

All Information on this Page is from the 2009 Final Report. (22Jan09)						
SCL # (Population; No Underline = Subpop.), Element Occurrence #, Figure A.5-1 Man#	Reporter, # of Plants, &/or Area (Sighting Forms or Table A.2-1)	Sighting Form Comments with Threats Bolded.	Appendix 6, Table A.6-1. Potential Impacts	Appendix 7, Table A.7-1, Erosion Affects Comments	Appendix 7, Table A.7-1, Erosion Affects on RTE Plant Ploygon	Follow-up
ASMI-2 Extirpated EO#005. Not relocated. Map3--site in river.	Layser; Dwerlkotte didn't relocate in 2005					None--site extirpated when dam built.
ASMI C	Beck--225plants in 3subpops.(5, 11, 12), 3acres, ave.elev. 2000ft.	Vigorous looking blooming plants scattered on gravel shore. Plants of all age and size classes present. Plants growing on gravel and rocky shore of reservoir and sometimes extend up into the forested margin. Plants in portions of polygons 11 and 12 are growing in the high-water/flood zone which has some non-Project erosion occurring, (this area is upslope of the area with Project-related erosion, i.e., the fluctuation zone). Several plants have exposed roots that are up to a foot long. Polygon 5 in the vicinity of a dispersed recreation site and has a low potential to be affected by trampling, although this was not observed. Some non-natives present in the population, i.e., Bromus tectorum and Centaurea biebersteinii. Plants scattered to densely scattered along gravel shore. Entire population, consisting of three subpopulations (5, 11, 12) is 0.7 miles long.				
ASMI-5 Relocated. Map7	Dwerlkotte found in 2005; Beck--140plants, 950x110ft.		Recreation. Weeds--Medium (11-50% cover in general vicinity of subpop.)			
ASMI-11 New. Map7	Beck--65plants, 625x30ft.		Weeds--Medium (11-50% cover in general vicinity of subpop.). Non-project erosion. Site visited 7/21-23/2008 Erosion Field Trip.	1 Non-Project erosion occurs within RTE plant polygon. Erosion Site ID=107.	ASMI plants growing in the high-water/flood zone (non-Project erosion), upslope of the area with Project-related erosion (fluctuation zone). Roots of some plants exposed	
ASMI-12 New. Map7	Beck--20plants, 40x15ft.		Weeds--Medium (11-50% cover in general vicinity of subpop.). Non-project erosion. Site visited 7/21-23/2008 Erosion Field Trip.	1 Non-Project erosion occurs within RTE plant polygon. Erosion Site ID=107.	ASMI plants growing in the high-water/flood zone (non-Project erosion), upslope of the area with Project-related erosion (fluctuation zone). Roots of some plants exposed. Steep site with, cobble and gravel substrate.	

<p><u>ASMI-16</u> New. Map1</p>	<p>Beck--200+plants, 500x40ft., ave.elev.2020ft.</p>	<p>Vigorous population of plants growing on a duff substrate on steep forested slope. Plants of different age and size classes observed. Vigorous population of plants growing on steep, open forested slopes on a duffy substrate, approximately 30 feet above reservoir high water level. Population very steep. Most ASMI plants growing in an open forested area with a soil substrate. There is some Project related erosion to the downslope edge of the population (bank undercutting). ASMI plants are also growing on the newly eroded substrate. Erosion appears to be affecting individual plants, but not overall population. The main road to the dam is just upslope of this population. Weeds do not currently seem to be an issue in this population. Plants are growing in amongst forest. There are some large springs just south of the population. Population mapped from boat. Much of population steep and difficult to walk through.</p>	<p>Weeds--Low (0-10% cover in general vicinity of subpop.). Project-related erosion. Site visited 7/21-23/2008 Erosion Field Trip.</p>	<p>2 Project-related erosion without negative impacts to RTE plant population. Erosion Site ID=3.</p>	<p>ASMI plants growing in soil substrate which is eroding at downslope edge. Substrate is sheared up slate which is prone to erosion. ASMI plants also growing on newly eroded substrate. Erosion affecting individual plants, but not overall population.</p>	
