Rare Plant and Vegetation Survey of Lake Easton State Park

Pacific Biodiversity Institute

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Introduction

Under contract with the Washington State Parks and Recreation Commission Lake Easton State Park, located in Kittitas County was surveyed for rare plant occurrences and mapped according to vegetation communities by Pacific Biodiversity Institute (PBI). Vegetation data was collected for all the mapped vegetation types. This report summarizes the activities and findings of the contracted work.

Survey Conditions and Survey Routes

The project area was surveyed by two botanists on May 31, 2006 and then revisited by another botanist on June 2 and September 22 – 24, 2006. Details on personnel and survey dates are provided in Appendix A. Our routes from these surveys are illustrated in Figure 1. Portions of all the units were accessible by maintained roads and trails, however penetrating the interior of some of the units required bushwacking through dense shrubs and forest plantations.

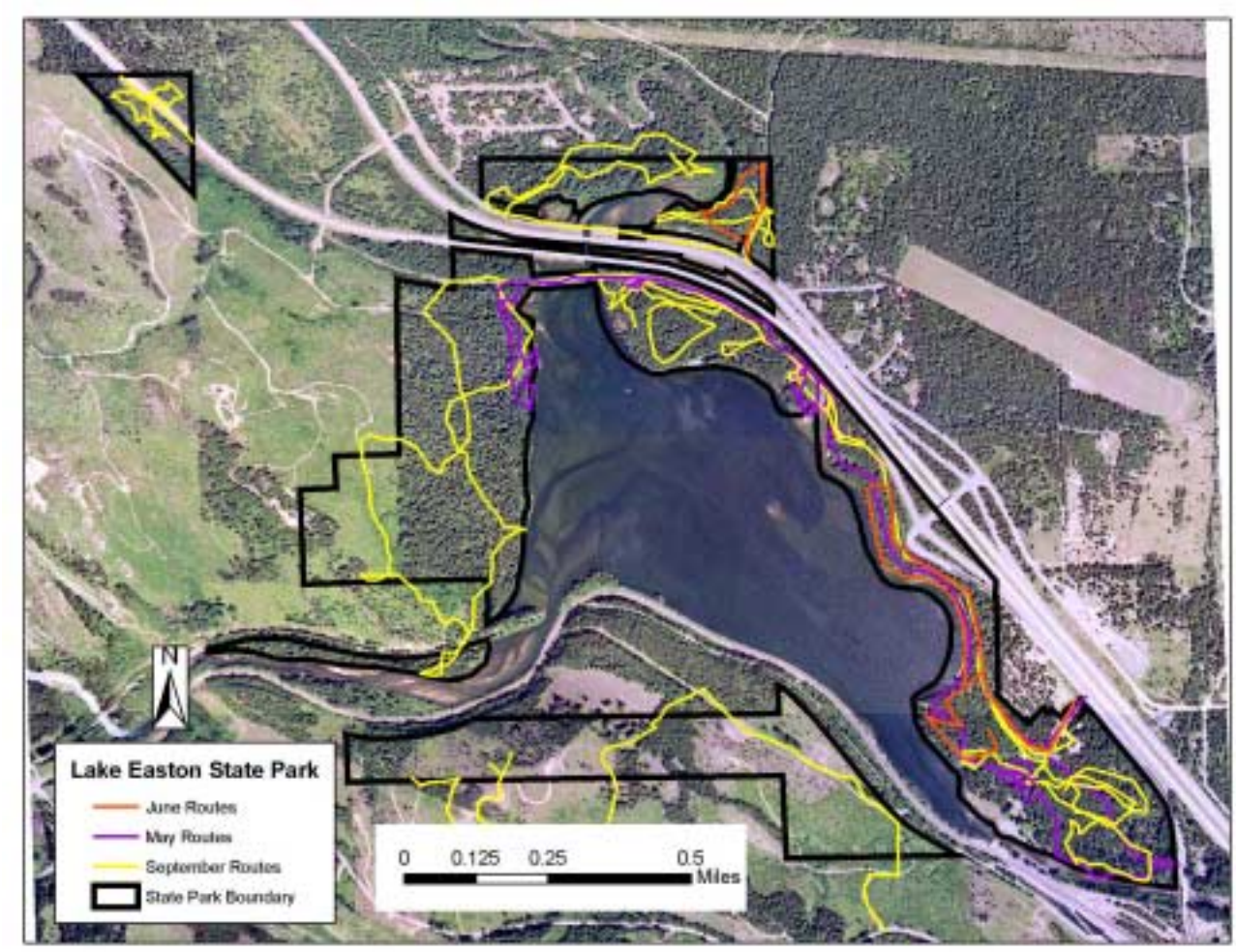

Figure 1. Survey routes for the vegetation community mapping and rare and endangered plant surveys conducted by PBI in 2006.

Vegetation Communities

Methods – Vegetation Surveys

Vegetation communities within Lake Easton State Park were delineated and classified using a combination of field survey and remote sensing techniques. We relied on descriptions from the Field Guide for Forested Plant Associations of the Wenatchee National Forest (Lillybridge et al, 1995) and Classification and Management of Aquatic, Riparian and Wetland Sites on the National Forests of Eastern Washington (Kovalchik and Clausnitzer, 2004) to make final vegetation community assignments. In some cases, these descriptions were not adequate in describing existing vegetation associations. In these cases, alternative vegetation communities or plant associations were created by PBI.

Remote sensing techniques consisted of manually delineating plant associations or mosaics of plant associations in a digital environment. We reviewed orthorectified aerial photography from the 1998 and recent LANDSAT Thematic Mapper satellite images for discernable vegetation or landform patterns. We also used recent high-resolution true color orthorectified aerial photography from Washington Department of Transportation. Topographic maps, digital elevation models (DEMs) were also employed to assist the process of vegetation community delineation. The vegetation polygons were created by hand in a GIS by ocular assessment.

Field surveys consisted of visiting sites located within the vegetation polygons created during the remote sensing process. At representative sites within a polygon, vegetation data and site descriptions were recorded in a fashion consistent with the "plant community polygon" format provided by the Washington State Parks and Recreation Commission. Further refinements and editing of the vegetation polygon layers were done by hand on hardcopy maps in the field, and later edited digitally to create the final vegetation polygon GIS layer.

Results – Vegetation Surveys

We mapped and surveyed 33 vegetation community polygons, comprised of 24 plant community and land cover types, within Lake Easton State Park. Vegetation community polygons are either stand-alone plant associations or mosaics of multiple plant associations. Table 1 lists the plant associations and cover types found in Lake Easton State Park. See Appendix C for interpretation of "Status" codes. Figures 2 and 3 on the following pages illustrate the location of the vegetation community polygons. Note that Figure 3 only shows the primary plant associations in each polygon (PA1 in the database). A printout of the complete set of data we collected for each polygon is attached in Appendix D. The ecological condition of each polygon was evaluated according to a simple ranking system described in Appendix B.

