs (% by wt.)
Albion Perennial Ryegrass ( <i>Lolium perenne</i> tetraploid var Albion)	5 (25%)
Orchardgrass ( <i>Dactylis glomerata</i> var Quick draw)	4 (20%)
Annual Ryegrass ( <i>Lolium multiflorum</i> tetraploid var tetrastar)	3 (15%)
Crimson clover ( <i>Trifolium incarnatum</i> )	2 (10%)
Domino White Clover ( <i>Trifolium repens</i> var Domino)	2 (10%)
Ladino White Clover ( <i>Trifolium repens</i> var Ladino)	2 (10%)
Small Burnet ( <i>Sanguisorba minor</i> )	2 (10%)
<b>TOTAL</b>	<b>20 lbs/ac.</b>

Access to the site for logging equipment, and for log hauling purposes, will be south from FR90 on the 7902 road, then following the 7902A spur to the south to a point near the corner between Section 21 and 22, then to the northwest along the 7092 road to the designated landing site. Cowlitz PUD has an easement for use of the 7092 and 7092A spur for management of their property. Road 7902 and spur 7902A are stable roads with solid base material. These roads will require minor clearing of encroaching overstory vegetation along the shoulder, the addition of surfacing gravel along some sections, and clearing of existing ditch lines and surface drainage. The existing culverts under these roads are in good condition.

All commercial logs will be forwarded from the unit to the designated landing site adjacent to road 7902. The forwarding skid road is approximately 150 feet long. The landing site is a flat area immediately adjacent to the road. The skid road and landing area may require the removal of a few trees in order to provide sufficient room for log transport, sorting, and loading operations to be conducted safely. The skid road and landing area will be seeded with the native grass forage seed mixture following completion of the harvesting operation.

Two wildlife retention areas are designated within the unit; one near the northwest boundary and one near the southeast boundary. The southern retention site encompasses an area approximately 1,200 square feet; the northern retention site encompasses an area approximately 2,200 square feet. The wildlife retention areas are marked with yellow paint and care should be taken during the logging operation to protect them from disturbance. Large down logs within the unit (outside of wildlife retention areas) may be disturbed or removed as needed to efficiently conduct the logging operation and provide additional space for forage production. If feasible, large down logs and other unmerchantable material may be accumulated in a few select areas outside the north and west boundaries of the unit to provide micro-habitat sites for wildlife. Most unmerchantable material and logging slash will be piled and burned within the unit.

During the summer of 2019, goshawk surveys will be conducted within and adjacent to the unit to determine if any goshawks are present, possibly foraging, or occupying the area, and therefore requiring mitigation.



<b>Elk Forage Plot Treatment Prescription: DBMU-2</b>	
	Harvesting is proposed to occur in the fall of 2019. Distribution of the grass forage seed mixture will be conducted in the spring of 2020. Burning of the residual piles will be conducted in the fall of 2020. Additional grass forage seeding may occur at the location of the burned piles in the spring of 2021.

<b>Implementation Schedule</b>	
<b>Time Period</b>	<b>Activity</b>
Spring 2019	Interview and select logging contractor to conduct harvest operation.
Summer 2019	Conduct goshawk survey.
Fall 2019	Mobilize on-site, road improvements, harvest timber, pull stumps, pile unmerchantable material, and scarify the soil.
Spring 2020	Seed grass forage mixture throughout the unit, skid road, and landing area.
Summer 2020	Monitor grass seeding to confirm establishment.
Fall 2020	Additional grass seeding, if necessary. Burn stumps and unmerchantable material piles.
Spring 2021	Seed grass forage mixture in areas exposed after burning piles.
Summer 2023 / 2024	Monitor site for ungulate use. Cut any encroaching conifer seedlings becoming established within the forage area.
Subsequent 5-year intervals	Monitor site for ungulate use. Cut any encroaching conifer seedlings becoming established within the forage area.