<p><u>CACA-1</u> New. Map1</p>	<p>Beck--20plants, 25x10ft., ave.elev.1995ft.</p>	<p>Plants seem vigorous, though there aren't very many of them in this population. Plants are growing on a grassy bench 2 – 3 feet above high water of the reservoir. The seep this population is associated with is adjacent to the population. The soil is probably moist to wet a majority of the growing season. Population is above the high water level. Changes to upslope hydrology (although none are known to be planned) could be detrimental to the population. There is evidence of human activity in the vicinity of the site, although direct impacts to the population were not observed. There is some Canada thistle growing in the population. Yellow iris occurs along the shore near this site. Plants are up on moist grassy bench, about 10 feet to the north from the seep. Plants are growing with SAMA-1.</p>	<p>Weeds--Low (0-10% cover in general vicinity of subpop.).</p>			
<p><u>CRST-A</u></p>	<p>Beck--23 plants in 5subpops.all on CNF</p>	<p>Plants are widely scattered. Plants rhizomatous so individuals somewhat difficult to distinguish from each other. Some plants have > 100 little leaves. Sighting form CRST A includes 2007 CRST polygons 2A, 2B, 2C, 2D, and polygon 5. Plants growing in cracks in nearly vertical limestone, in limestone soil and in moss on limestone from 3 feet above water level to 20 feet above water level. Plants just above high water level of reservoir. Some moss mat with plants growing down to near water level. CRST plants do not tolerate inundation. No particular threats identified. Non-natives do not seem to be an issue. Habitat adjacent reservoir. You can only survey with certainty up to about 15 feet from water level. Good, high-powered binoculars are required. Plants small and grow with other fern species.</p>				<p>2007 sighting form indicates that a revisit is needed to map entire extent of population, early to mid-June best. To do a more complete survey, a boat would need to go very slow and close along these cliffs searching only for this species. Plants are very difficult to see without good high power binoculars.</p>
<p>CRST-2 EO#001</p>	<p>St. John, Thompson, Dwerlkotte didn't relocate 6-21-2005</p>					
<p>CRST-2A Relocated. Map1</p>	<p>Beck--1plant, 10x10ft.</p>		<p>Weeds--Low (0-10% cover in general vicinity of subpop.).</p>			

CRST-2B Relocated. Map1	Beck--10plants, 170x10ft.		Weeds--Low (0-10% cover in general vicinity of subpop.).			
CRST-2C Relocated. Map1	Beck--2plants, 35x10ft.		Weeds--Low (0-10% cover in general vicinity of subpop.).			
CRST-2D Relocated. Map1	Beck--2plants, 45x15ft.		Weeds--Low (0-10% cover in general vicinity of subpop.).			
CRST-5 Relocated. Map1	Beck--8plants, 30x10ft.		Weeds--Low (0-10% cover in general vicinity of subpop.).			
CRST-3 Relocated. Map3	Ahlenslager, Beck-- 20plants, 135x20ft., ave.elev.2000ft.	Plants are scattered and rhizomatous so individuals somewhat difficult to distinguish from each other. Some plants have > 100 little fronds. Plants growing in cracks in nearly vertical limestone, in limestone soil, moss and on limestone from 5 feet above the high water level to 12 feet above water level. Plants just above high pool of reservoir. No particular threats have been identified for this population. Non-natives do not seem to be an issue. Habitat adjacent reservoir. Plants are on a north-facing vertical limestone cliff growing in moss.	Weeds--Low (0-10% cover in general vicinity of subpop.). Site visited 7/21-23/2008 Erosion Field Trip.	0 Erosion does not occur in the RTE plant polygon. Erosion Site ID=42.		Erosion not in RTE plant polygon.
CRST-4 New. Map1	Beck--3plants, 55x10ft., ave.elev.2000ft.	The three rhizomatous plants are each about 20 feet from each other. They grow in vertical cracks in limestone cliffs. Two of the plants do not appear to be very vigorous. Most of the population is probably mapped, but there might be other scattered plants on other steep limestone cliffs in the area. Mixed coniferous forest on a large knoll on the transmission line ROW, which is mostly logged over. Three rhizomatous clumps of plants grow in a forested portion of the knoll in vertical cracks in limestone cliffs. Two them do not appear to be very vigorous. The general area is forested. It is unlikely that Project maintenance activities would affect the population unless trees are cut down in the area of the population. There do not seem to me any imminent threats to this population. Non-natives do not seem to be an issue. Plants between 5 and 10 feet from the ground.	Weeds--Low (0-10% cover in general vicinity of subpop.). Is entire site surveyed? Could road maintenance affect the subpop.?			