Table 1. Vegetation Community Types Encountered in Lake Easton State Park

Abbreviation	Association Name	English Name	Reference	Status
ABGR/ACCI	*Abies grandis / Acer circinatum*	grand fir / vine maple	Lillybridge et al., 1995	G4
ABGR/ACCI-CHUM	*Abies grandis / Acer circinatum - Chimaphila umbellata*	grand fir / vine maple - pipsissewa	Lillybridge et al., 1995	G4
ABGR/ACTR	*Abies grandis / Achlys triphylla*	grand fir / vanillaleaf	Lillybridge et al., 1995	G3
ABGR/HODI/CARU	*Abies grandis / Holodiscus discolor / Calamagrostis rubescens*	grand fir / oceanspray / pinegrass	Lillybridge et al., 1995	G2G3
ABGR/MANE2	*Abies grandis / Mahonia nervosa*	grand fir / dwarf Oregongrape	Lillybridge et al., 1995	G3G4
ALIN2/CAUT	*Alnus incana / Carex utriculata*	speckled alder / Northwest Territory sedge	Kovalchik and Clausnitzer, 2004	??
ALIN2/PHAR	*Alnus incana / Phalaris arundinacea*	speckled alder / reed canarygrass	Kovalchik and Clausnitzer, 2004	
ALRU2/POMU	*Alnus rubra / Polystichum munitum*	red alder / swordfern	Chappell, 2005	G4S4
PHAR wetland	*Phalaris arundinacea* wetland	reed canarygrass wetland	PBI	
PSME/ARUV	*Pseudotsuga menziesii / Arctostaphylos uva-ursi*	douglas-fir / kinnikinnick	Lillybridge et al., 1995	G3G4
PSME/PAMY	*Pseudotsuga menziesii / Paxistima myrsinites*	douglas-fir / Oregon boxleaf	Lillybridge et al., 1995	??
PSME/SPBEL	*Pseudotsuga menziesii / Spiraea betulifolia*	douglas-fir / white spirea	Lillybridge et al., 1995	??
PSME/SPBEL/CARU	*Pseudotsuga menziesii / Spiraea betulifolia / Calamagrostis rubescens*	douglas-fir / white spirea / pinegrass	Lillybridge et al., 1995	??
TSHE/ACCI/ACTR	*Tsuga heterophylla / Acer circinatum / Achlys triphylla*	western hemlock / vine maple / vanillaleaf	Lillybridge et al., 1995	G3G4
TSHE/ACCI/ASCA3	*Tsuga heterophylla / Acer circinatum / Asarum caudatum*	western hemlock / vine maple / wild ginger	Lillybridge et al., 1995	??
TSHE/ACCI/CLUN	*Tsuga heterophylla / Acer circinatum / Clintonia uniflora*	western hemlock / vine maple / queen's cup	Lillybridge et al., 1995	??
TSHE/MANE2	*Tsuga heterophylla / Mahonia nervosa*	western hemlock / dwarf Oregongrape	Lillybridge et al., 1995	G4
TSHE/VAME	*Tsuga heterophylla / Vaccinium membranaceum*	western hemlock / thinleaf huckleberry	PBI	??
TSHE/VAME-PAMY/XETE	*Tsuga heterophylla / Vaccinium membranaceum - Paxistima myrsinites / Xerophyllum tenax*	western hemlock / thinleaf huckleberry - Oregon boxleaf / beargrass	PBI	??
ROCKY BALD	*Rocky bald with vegetation*	Rocky bald with vegetation	PBI	??
TALUS	*Talus slope with vegetation*	Talus slope with vegetation	PBI	??
Developed	*Developed area*	Developed area, roads, buildings	PBI	
Recent clearcut	*Recent clearcut*	Clearcut with last 10 years	PBI	
Water	*Water*	Water – reservoir and river	PBI	

Figure 2. Layout of the vegetation community polygons overlaying a recent color aerial photograph.

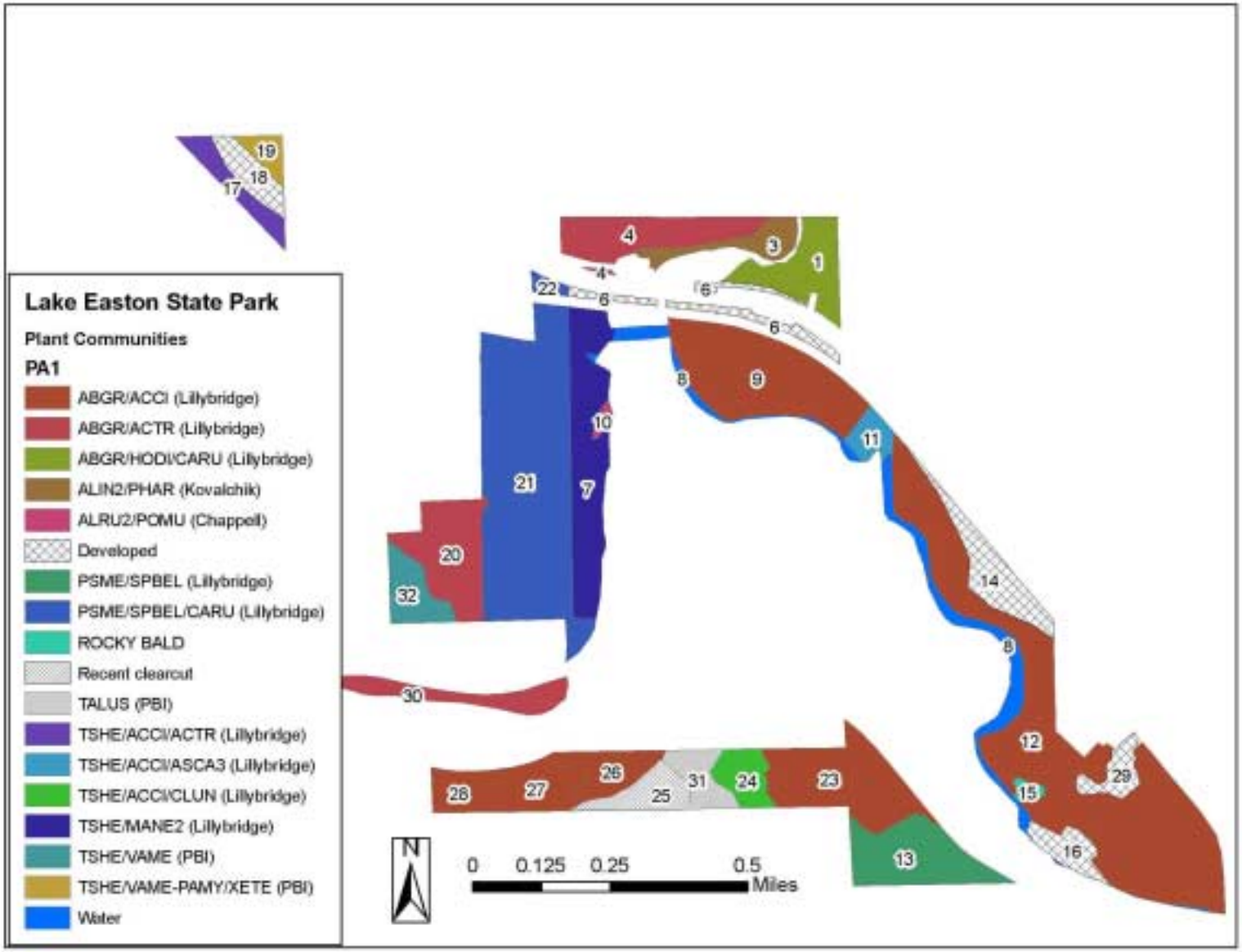

Figure 3. The primary vegetation community types within Lake Easton State Park.

Examples of Vegetation Community Types

Abies grandis / Acer circinatum forest (ABGR/ACCI), *Abies grandis / Acer circinatum - Chimaphila umbellate* forest (ABGR/ACCI-CHUM), *Abies grandis / Achlys triphylla* forest (ABGR/ACTR), *Abies grandis / Holodiscus discolor / Calamagrostis rubescens* forest (ABGR/HODI/CARU), and *Abies grandis / Mahonia nervosa* forest (ABGR/MANE2)

These plant communities were described by Lillybridge et al (1995). They all are characterized by the presence of grand fir in the overstory and as tree reproduction in the understory. These grand fir associations occur on more mesic and slightly cooler sites than the Douglas-fir associations. But they represent warmer and drier conditions than the western hemlock associations that are described below. The ABGR/ACCI and ABGR/ACCI-CHUM associations usually have an abundance of vine maple in the understory. The ABGR/ACTR association lacks vine maple but has an understory of vanillaleaf. It usually occurs on deep, mesic soils. The ABGR/HODI/CARU association represents the driest and warmest of the grand fir associations found at Lake Easton and is characterized by the presence of oceanspray and pinegrass in the understory. The ABGR/MANE2 association occurs on sites that represent more intermediate moisture conditions and has an abundance of dwarf Oregongrape in the understory.

Alnus incana / Carex utriculata forest (ALIN2/CAUT)

This wetland plant community was described by Kovalchik and Clausnitzer (2004). It is characterized by a dense cover of speckled alder in the overstory and an understory of Northwest Territory sedge. It occurs in small patches along the Kachess River in the northern part of Lake Easton State Park.

Alnus incana / Phalaris arundinacea forest (ALIN2/PHAR)

This wetland plant community was described by Kovalchik and Clausnitzer (2004). It is characterized by a dense cover of speckled alder in the overstory and reed canarygrass in the understory. It occurs along the Kachess River in the northern part of Lake Easton State Park.

Alnus rubra / Polystichum munitum forest (ALRU2/POMU)

This plant community was described by Chappell (2005). While this is normally considered a Puget Sound area association, we found it also occurring at Lake Easton State Park. This is due to the westside moisture and similar environmental conditions occurring at this elevation near Snoqualmie Pass.

Phalaris arundinacea wetland (PHAR wetland)

This plant community has not been described before. Pacific Biodiversity Institute decided that it was a unique community that warranted a name and description. It was found in a few small wetland patches at Lake Easton State Park. It is characterized by an abundance of reed canarygrass, sometimes to the exclusion of other plants.

***Pseudotsuga menziesii / Arctostaphylos uva-ursi* forest (PSME/ARUV), and *Pseudotsuga menziesii / Paxistima myrsinites* forest (PSME/PAMY)**

These plant communities were described by Lillybridge et al (1995). They are characterized by Douglas-fir in the overstory and a lack of other more shade tolerant trees. Kinnikinnick is often the only common understory shrub in the PSME/ARUV association, which occurs on shallow, well drained soils on relatively hot sites. The PSME/PAMY association is more common and occurs on deeper soils and more mesic sites

Pseudotsuga menziesii / Spiraea betulifolia forest (PSME/SPBEL), and *Pseudotsuga menziesii / Spiraea betulifolia / Calamagrostis rubescens* forest (PSME/SPBEL/CARU)

These plant communities were described by Lillybridge et al (1995). They are characterized by Douglas-fir in the overstory and a lack of other more shade tolerant trees. White spirea is a common understory shrub in both these associations. These associations differ by the abundance of pinegrass in the second association and its absence in the first. They represent subtle differences in soil properties and moisture regimes.

***Tsuga heterophylla / Acer circinatum / Achlys triphylla* forest (TSHE/ACCI/ACTR),**
***Tsuga heterophylla / Acer circinatum / Asarum caudatum* forest (TSHE/ACCI/ASCA3), and**
***Tsuga heterophylla / Acer circinatum / Clintonia uniflora* forest (TSHE/ACCI/CLUN)**

These plant communities were described by Lillybridge et al (1995). They all are characterized by the presence of *Tsuga heterophylla* in the overstory or as significant tree reproduction in the understory. *Acer circinatum* is a common understory shrub in all these associations. These associations differ in their herbaceous cover and this represents differences in soil properties and moisture regimes. *Asarum caudatum* is found on wetter sites while *Clintonia uniflora* and *Achlys triphylla* are found on more mesic sites.

Tsuga heterophylla / Mahonia nervosa forest (TSHE/MANE2)

This plant community was described by Lillybridge et al (1995). This plant association occurs on similar sites as the other western hemlock associations described above, but occurs on better drained, slightly drier sites.

Tsuga heterophylla / Vaccinium membranaceum forest (TSHE/VAME)

This plant community has not been described before. Pacific Biodiversity Institute decided that it was a unique community that warranted a name and description. It was found in small patches at Lake Easton State Park. It is similar to the other western hemlock associations, but lacks both dwarf Oregon grape and vine maple. It does have abundant thinleaf huckleberry (*Vaccinium membranaceum*) in the understory.

Tsuga heterophylla / Vaccinium membranaceum - Paxistima myrsinites / Xerophyllum tenax forest (TSHE/VAME-PAMY/XETE)

This plant community has not been described before. Pacific Biodiversity Institute decided that it was a unique community that warranted a name and description. It was found in small patches at Lake Easton State Park. It is similar to the other western hemlock associations, particularily the TSHE/VAME association described above, but also has an abundance of *Xerophyllum tenax* and *Paxistima myrsinites*. It should be considered a variant of the TSHE/VAME association.

Rocky Bald

This plant community has not been described before in this area. Pacific Biodiversity Institute decided that it was a unique community that warranted a name and description. It was found in one major patch and several smaller patches at Lake Easton State Park. It is characterized by a scarcity of tree cover, very shallow to non-existent soil, mosses, *Selaginella densa*, rock ferns, *Arctostaphylos uva-ursi* and an diversity of grasses and herbs. The main patch at Lake Easton is heavily impacted by trails and recreational use.

Talus

This plant community has not been described before in this area. Pacific Biodiversity Institute decided that it was a unique community that warranted a name and description. It was found in one major patch and several smaller patches on the south side of Lake Easton at Lake Easton State Park. Some places are vegetated with mosses and lichens and scattered shrubs and trees. Other areas are covered only with bare talus with sparse lichen cover. It occurs on relatively steep, north-facing slopes.

Rare Plant Surveys

Methods – Rare Plants

We visited Lake Easton State Park multiple times during the 2006 field season to conduct a rare plant survey. We used the Washington Department of Natural Resources Natural Heritage Program's (DNR NHP) rare plant list to determine the conservation status of vascular plants encountered in the field. When a plant from the DNR NHP list was located, we used the standard DNR NHP rare plant sighting form to complete field descriptions for the observation.

Field surveys were conducted on May 31, June 2 and September 22 – 24, 2006. During the field surveys, we were equipped with reference literature, rare plant lists for the area, maps showing rare plant locations from previous surveys, and a portable plant identification lab. We looked for rare plants in habitats previously identified as being likely occurrence sites. So as not to miss a rare plant, all vascular plant species encountered during the inventory were identified on site, at base camp in the portable laboratory, or back at our office.

Survey routes were determined based on the desire to efficiently cover a large proportion of the park's area throughout the field season. We surveyed habitats of the park where we felt rare plants were more likely to occur more intensively. Survey routes for the rare plant inventory and rare plant locations were recorded either by hand, on a hardcopy topographic map, or as GPS waypoints and trackpoints, all of which were later compiled into a single GIS data layer (Figure 1).

Results – Rare Plants

No plants listed by the DNR Natural Heritage Program were found during our surveys of Lake Easton State Park. One rare plant has been recorded at Lake Easton State Park before. In 2004, water awlwort *(Subularia aquatica)*, a state listed (R1) plant was found along the shores of the Lake Easton reservoir (Figure 4) and is recorded in the DNR Natural Heritage Program rare plant database. We did not find this plant during our 2006 surveys. From our past experience with this species at Lake Wenatchee State Park in 2004, it appears to only grow in a narrow band along some lakeshores. Due to considerable fluctuation of the lake level at the Lake Easton reservoir during our surveys, it is likely that lake-level conditions were not adequate for *Subularia aquatica* to appear at the time of our surveys. Further surveys for this species should be conducted at Lake Easton State Park in the future.