DRDR B	Beck, 1000s in 12! [11] subpops., all on FS, elev.1990- 2200ft.	Many thousands of plants in an 8-mile long population growing on sparsely vegetated, steep to vertical, limestone slopes along reservoir. Plants grow in limestone-derived soil and out of cracks in limestone. Plants of all size classes noted. It is sometimes difficult to distinguish individual plants, as they may be growing quite close together. Most of the population observed and mapped from a boat with binoculars. Plants range from high water level, upslope as far as visible from the boat Sighting form DRDR B includes 2007 DRDR polygons 2, 3, 5a, 5b, 11, 13, 21a, 21b, 21c, 21d, 24b. Plant density can vary from one or a few widely spaced plants, to several 100 in dense concentrations.				
		Most slopes are very steep to vertical, though the plants were also observed growing on nearly flat ground. There is a lot of potentially suitable habitat that is not currently occupied by plants. No particular threats have been identified for this population. Non-natives do not seem to be an issue. Habitat adjacent reservoir. Look for mats of plants on steep to vertical limestone slopes.				

DRDR-2 EO#009 Relocated. Map1	St. John, Dwerlkotte relocated in 2005, Beck--100s to1000+plants, 885x 155ft.		Weeds--Low (0- 10% cover in general vicinity of subpop.). Site visited 7/21- 23/2008 Erosion Field Trip.	0 Erosion does not occur in the RTE plant polygon. Erosion Site ID=51.	Plants growing on bedrock. Erosion not in RTE plant polygon.	
DRDR-3 Relocated. Map2	Dwerlkotte relocated in 2005, Beck--100s to 1000+plants, 1,980x120ft.		Weeds--Low (0- 10% cover in general vicinity of subpop.).			
DRDR-5A (DRDR-5 PAD) EO#009 Relocated. Map2	Althausen, Dwerlkotte relocated in 2005; Beck--100s to 1000+plants, 2,365x50ft.		Weeds--Low (0- 10% cover in general vicinity of subpop.). Non- project erosion. Site visited 7/08 Erosion Field Trip.	2 Project-related erosion without negative impacts to RTE plant population. Erosion Site ID=51.	DRDR plants growing in newly eroded areas in chute.	
DRDR-5B Relocated. Map2	Beck--10plants, 10x10ft.		Weeds--Low (0- 10% cover in general vicinity of subpop.).			
DRDR-11 EO#009 Relocated. Map3	Dwerlkotte relocated in 2005; Beck-- 50plants, 110x15ft.		Weeds--Low (0- 10% cover in general vicinity of subpop.).			
DRDR-13 EO#009 Relocated. Map4	Dwerlkotte relocated in 2005-new subpop., Beck--100s to 1000+plants, 850x 30ft.		Weeds--Low (0- 10% cover in general vicinity of subpop.). Site visited 7/21- 23/2008 Erosion Field Trip.	0 Erosion does not occur in the RTE plant polygon. Erosion Site ID=40.	Erosion not in RTE plant polygon.	
DRDR-21A New. Map3	Beck--10plants, 50x15ft.		Weeds--Low (0- 10% cover in general vicinity of subpop.).			
DRDR-21B New. Map3	Beck--100s to 1000+plants, 2,075x35ft.		Weeds--Low (0- 10% cover in general vicinity of subpop.).			
DRDR-21C New. Map3	Beck--10plants, 40x10ft.		Weeds--Low (0- 10% cover in general vicinity of subpop.).			
DRDR-21D New. Map3	Beck--10plants, 60x15ft.		Weeds--Low (0- 10% cover in general vicinity of subpop.). Site visited 7/08 Erosion Field Trip.	0 Erosion does not occur in the RTE plant polygon. Erosion Site ID=43.	Erosion not in RTE plant polygon.	
DRDR-24A New. Map5	Beck--left out of Final Report		Weeds--Low (0- 10% cover in general vicinity of subpop.). Need sighting information.			
DRDR-24B New. Map5	Beck--100s to 1000+plants, 3,620x55ft.		Weeds--Low (0- 10% cover in general vicinity of subpop.). Site visited 7/21- 23/2008 Erosion Field Trip.	0 Erosion does not occur in the RTE plant polygon. Erosion Site ID=31A.	Boat could not access area. It is likely that plants are not growing in erosion area - this species tends to grow on limestone bedrock.	

DRDR C	Beck, 200+plants, in 6 subpops., all on FS. 2000ft. Long, elev.1730-2200ft.	Estimated 200+ plants in 6 subpops. in a 2,000-foot long population north of Boundary Dam growing on sparsely vegetated, steep to vertical, limestone slopes along reservoir. Plants grow in limestone-derived soil and out of cracks in limestone. Plants of all size classes noted. It is sometimes difficult to distinguish individual plants, as they may be growing quite close together. Most of the population mapped and observed with binoculars. Plants range from near water level, upslope several 100 feet. Sighting form DRDR C includes 2007 DRDR polygons 25a, 25b, 26, 27, 28, and 29. Plant density can vary from one or a few widely spaced plants, to 50+ in dense concentrations. Most slopes are very steep to vertical, though the plants were also observed growing on nearly flat ground.				
		There is a lot of potentially suitable habitat that is not currently inhabited by plants. Subpops. 27 and 29 (1 and 3 plants, respectively) are located north of the dam on fill alongside roads associated with access and maintenance . Plants range from just above high pool, upslope to the Vista House. Subpops. 27 and 29 (1 and 3 plants, respectively) are located north of the dam on fill alongside roads associated with access and maintenance. Some plants are growing adjacent roads and facilities adjacent to Boundary Dam and could potentially be affected by maintenance activities (though evidence of this was not observed). Non-natives do not seem to be an issue. Habitat adjacent reservoir. Most plants visible from the top of the dam and from the road that goes from the dam up to the Vista House. Look for mats of plants on steep to vertical limestone slopes.	Road maintenance could affect site.			
DRDR-25A New. Map1	Beck--100+plants, 220x35ft.		Weeds--Low (0-10% cover in general vicinity of subpop.). Project maintenace and operations could affect site.			
DRDR-25B New. Map1	Beck--75+plants, 180x50ft.		Weeds--Low (0-10% cover in general vicinity of subpop.). Project maintenace and operations could affect site.			
DRDR-26 New. Map1	Beck--5plants, 20x10ft.		Weeds--Low (0-10% cover in general vicinity of subpop.). Project maintenace and operations could affect site.			
DRDR-27 New. Map1	Beck--1plant, 25x10ft.		Weeds--Low (0-10% cover in general vicinity of subpop.). Project maintenace and operations could affect site.			
DRDR-28 New. Map1	Beck--10plants, 80x25ft.		Weeds--Low (0-10% cover in general vicinity of subpop.). Project maintenace and operations could affect site.			

DRDR-29 New Map1	Beck--3plants, 25x10ft.		Weeds--Low (0-10% cover in general vicinity of subpop.). Project maintenance and operations could affect site.			
<u>MUME-A</u>	Beck--elev.1990-1995ft.	This population has 24 subpops along 8 miles of reservoir. Look for rhizomatous patches of plants scattered amongst shrubby and grassy meadows. Plants can also be found growing out of cracks in rocks near high water level . It is usually difficult to distinguish discrete individuals. Plants growing along reservoir margin just above high water , in densely vegetated meadows with diverse species of forbs and grass, and often many weed species . Plants closely associated with upper portion of the fluctuation zone . Subpops. ranging in vigor from a continuous rhizomatous fringe of plants with many stems, to subpops consisting of only a few small ramets. Plants are sometimes partially to completely submerged by high water . They were also observed to be with 3 vertical feet of the high water level . The silt loam soil they grow in is probably wet to moist during the entire growing season. Cover of exotic species is quite high in some of the subpopulations				
		Weedy species include: Hypericum perforatum, Iris pseudacorus, Cirsium arvense, Tanacetum vulgare, Plantago lanceolata, Chrysanthemum leucanthemum, and Poa compressa. We observed some plants mostly submerged in August. Plant distribution is often scattered patchy. Some plants grow along upper edge of fluctuation zone where isolated locations of Project-related erosion might affect individual plants, but not overall population. In addition, limited numbers of plants grow in the vicinity of several dispersed recreation sites on the reservoir. While individual plants might be occasionally trampled, the overall population is unlikely to be negatively affected. More plants could be found mixed amongst dense vegetation in appropriate habitat.				