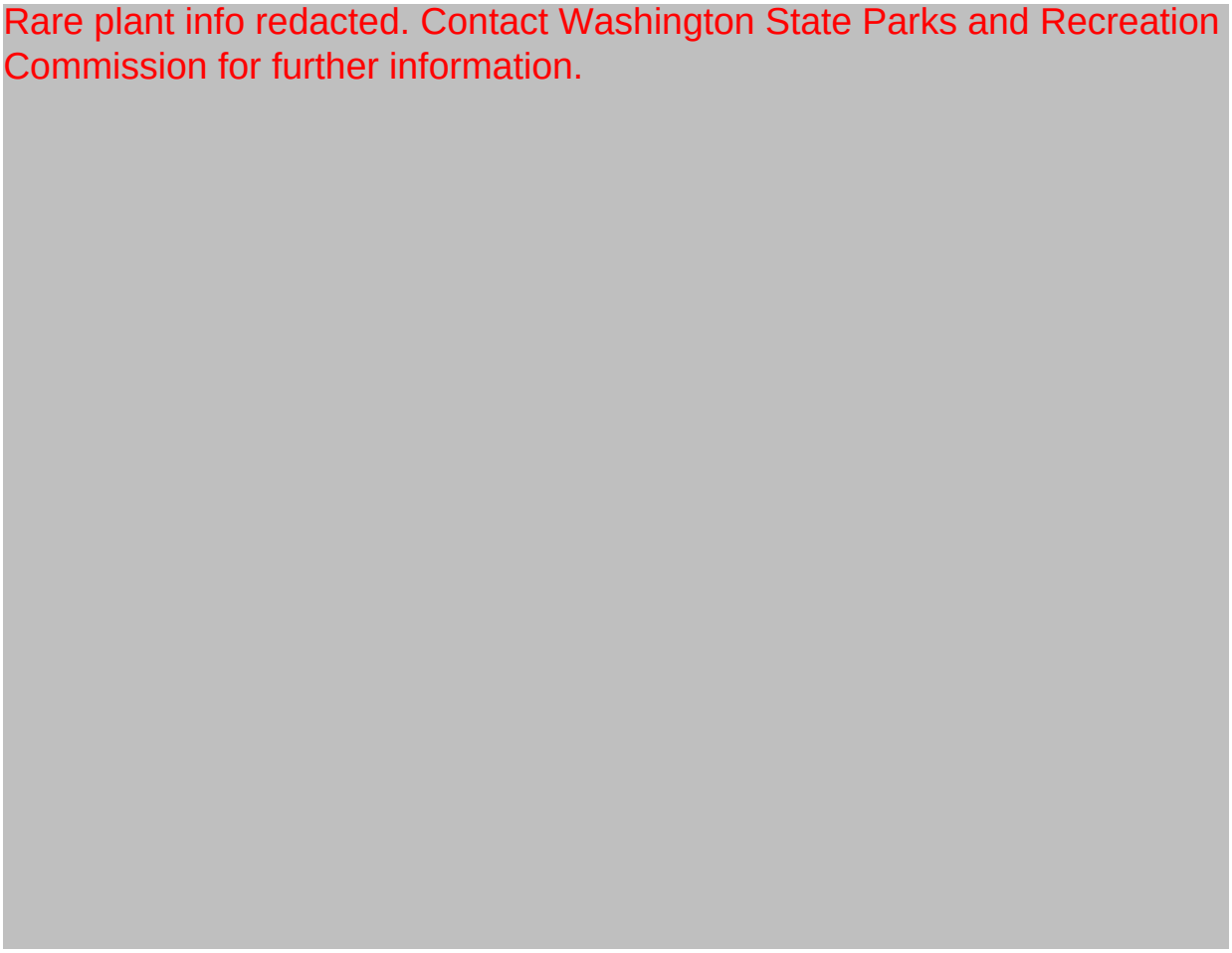

Figure 4. Location of *Subularia aquatica* population found at Lake Easton in 2004.

Vascular Plant List for Lake Easton State Park

A total of 149 vascular plant species were identified during the 2006 surveys at Lake Easton State Park. Of these, 23 of the plant species are non-native, accounting for about 15% of the total.

Key to Vascular Plant Species List

"Code": Four-letter plant code as shown on the USDA PLANTS database.
"alien": species that are not native to the park are indicated with an "a"
"Common Name / Accepted Synonym": The species list uses Hitchcock and Cronquist, *Flora of the Pacific Northwest* as the taxonomic authority, as this is still the standard reference for our area. Updated nomenclature or general common names are shown in this column when they exist.

Table 2. Vascular Plant List for Lake Easton State Park

#	Code	Scientific Name	Common Name/Accepted Synonym	Family	alien
1	ABGR	Abies grandis (Dougl. ex D. Don) Lindl.	grand fir	Pinaceae	
2	ACCI	Acer circinatum Pursh	vine maple	Aceraceae	
3	ACGL	Acer glabrum Torr.	Rocky Mountain maple	Aceraceae	
4	ACMI2	Achillea millefolium L.	yarrow	Asteraceae	
5	ACTR	Achlys triphylla (Sm.) DC.	sweet after death	Berberidaceae	
6	AGHE2	Agoseris heterophylla (Nutt.) Greene	annual agoseris	Asteraceae	
7	ALRU2	Alnus rubra Bong.	red alder	Betulaceae	
8	ALSI3	Alnus sinuata (Regel) Rydb.	>>Alnus viridis ssp. sinuata	Betulaceae	
9	AMAL2	Amelanchier alnifolia (Nutt.) Nutt. ex M. Roemer	Saskatoon serviceberry	Rosaceae	
10	ANMA	Anaphalis margaritacea (L.) Benth.	western pearly everlasting	Asteraceae	
11	ANORO	Anemone oregana Gray var. oregana	blue windflower	Ranunculaceae	
12	ANAR3	Angelica arguta Nutt.	Lyall's angelica	Apiaceae	
13	ARNE	Arctostaphylos nevadensis Gray	pinemat manzanita	Ericaceae	
14	ARMA18	Arenaria macrophylla Hook.	>>Moehringia macrophylla	Caryophyllaceae	
15	ARCO9	Arnica cordifolia Hook.	heartleaf arnica	Asteraceae	
16	ASDE6	Aspidotis densa (Brack.) Lellinger	Indian's dream	Pteridaceae	
17	ATFI	Athyrium filix-femina (L.) Roth	common ladyfern	Dryopteridaceae	
18	BEAQ	Berberis aquifolium Pursh	>>Mahonia aquifolium	Berberidaceae	
19	BENE2	Berberis nervosa Pursh	>>Mahonia nervosa	Berberidaceae	
20	BRTE	Bromus tectorum L.	cheatgrass	Poaceae	a
21	CARU	Calamagrostis rubescens Buckl.	pinegrass	Poaceae	
22	CABU	Calypso bulbosa (L.) Oakes	fairy slipper	Orchidaceae	
23	CABU2	Capsella bursa-pastoris (L.) Medik.	shepherd's purse	Brassicaceae	a
24	CAGE2	Carex geyeri Boott	Geyer's sedge	Cyperaceae	
25	CAUT	Carex utriculata Boott	Northwest Territory sedge	Cyperaceae	
26	CESA	Ceanothus sanguineus Pursh	redstem ceanothus	Rhamnaceae	
27	CEVE	Ceanothus velutinus Dougl. ex Hook.	snowbrush ceanothus	Rhamnaceae	
28	CEDI3	Centaurea diffusa Lam.	diffuse knapweed	Asteraceae	a
29	CEMA4	Centaurea maculosa auct. non Lam. [misapplied]	>>Centaurea stoebe ssp. micranthos	Asteraceae	a
30	CEVI3	Cerastium viscosum auct. non L. [misapplied]	>>Cerastium glomeratum	Caryophyllaceae	a
31	CHLE80	Chrysanthemum leucanthemum L.	>>Leucanthemum vulgare	Asteraceae	a
32	CIAL	Circaea alpina L.	small enchanter's nightshade	Onagraceae	
33	CIRSI	Cirsium P. Mill.	thistle	Asteraceae	a
34	CLUN2	Clintonia uniflora (Menzies ex J.A. & J.H. Schultes) Kunth	bride's bonnet	Liliaceae	
35	COPA3	Collinsia parviflora Lindl.	maiden blue eyed Mary	Scrophulariaceae	
36	COLI2	Collomia linearis Nutt.	tiny trumpet	Polemoniaceae	
37	COCA13	Cornus canadensis L.	bunchberry dogwood	Cornaceae	
38	COST4	Cornus stolonifera Michx.	>>Cornus sericea ssp. sericea	Cornaceae	
39	COCO6	Corylus cornuta Marsh.	California hazelnut	Betulaceae	
40	CRDO2	Crataegus douglasii Lindl.	black hawthorn	Rosaceae	
41	CRCRA2	Cryptogramma crispa (L.) R. Br. ex Hook. ssp. acrostichoides (R. Br.) Hultén	>>Cryptogramma acrostichoides	Pteridaceae	
42	CYFR2	Cystopteris fragilis (L.) Bernh.	brittle bladderfern	Dryopteridaceae	
43	DRVE2	Draba verna L.	spring draba	Brassicaceae	a
44	ELPA3	Eleocharis palustris (L.) Roemer & J.A. Schultes	common spikerush	Cyperaceae	
45	EPAN2	Epilobium angustifolium L.	>>Chamerion angustifolium ssp. angustifolium	Onagraceae	
46	EPMI	Epilobium minutum Lindl. ex Lehm.	chaparral willowherb	Onagraceae	
47	EQAR	Equisetum arvense L.	field horsetail	Equisetaceae	
48	ERLA6	Eriophyllum lanatum (Pursh) Forbes	common woolly sunflower	Asteraceae	
49	ERGR9	Erythronium grandiflorum Pursh	yellow avalanche-lily	Liliaceae	
50	FRVI	Fragaria virginiana Duchesne	Virginia strawberry	Rosaceae	
51	FRLA2	Fritillaria lanceolata Pursh	>>Fritillaria affinis var. affinis	Liliaceae	

52	GAAP2	Galium aparine L.	stickywilly	Rubiaceae	a
53	GATR2	Galium trifidum L.	threepetal bedstraw	Rubiaceae	
54	GEMA4	Geum macrophyllum Willd.	largeleaf avens	Rosaceae	
55	GOOB2	Goodyera oblongifolia Raf.	western rattlesnake plantain	Orchidaceae	
56	HEMI7	Heuchera micrantha Dougl. ex Lindl.	crevice alumroot	Saxifragaceae	
57	HIERA	Hieracium L.	hawkweed	Asteraceae	
58	HODI	Holodiscus discolor (Pursh) Maxim.	Indian plum	Rosaceae	
59	HYPE	Hypericum perforatum L.	common St. Johnswort	Clusiaceae	a
60	HYRA3	Hypochaeris radicata L.	hairy cat's ear	Asteraceae	a
61	JUAC	Juncus acuminatus Michx.	tapertip rush	Juncaceae	
62	JUEF	Juncus effusus L.	common rush	Juncaceae	
63	JUEN	Juncus ensifolius Wikstr.	swordleaf rush	Juncaceae	
64	LANE3	Lathyrus nevadensis S. Wats.	Sierra pea	Fabaceae	
65	LICO	Lilium columbianum Leichtl. in Duchartre	Columbia lily	Liliaceae	
66	LIDA	Linaria dalmatica (L.) P. Mill.	Dalmatian toadflax	Scrophulariaceae	a
67	LIBO3	Linnaea borealis L.	twinflower	Ericaceae	
68	LOCI3	Lonicera ciliosa (Pursh) Poir. ex DC.	orange honeysuckle	Caprifoliaceae	
69	LOIN5	Lonicera involucrata (Richards.) Banks ex Spreng.	twinberry honeysuckle	Caprifoliaceae	
70	LUNA5	Luina nardosmia (Gray) Cronq.	>>Cacaliopsis nardosmia	Asteraceae	
71	LUPO2	Lupinus polyphyllus Lindl.	bigleaf lupine	Fabaceae	
72	LUCA*	Luzula campestris (L.) DC.	field woodrush	Juncaceae	
73	LYAM3	Lysichiton americanus Hultén & St. John	American skunkcabbage	Araceae	
74	MAMI	Madia minima (Gray) Keck	>>Hemizonella minima	Asteraceae	
75	MEAR4	Mentha arvensis L.	wild mint	Lamiaceae	
76	MEPA	Mertensia paniculata (Ait.) G. Don	tall bluebells	Boraginaceae	
77	MIGR	Microsteris gracilis (Hook.) Greene	slender phlox	Polemoniaceae	
78	MIAL3	Mimulus alsinoides Dougl. ex Benth.	wingstem monkeyflower	Scrophulariaceae	
79	MOPA5	Montia parviflora (Dougl. ex Hook.) T.J. Howell	>>Claytonia parviflora ssp. parviflora	Portulacaceae	
80	MOPE3	Montia perfoliata (Donn ex Willd.) T.J. Howell	>>Claytonia perfoliata ssp. perfoliata	Caryophyllaceae	
81	MYLA	Myosotis laxa Lehm.	bay forget-me-not	Boraginaceae	
82	NONE3	Nothochelone nemorosa (Dougl. ex Lindl.) Straw	woodland beardtongue	Scrophulariaceae	
83	OECE	Oemleria cerasiformis (Torr. & Gray ex Hook. & Arn.) Landon	Indian plum	Rosaceae	
84	OESA	Oenanthe sarmentosa K. Presl ex DC.	water parsely	Apiaceae	
85	OSCH	Osmorhiza chilensis Hook. & Arn.	>>Osmorhiza berteroi	Apiaceae	
86	PAMY	Paxistima myrsinites (Pursh) Raf.	Oregon boxleaf	Celastraceae	
87	PERA	Pedicularis racemosa Dougl. ex Benth.	sickletop lousewort	Scrophulariaceae	
88	PEFR5	Petasites frigidus (L.) Fries	arctic sweet coltsfoot	Asteraceae	
89	PHAR3	Phalaris arundinacea L.	reed canarygrass	Poaceae	a
90	PHCA11	Physocarpus capitatus (Pursh) Kuntze	Pacific ninebark	Rosaceae	
91	PICO	Pinus contorta Dougl. ex Loud.	lodgepole pine	Pinaceae	
92	PIMO3	Pinus monticola Dougl. ex D. Don	western white pine	Pinaceae	
93	PIPO	Pinus ponderosa P.& C. Lawson	ponderosa pine	Pinaceae	
94	PLLA	Plantago lanceolata L.	narrowleaf plantain	Plantaginaceae	a
95	PLMA2	Plantago major L.	common plantain	Plantaginaceae	
96	PLATA2	Platanthera L.C. Rich.	fringed orchid	Orchidaceae	
97	POAN	Poa annua L.	annual bluegrass	Poaceae	a
98	POBU	Poa bulbosa L.	bulbous bluegrass	Poaceae	a
99	POGL8	Polypodium glycyrrhiza D.C. Eat.	licorice fern	Polypodiaceae	
100	POHE3	Polypodium hesperium Maxon	western polypody	Polypodiaceae	
101	POMU	Polystichum munitum (Kaulfuss) K. Presl	swordfern	Polypodiaceae	
102	POTR15	Populus trichocarpa Torr. & Gray ex Hook.	>>Populus balsamifera ssp. trichocarpa	Salicaceae	
103	POPA14	Potentilla palustris (L.) Scop.	>>Comarum palustre	Rosaceae	
104	PREM	Prunus emarginata (Dougl. ex Hook.) D. Dietr.	bitter cherry	Rosaceae	
105	PSME	Pseudotsuga menziesii (Mirbel) Franco	Douglas-fir	Pinaceae	
106	PTAQ	Pteridium aquilinum (L.) Kuhn	bracken fern	Dennstaedtiaceae	
107	PUPA3	Puccinellia pauciflora (J. Presl) Munz	>>Torreyochloa pallida var. pauciflora	Poaceae	

108	PYAP	Pyrola aphylla Sm.	>>Pyrola picta	Pyrolaceae	
109	PYAS	Pyrola asarifolia Michx.	liverleaf wintergreen	Pyrolaceae	
110	RAOC	Ranunculus occidentalis Nutt.	western buttercup	Ranunculaceae	a
111	RAUN	Ranunculus uncinatus D. Don ex G. Don	woodland buttercup	Ranunculaceae	a
112	ROGY	Rosa gymnocarpa Nutt.	dwarf rose	Rosaceae	
113	RONU	Rosa nutkana K. Presl	Nootka rose	Asteraceae	
114	RUPA	Rubus parviflorus Nutt.	thimbleberry	Rosaceae	
115	RUUR	Rubus ursinus Cham. & Schlecht.	California blackberry	Rosaceae	
116	RUACA	Rumex acetosa L. ssp. acetosa	garden sorrel	Polygonaceae	a
117	RUCR	Rumex crispus L.	curly dock	Polygonaceae	a
118	SAEX	Salix exigua Nutt.	narrowleaf willow	Salicaceae	
119	SALA*	Salix lasiandra Benth.	whiplash willow	Salicaceae	
120	SASC	Salix scouleriana Barratt ex Hook.	Scouler's willow	Salicaceae	
121	SASI2	Salix sitchensis Sanson ex Bong.	Sitka willow	Salicaceae	
122	SARA2	Sambucus racemosa L.	red elderberry	Caprifoliaceae	
123	SCCY	Scirpus cyperinus (L.) Kunth	woolgrass	Cyperaceae	
124	SCMI2	Scirpus microcarpus J.& K. Presl	panicled bulrush	Cyperaceae	
125	SELA	Sedum lanceolatum Torr.	spearleaf stonecrop	Crassulaceae	
126	SELAL	Sedum lanceolatum Torr. ssp. lanceolatum	spearleaf stonecrop	Crassulaceae	
127	SEDE2	Selaginella densa Rydb.	lesser spikemoss	Selaginellaceae	
128	SHCA	Shepherdia canadensis (L.) Nutt.	russet buffaloberry	Elaeagnaceae	
129	SMRA*	Smilacina racemosa (L) Desf.	>>Maianthemum racemosum ssp. amplexicaule	Liliaceae	
130	SMST	Smilacina stellata (L.) Desf.	>>Maianthemum stellatum	Liliaceae	
131	SOSC2	Sorbus scopulina Greene	Greene's mountain ash	Rosaceae	
132	SPARG	Sparganium L.	bur-reed	Sparganiaceae	
133	SPBE2	Spiraea betulifolia Pallas	white spirea	Rosaceae	
134	SPDO	Spiraea douglasii Hook.	rose spirea	Rosaceae	
135	STCO14	Stachys cooleyae Heller	>>Stachys chamissonis var. cooleyae	Lamiaceae	
136	STJA3	Stellaria jamesiana Torr.	>>Pseudostellaria jamesiana	Caryophyllaceae	
137	SYAL	Symphoricarpos albus (L.) Blake	common snowberry	Caprifoliaceae	
138	TAOF	Taraxacum officinale G.H. Weber ex Wiggers	dandelion	Asteraceae	a
139	THPL	Thuja plicata Donn ex D. Don	western red cedar	Cupressaceae	
140	TRDU	Tragopogon dubius Scop.	yellow salsify	Asteraceae	a
141	TRLA6	Trientalis latifolia Hook.	>>Trientalis borealis ssp. latifolia	Primulaceae	
142	TROV2	Trillium ovatum Pursh	Pacific trillium	Liliaceae	
143	TSHE	Tsuga heterophylla (Raf.) Sarg.	western hemlock	Pinaceae	
144	TSME	Tsuga mertensiana (Bong.) Carr.	mountain hemlock	Pinaceae	
145	TYLA	Typha latifolia L.	broadleaf cattail	Typhaceae	
146	VAME	Vaccinium membranaceum Dougl. ex Torr.	thinleaf huckleberry	Ericaceae	
147	VETH	Verbascum thapsus L.	common mullein	Scrophulariaceae	a
148	VEAM2	Veronica americana Schwein. ex Benth.	American speedwell	Scrophulariaceae	
149	VIGL	Viola glabella Nutt.	pioneer violet	Violaceae	