MUME-6			Recreation. Weeds--Medium-High (11-100% cover in general vicinity of subpop.).			
MUME-8			Recreation. Weeds--Medium-High (11-100% cover in general vicinity of subpop.).			
MUME-9			Recreation. Weeds--Medium-High (11-100% cover in general vicinity of subpop.).			
MUME-16			Recreation. Weeds--Medium-High (11-100% cover in general vicinity of subpop.).			

MUME-18			Recreation. Weeds-- Medium-High (11- 100% cover in general vicinity of subpop.).			
MUME-19			Recreation. Weeds-- Medium-High (11- 100% cover in general vicinity of subpop.).			
MUME-23			Recreation. Weeds-- Medium-High (11- 100% cover in general vicinity of subpop.).			
<u>SAMA-1</u> EO#004 Relocated. Map1	Layser; Dwerlkotte relocated in 2005-but not sure if at EO#004; Beck, 28plants, 10x40ft., ave.elev.1995ft. Comment--Dwerlkotte and Beck were at a different site than EO#004.	Moderate sized populations of plants clumped in a moist seepy area. Plants are growing on a grassy bench 2-3 feet above high water of the reservoir. The major part of the seep this population is associated with is located approximately 10 feet south of the population. The soil is probably moist or wet a majority of the growing season. There is some evidence of trampling related to surveying in this area in 2007. Changes to upslope hydrology (although none are known to be planned) could be detrimental to this population. There is some Canada thistle growing in the population. Population located with CACA-1 population.	Weeds--Low (0- 10% cover in general vicinity of subpop.).			
<u>SAMA-5</u> New. Map3	Beck--125plants, 255x65ft., ave.elev.2005ft.	Population vigorous, approximately 1/3 are flowering, all associated with seep that surfaces just upslope of population. Plants are growing in and near a seepy creek that emerges from the ground upslope of the population. The substrate is hummocky moss and the soil is probably moist or wet the majority of the growing season. Changes to upslope hydrology (although none are known to be planned) could be detrimental to this population. Weedy species do not seem to be an issue in this population. Walk upslope into forest just north of waterfall.	Weeds--Low (0- 10% cover in general vicinity of subpop.).			
<u>SAMA-6</u> New. Map2	Beck--200plants, 240x65ft., ave.elev.2010ft.	100 flowering stalks counted. It was estimated that there were at least twice as many total plants as there were flowering plants, i.e., many plants were vegetative. Population was quite vigorous. Plants growing in braided, seepy wetland in forested area. Plants growing in wetter areas with moss. Soil probably moist to wet throughout the growing season. Population above high water level of reservoir. Changes to upslope hydrology (while none are known to be planned) could be detrimental to this population. Trace amounts of several species of weeds present --Cirsium arvense and Hieracium caespitosum. Walk upslope into forest. Scattered plants associated with seepy creek. Relatively large, healthy population of SAMA growing in a braided seep near reservoir.	Weeds--Low (0- 10% cover in general vicinity of subpop.).			