Ecological Condition of Lake Easton State Park

Lake Easton State Park is located in a highly developed portion of the eastern Cascade Range in Washington State. Interstate 90 bisects the parcels that comprise the park. One parcel is found between the east and westbound lanes. Lake Easton itself is a reservoir formed by a dam at the confluence of the Yakima and Kachess Rivers. There are extensive developed areas (campgrounds, buildings, picnic areas, roads and heavily used trails) throughout the park. On the south side of Lake Easton there is a parcel that consists of recent clearcuts, second-growth forests and patches of mature native forest. A major electrical transmission line and roads bisect this parcel.

Due to the developed nature of the park and the extensive fragmentation of its forests, the overall ecological condition of the park is fairly low. Nevertheless, there are a few patches of forest that have relatively good ecological condition. There are also some wetlands that have formed in the delta that has developed where the Kachess River enters the reservoir that have some ecological value. The overall diversity of native plants is relatively high (126 species). Only 23 non-native plants (15% of total flora) were found here, which is on the low side for a state park. One state listed rare plant, *Subularia aquatica* is know to occur here.

Lake Easton State Park is situated in an unusually ecologically diverse part of the Cascade Range and is influenced by both westside and eastside environments. The low elevation of Snoqualmie Pass to the west allows considerable moisture from the Pacific Ocean over the pass to the Lake Easton area. We found a high diversity of plant communities and cover types here (24), which is quite high for a park of this size. Careful management and perhaps eventual expansion of the park can ensure protection of this biodiversity.

Elk and deer use the park. Waterfowl make significant use of the reservoir and adjacent wetlands. Although the park is in a fragmented landscape, it does help provide connectivity across the Interstate 90 corridor. Much more could be done to enhance this connectivity. An opportunity for a wildlife overpass (or some other kind of enhanced connectivity) exists on the west end of the park.

There is intense, illegal off-road vehicle use occurring in the northern part of Lake Easton State Park, north of Interstate 90. Considerable resource damage is occurring due to the unregulated use of this area. There is also illegal dumping occurring in this area of appliances and other trash. This was reported to one of the rangers at the park in late September.

GIS Products Produced

Associated with this report is a polygon layer created by PBI depicting the vegetation community types mapped in Lake Easton State Park. The dataset has been converted into ESRI shapefile format and provided to the Washington State Parks and Recreation Commission. The spatial datasets are complete with metadata meeting FGDC standards. Refer to the associated metadata for descriptions and attribute definitions for each spatial dataset.

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Appendix A - Field Survey Schedule

May 31, 2006

Field Staff: Dana Visalli and Scott Heller

June 2, 2006

Field Staff: Peter Morrison

September 22-24, 2006

Field Staff: Peter Morrison

Appendix B – Ecological Condition Ranking System

Ecological Condition Ranks

When assessing conservation priorities and management decisions, it can be useful to rank natural communities into levels of ecological condition. For example, an unfragmented area with high native species diversity, absence of non-native species and little soil erosion often has greater conservation value than another area in the same habitat type that is fragmented, infested with weeds or has erosion problems. Likewise, areas with a lower ecological condition rank may be targets for restoration activities.

The flowing ecological condition ranks were applied to vegetation polygons that were surveyed in this project:

Condition Rank 1. This condition class represents areas that have been altered to the point where the ecological condition often deviates dramatically from baseline conditions found in areas where stressors are much less prevalent. Areas characterized by Condition Class 1 often have high amounts of bare ground and/or non-native plant cover. The structure is often significantly altered from baseline conditions. Often one or more of the structural layers (trees, shrubs, herbs, grasses, mosses & lichens, biotic crust) may be significantly altered or even missing from the community. The composition of native vegetation is skewed toward species that can survive despite regular disturbance. Species diversity of native plants is usually low and native grass species are usually absent or in very low abundance (for a given community type). Evidence of accelerated erosion and soil compaction may be present. Hydrologic alteration may also be present. Significant direct evidence of various stress factors is usually abundant. Rare plant and animal species generally do not occur in this condition class.

Condition Rank 2. This condition class represents areas that show a fairly broad range of stress ranging from high to moderately low impact from a variety of stressors. Areas characterized by Condition Class 2 usually have moderate levels of non-native plant cover. The structure of the natural community present in Condition Class 2 areas is often relatively intact when compared to baseline conditions. Usually all structural layers are present, but form and stature may be altered from baseline conditions. Soil surface conditions are often intermediate between those in Condition Class 1 and Condition Class 3. Species diversity of native plants is often moderate for that community. Non-native species are usually present, but not as common or abundant as in Condition Class 1. Native grass species are often present, but usually in low abundance for that community type. Diversity of native grass species is relatively low when compared to baseline conditions. Evidence of accelerated erosion and soil compaction may be present in isolated areas, but is not dramatic or widespread. Hydrologic alteration is absent. Direct signs of stressors may be present, but not widespread or abundant. Rare plant and animal species may be found in this condition class, but are not common. Rare species that are found in this condition class are relatively tolerant of the stressors that are present.

Condition Rank 3. This condition class represents areas that show the least stress in the project area and are the closest to representing baseline conditions. Areas characterized by Condition Class 3 have little evidence of non-native plant invasion. The composition and

structure of native vegetation in this condition class correspond to the natural ranges of variation characteristic to this habitat type. Old-growth conditions may exist. Species diversity of native plants is often high relative to the community under consideration. Native grass species are usually present and often fairly abundant for the community type. Species diversity of native grass species is also often high. Soil compaction, accelerated erosion and hydrologic alteration are absent. Direct signs of stressors are usually absent. Certain rare species may only exist within this condition class and rare species are generally more common than in the lower condition classes.

Appendix C – Description of Rare Element Status Codes

Global Rank (GRank)

Global Rank characterizes the relative rarity or endangerment of the element world-wide. Two codes (e.g. G1G2) represent an intermediate rank.

G1 = Critically imperiled globally (5 or fewer occurrences).
G2 = Imperiled globally (6 to 20 occurrences).
G3 = Either very rare and local throughout its range or found locally in a restricted range (21 to 100 occurrences).
G4 = Apparently secure globally.
G5 = Demonstrably secure globally.
GH = Of historical occurrence throughout its range.
GU = Possibly in peril range-wide but status uncertain.
GX = Believed to be extinct throughout former range.
GNR = Not yet ranked.
Tn = Rarity of an infraspecific taxon. Numbers and codes similar to those for Gn ranks above.
Q = Questionable.

State Rank (SRank)

State Rank characterizes the relative rarity or endangerment within the state of Washington. Two codes (e.g. S1S2) represents an intermediate rank.

S1 = Critically imperiled (5 or fewer occurrences).
S2 = Imperiled (6 to 20 occurrences), very vulnerable to extirpation.
S3 = Rare or uncommon (21 to 100 occurrences).
S4 = Apparently secure, with many occurrences.
S5 = Demonstrably secure in state.
SA = Accidental in state.
SE = An exotic established in state.
SH = Historical occurrences only but still expected to occur.
SN = Regularly occurring, usually migratory, nonbreeding animals.
SU = Unrankable; need more information.
SX = Apparently extirpated from the state.
SP = Likely to occur or to have occurred but without documentation.
SZ = Not of conservation concern (not SE or SA).
SNR = Not yet ranked.
"B" and "N" qualifiers are used to indicate breeding and nonbreeding status, respectively, of migrant species whose nonbreeding status (rank) may be quite different from their breeding status in the state (e.g. S1B,S4N for a very rare breeder that is a common winter resident).

State Status (StStat)

State Status of plant species is determined by the Washington Natural Heritage Program. Factors considered include abundance, occurrence patterns, vulnerability, threats, existing protection, and taxonomic distinctness. Values include:

E = Endangered. In danger of becoming extinct or extirpated from Washington.
T = Threatened. Likely to become Endangered in Washington.
S = Sensitive. Vulnerable or declining and could become Endangered or Threatened in the state.
X = Possibly extinct or Extirpated from Washington.
P1 = Priority 1. Rare nonvascular plant but with insufficient information to assign another rank.
P2 = Priority 2. Nonvascular plant of concern but with insufficient information to assign another rank.
R1 = Review group 1. Of potential concern but needs more field work to assign another rank.
R2 = Review group 2. Of potential concern but with unresolved taxonomic questions.
W = Watch. More abundant and/or less threatened than previously thought.

Federal Status

Federal Status under the U.S. Endangered Species Act (USESA) as published in the Federal Register:

LE = Listed Endangered. In danger of extinction.
LT = Listed Threatened. Likely to become endangered.
PE = Proposed Endangered.
PT = Proposed Threatened.
C = Candidate species. Sufficient information exists to support listing as Endangered or Threatened.
SC = Species of Concern. An unofficial status, the species appears to be in jeopardy, but insufficient information to support listing.
NL = Not Listed. Used when two portions of a taxon have different federal status.

Appendix D – Vegetation Survey Data

Legend:

Site = name of locality of map project

Polygon = number you put on map

Name/Date = your name / day-month-year completed polygon survey

Photo roll/number = number of roll (on canister) and number of shot

Survey intensity
1 = walked or could see most of polygon (high confidence in survey data)
2 = walked or could see part of polygon interior (moderate confidence)
3 = walked perimeter or could see part of polygon interior (low confidence)
4 = photo interpretation or other remote survey

VEGETATION COVER
This is canopy cover, i.e. the space between leaves/branches is included in "cover". Each Life form category canopy cover must be 0-100%. Therefore, the sum of all life forms (layers) can exceed 100%. List most abundant species in each life form category; when trees are cored, note DBH, species, length of core, number of rings counted.

TOTAL VEGETATION COVER includes all vascular plants, mosses, lichens and foliose lichens (crustose lichens excluded they are considered rock); this never exceeds 100%.

SOIL SURFACE estimate to nearest **%** the following, the sum of the categories adds to 100%
Rock outcrop = exposed bedrock including detached boulders over 1m across
Gravel/cobble = large fragments between sand and boulder
Bareground = exposed mineral soil
Mosses/lichens = nonvascular plant cover on soil
Litter = includes logs, branches, and basal area of plants
Describe in comments if there is wide variation in any category; note % standing water if it is persistent or characteristic of site.

LAND USE - put 0 (zero) if not applicable to site.

Logging
1 = unlogged, no evidence of past logging or occasional cut stumps not part of systematic harvest of trees, no or very little impact on stand composition
2 = selectively logged: frequent cut stumps but origin of dominant or co-dominant cohort appears to be natural disturbance
3 = heavy logging disturbance with natural regeneration: many cut stumps that predate the dominant or co-dominant cohort with no tree planting
4 = tree plantation: dominant cohort appears to be planted after clearcutting

Stand Age
1 = very young 0-40 yr
2 = young 40-90 yr
3 = mature 90-200 yr
4 = old-growth 200+ yr
5 = young with scattered old trees (2-10 old trees per acre)
6 = mature with scattered old trees

Agriculture
1 = active annual cropping
2 = active perennial herbaceous cropping
3 = active woody plant cultivation
4 = fallow, plowed no crops this yr
5 = Federal CRP
6 = other

Livestock
1 = active heavy grazing (most forage used to ground soil compaction or churning)
2 = active moderate grazing (25-75% forage used)
3 = active light grazing (lots of last year's litter left)
4 = no current, heavy past grazing
5 = no current, light past grazing
6 = no obvious sign of grazing

Development
1 = actively used facilities
2 = roads
3 = established trails
4 = abandoned facilities
5 = none obvious
6 = multiple types (detail in comments)

Wildlife
1 = heavy ungulate use
2 = moderate ungulate use
3 = light to no ungulate use
4 = burrowing animals
5 = active beaver
6 = active porcupine
7 = other, list animal

Recreation Use Severity
1 = heavy use, abundant soil and vegetation displacement off trail/road
2 = moderate use, frequent soil and vegetation displacement off trail/road
3 = light use, little sign of activity off trail/road

Recreation Use Primary Type
1 = wheeled
2 = hoofed
3 = pedestrian
4 = combination of above
5 = other

Hydrology
1 = unaltered
2 = altered; dams, dikes, ditches, culverts, etc
3 = not assessed

Plant Association (PA) = list all PAs encountered in polygon survey, in comments list source of name if not on provided key.

Condition Rank of PA in key or estimate

% of Polygon = your estimate

Pattern = how PA is distributed in polygon
1 = matrix (most of polygon)
2 = large patches
3 = small patches
4 = clumped, clustered, contiguous
5 = scattered, more or less evenly repeating
6 = linear
7 = other

Exotic = primary species observed; secondary species observed.

Plot Number = number of any plots established for EO (element occurrence), or other more detail sheets within polygon.

Vegetation Polygon Data

Polygon Number	**1**
Survey Intensity	1
Observer	PM
Date	9/23/2006
Specific Location	
Total Vegetation	6
Trees Total	5
Dominant Trees	PSME, ABGR, TSHE
emergent	2
maincanopy	5
subcanopy	3
Shrubs Total	4
Dominant Shrubs	SPBEL, ACCI, MANE2, HODI, COCO6, PAMY, MANE2,
> 1.5' tall	3
< 1.5' tall	3
Graminoids Total	2
Dominant Graminoids	CARU, FEOC, CAGE2
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	NONE3, SMST, HIAL2, ANORO, TRLA6, LIBO3
Forbs Perennial	3
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	0
Ferns Deciduous	1
ExoticsTotal	1
Exotics Perennial	0
Exotics Annual	1
Water	0
Rock Outcrop	0
Gravel	3
Bare Ground	5
Moss Lichen	15
Litter	77
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
CEDI
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ABGR/HODI/CARU (Lillybridge)	50	Matrix	1
2. PSME/SPBEL/CARU (Lillybridge)	30	Large	1
3. ABGR/MANE2 (Lillybridge)	20	Small	1

Notes: Ferns: PTAQ. Garbage in places, old & new roads. Powerline

Polygon Number	**10**
Survey Intensity	1
Observer	DV
Date	5/31/2006
Specific Location	NW corner.
Total Vegetation	5
Trees Total	4
Dominant Trees	PSME, ALRU
emergent	2
maincanopy	4
subcanopy	3
Shrubs Total	3
Dominant Shrubs	SASI2
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	PHAR
Graminoids Perennial	4
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	ATFI
Forbs Perennial	2
Forbs Annual	0
Ferns Total	4
Ferns Evergreen	0
Ferns Deciduous	4
ExoticsTotal	4
Exotics Perennial	4
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Bare Ground	5
Moss Lichen	5
Litter	90
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	5
Wildlife	1
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
PHAR3 (5%)
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ALRU2/POMU (Chappell)	100	Matrix	1
2.	0		0
3.	0		0

Notes:

Polygon Number	**11**
Survey Intensity	1
Observer	SH
Date	5/31/2006
Specific Location	NE
Total Vegetation	6
Trees Total	5
Dominant Trees	PSME, THPL, ABGR, PIMO3, TSHE, ALRU2
emergent	1
maincanopy	5
subcanopy	2
Shrubs Total	6
Dominant Shrubs	ACCI, ARUV, Sorbus sp., RUPA
> 1.5' tall	6
< 1.5' tall	2
Graminoids Total	2
Dominant Graminoids	
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	TRLA6, TROV2, ATFI, PTAQ
Forbs Perennial	3
Forbs Annual	0
Ferns Total	4
Ferns Evergreen	4
Ferns Deciduous	3
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Bare Ground	3
Moss Lichen	1
Litter	96
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	3
Wildlife	0
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. TSHE/ACCI/ASCA3 (Lillybridge)	100	Matrix	2
2.	0		0
3.	0		0