<p><u>SAMA-7</u> New. Map3</p>	<p>Beck--5plants, 20x10ft., ave.elev.2000ft.</p>	<p>Small population of 5 vegetative plants growing in a weedy seep. Plants are growing in a long, narrow, weedy seep at the edge of open shrubby area along reservoir. The plants are growing in organic soil, which is probably moist or wet a majority of the growing season. There are only 5 plants and all of them were vegetative in 2007, suggesting that site conditions may not be optimal for this species. Changes in upslope hydrology (although none are known to be planned) could be detrimental to this population. There is lots of oxeye daisy and Canada thistle growing in the population. Plants are scattered in amongst shrubby-herbaceous area.</p>	<p>Weeds--Medium (11-50% cover in general vicinity of subpop.). Site visited 7/21-23/2008 Erosion Field Trip.</p>	<p>0 Erosion does not occur in the RTE plant polygon. Erosion Site ID=45.</p>	<p>Erosion not in RTE plant polygon.</p>	
<p><u>SAMA-8</u> New. Map4</p>	<p>Beck--10plants, 100x30ft., ave.elev.2015ft.</p>	<p>Small population of 10 vegetative plants growing adjacent small stream in moist to wet soil. Plants are growing on a forested bench 25 feet above high water of the reservoir, and approximately 40 vertical feet from the river. The seep/stream is visible from the river. The soil is probably moist a majority of the growing season – though this site doesn't seem as wet as most of the other Sanicula sites. Changes to upslope hydrology (although none are known to be planned) could be detrimental to this population. There are trace amounts of bull thistle growing in the population. Plants are up on forested bench, about 25 feet up from river along the seep. Population is directly across the river from an enormous mossy seep on the slate slopes on the west side of the river.</p>	<p>Low weeds.</p>			
<p><u>VIRE-1</u> Relocated. Map3</p>	<p>Ahlenslager, Beck-- 500+plants, 580x110ft., ave.elev.2000ft.</p>	<p>Many plants scattered on forest floor. No plants in flower, very few plants in fruit. Plants average 2 – 3 leaves. Cedar hemlock forest. VIRE 1 is in the vicinity of a dispersed recreation site and has a very low potential to be affected by trampling, although this was not observed. Most plants are not in the area most used for camping. There is some scattered Canada thistle scattered in moister microsites within the Viola population. The nearby shoreline is very weedy with a number of noxious weeds. Plants are near a knob of ground on the south end of the cove, just inside the cedar forest from the edge of the river.</p>	<p>Recreation. Weeds--Low (0-10% cover in general vicinity of subpop.).</p>			
<p><u>VIRE-3</u> New. Map3</p>	<p>Beck--10plants, 145x40ft., ave.elev.2000ft.</p>	<p>This is not a vigorous population, few plants present, none of which had fruit. Changes to upslope hydrology (although none are known to be planned) could be detrimental to this population. Weeds do not seem to be an issue in this population. Plants are in forest approximately 100 feet from shore, just upslope from the SAMA population. Plants seem to be associated with a microdraw with some underground moisture.</p>	<p>Weeds--Low (0-10% cover in general vicinity of subpop.).</p>			
<p><u>VIRE-6</u> New. Map1</p>	<p>Beck--40+plants, 80x20ft., ave.elev.2000ft.</p>	<p>Many plants scattered on forest floor. No plants in flower, very few plants in fruit. Plants average 2 – 3 leaves. This general area has many facilities and activities related to the operation of Boundary Dam, though most are unlikely to affect this population. The creek that runs through this population originates from a drainage roadside ditch upslope and along a road. Thus the population could potentially be vulnerable to upslope changes in hydrology associated with maintenance to the road or drainage ditch. There is a low cover of scattered bull thistle in the Viola population. Walk down slope to the 1-foot wide creek in the forest. Plants scattered along riparian area on both sides for approximately 50 feet.</p>	<p>Weeds--Medium (11-50% cover in general vicinity of subpop.). Project maintenance and operations could affect site.</p>			
<p>OUT OF 2007 STUDY AREA. Need information.</p>						

ASMI-8	On FS. Sighting form in non-FS section, on Fig. A.5-1 of Final Report				
ASMI-9	If on FS land, need sighting information; not on Fig. A.5-1.				
CIBU-1	On FS land (PAD), need sighting information; not on Fig. A.5-1.				
CIBU-2	On FS land (PAD), need sighting information; not on Fig. A.5-1.				
CIBU-3	On FS land (PAD), need sighting information; not on Fig. A.5-1.				
SAMA-2	On FS. On Fig. A.5-1 of Interim Report (Map 4 of 9); need sighting form.				
SAMA-3	If on FS land, need sighting information; not on Fig. A.5-1.				
VIRE-2	If on FS land, need sighting information; not on Fig. A.5-1.				
Not on FS land.					
ASMI-13	Study 22-ownership map incorrectly labeled, not FS land.				
ASMI-15	Study 22-ownership map incorrectly labeled, not FS land.				
SAMA-12	Study 22, Figure 5.1-1 shows T40N R43E S3 as Seattle City Light land.				