Notes: SMALL WETLAND IN POLYGON

Polygon Number	**12**
Survey Intensity	1
Observer	SH
Date	5/31/2006
Specific Location	SE to center of park (along lake).
Total Vegetation	6
Trees Total	6
Dominant Trees	PSME, THPL, ABGR, PICO, PIMO3, TSHE
emergent	2
maincanopy	6
subcanopy	2
Shrubs Total	6
Dominant Shrubs	ACCI, Sorbus sp., COCO6, LIBOL, MANE2, Rosa sp., HODI,
> 1.5' tall	6
< 1.5' tall	2
Graminoids Total	1
Dominant Graminoids	
Graminoids Perennial	1
Graminoids Annual	0
Forbs Total	4
Dominant Forbs	TRLA6, SMST, TROV2, ACTR, GAAP, DIFO, PTAQ, ATFI
Forbs Perennial	4
Forbs Annual	0
Ferns Total	4
Ferns Evergreen	4
Ferns Deciduous	2
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	0
Water	0
Rock Outcrop	5
Gravel	0
Bare Ground	2
Moss Lichen	3
Litter	90
Logging	3
Stand Age	3
Agriculture	0
Livestock	0
Development	6
Wildlife	0
Recreation Severity	3
Recreation Type	3
Hydrology	2

Exotic Species

Primary Exotic
Cirsium sp..
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ABGR/ACCI (Lillybridge)	100	Matrix	2
2.	0		0
3.	0		0

Notes: ABGR (YOUNG) IN UNDERSTORY. ONE GROVE, APPROX. 5 OR 6 MATURE ABGR

Polygon Number	**13**
Survey Intensity	1
Observer	PM
Date	9/23/2006
Specific Location	Recent regrowing clearcut
Total Vegetation	5
Trees Total	4
Dominant Trees	PSME, ABGR, POTR15, PICO, LAOC, THPL
emergent	0
maincanopy	4
subcanopy	0
Shrubs Total	4
Dominant Shrubs	ACCI, SASC, SACE3, SYAL, RUUR, PAMY, SPBEL, RUPA,
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	2
Dominant Graminoids	AGRE2, BRCA5
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	CEDI, CEMA9, FRVI, SOCA6, ACTR
Forbs Perennial	3
Forbs Annual	1
Ferns Total	2
Ferns Evergreen	0
Ferns Deciduous	2
ExoticsTotal	2
Exotics Perennial	0
Exotics Annual	2
Water	0
Rock Outcrop	0
Gravel	1
Bare Ground	2
Moss Lichen	2
Litter	95
Logging	4
Stand Age	1
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	1
Hydrology	1

Exotic Species

Primary Exotic
CEDI
Secondary Exotic
CEMA9
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME/SPBEL (Lillybridge)	50	Large	1
2. ABGR/ACCI (Lillybridge)	50	Large	1
3.	0		0

Notes: Ferns: PTAQ

Polygon Number	**14**
Survey Intensity	2
Observer	PM
Date	9/23/2006
Specific Location	Exit area for Easton of I-90.

Total Vegetation	0
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	0
Litter	0
Logging	
Stand Age	
Agriculture	
Livestock	
Development	
Wildlife	
Recreation Severity	
Recreation Type	
Hydrology	

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. Developed	100	Matrix	1
2.	0		0
3.	0		0

Notes: DEVELOPED. Freeway exit ramps and roads.

Polygon Number	**15**
Survey Intensity	1
Observer	PM
Date	9/23/2006
Specific Location	Rocky bald
Total Vegetation	4
Trees Total	2
Dominant Trees	PSME, PIPO
emergent	2
maincanopy	2
subcanopy	1
Shrubs Total	3
Dominant Shrubs	ARUV, HODI, PREM, AMAL2, BEAQ
> 1.5' tall	2
< 1.5' tall	3
Graminoids Total	3
Dominant Graminoids	BRTE, FEOC, CARU, CAGE2
Graminoids Perennial	3
Graminoids Annual	3
Forbs Total	2
Dominant Forbs	RUAC3, CEDI, ERLA6
Forbs Perennial	2
Forbs Annual	2
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	0
ExoticsTotal	3
Exotics Perennial	0
Exotics Annual	3
Water	0
Rock Outcrop	20
Gravel	5
Bare Ground	10
Moss Lichen	20
Litter	45
Logging	0
Stand Age	3
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	1
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
BRTE
Secondary Exotic
RUAC
Noxious Exotic
CEDI

Plant Associations

		Percent	Pattern	Rank
1.	ROCKY BALD	80	Matrix	1
2.	PSME/ARUV (Lillybridge)	20	Small	2
3.		0		0

Notes: Ferns: SEDE. Lots of trail & recreational disturbance to this bald.

Polygon Number	**16**
Survey Intensity	3
Observer	PM
Date	9/23/2006
Specific Location	Developed area next to lake. Bureau of Reclamation site.
Total Vegetation	0
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	0
Litter	0
Logging	
Stand Age	
Agriculture	
Livestock	
Development	
Wildlife	
Recreation Severity	
Recreation Type	
Hydrology	

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. Developed	100	Matrix	1
2.	0		0
3.	0		0

Notes: Boat launch & dam area. No trespassing - off limits.

Polygon Number	**17**
Survey Intensity	1
Observer	PM
Date	9/23/2006
Specific Location	SW of I-90, SW of PICO band.
Total Vegetation	5
Trees Total	5
Dominant Trees	PSME, THPL, PIMO3, ABAM, TSHE, PICO, POTR15
emergent	1
maincanopy	5
subcanopy	2
Shrubs Total	4
Dominant Shrubs	ACCI, MANE2, SPBEL, PAMY, ROGY, COCO6, VAME,
> 1.5' tall	3
< 1.5' tall	3
Graminoids Total	1
Dominant Graminoids	
Graminoids Perennial	1
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	LIBO3, ADBI, TRLA6, HIAL2, ACTR, VIOR, HYPE
Forbs Perennial	2
Forbs Annual	1
Ferns Total	3
Ferns Evergreen	0
Ferns Deciduous	3
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	1
Bare Ground	3
Moss Lichen	3
Litter	93
Logging	0
Stand Age	3
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
HYPE
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. TSHE/ACCI/ACTR (Lillybridge)	100	Matrix	2
2.	0		0
3.	0		0

Notes:

Polygon Number	**18**
Survey Intensity	1
Observer	PM
Date	9/23/2006
Specific Location	freeway & SW of freeway, band of PIPO in disturbed area.
Total Vegetation	5
Trees Total	3
Dominant Trees	PICO, PSME
emergent	1
maincanopy	3
subcanopy	2
Shrubs Total	3
Dominant Shrubs	ARUV, SPBEL, SASC, CEVE, PAMY, GASH, VAME
> 1.5' tall	2
< 1.5' tall	3
Graminoids Total	3
Dominant Graminoids	FEOC
Graminoids Perennial	3
Graminoids Annual	1
Forbs Total	3
Dominant Forbs	FRVI, CEMA9, ACMI, PLLA, CEDI, ERLA6, ANMA
Forbs Perennial	3
Forbs Annual	1
Ferns Total	2
Ferns Evergreen	0
Ferns Deciduous	2
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	2
Water	0
Rock Outcrop	0
Gravel	5
Bare Ground	10
Moss Lichen	20
Litter	65
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
CEDI
Secondary Exotic
CEMA9
Noxious Exotic
HYPE

Plant Associations

	Percent	Pattern	Rank
1. Developed	50	Matrix	1
2. PSME/ARUV (Lillybridge)	25	Large	1
3. PSME/SPBEL (Lillybridge)	25	Large	1

Notes: Ferns: PTAQ. Freeway

Polygon Number	**19**
Survey Intensity	1
Observer	PM
Date	9/23/2006
Specific Location	NE OF I-90
Total Vegetation	5
Trees Total	5
Dominant Trees	PSME, ABGR, TSHE, THPL, PICO, PIMO3
emergent	2
maincanopy	5
subcanopy	3
Shrubs Total	4
Dominant Shrubs	MANE2, PAMY, ROGY, VAME, ACCI
> 1.5' tall	3
< 1.5' tall	4
Graminoids Total	2
Dominant Graminoids	XETE, FEOC
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	CHUM, VIGL, TRLA6, LIBO3, HIAL2, ACTR
Forbs Perennial	3
Forbs Annual	1
Ferns Total	2
Ferns Evergreen	2
Ferns Deciduous	0
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	10
Bare Ground	15
Moss Lichen	1
Litter	74
Logging	2
Stand Age	3
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic	
HYPE	
Secondary Exotic	
CEDI	
Noxious Exotic	

Plant Associations

	Percent	Pattern	Rank
1. TSHE/VAME-PAMY/XETE (PBI)	40	Matrix	2
2. ABGR/ACTR (Lillybridge)	30	Large	2
3. ABGR/ACCI-CHUM (Lillybridge)	30	Large	2

Notes: Ferns: PTAQ. Edge of freeway disturbed. Young PICO-PSME stand + base.

Polygon Number	**20**
Survey Intensity	1
Observer	PM
Date	9/23/2006
Specific Location	Plantation west of polygon 21 & west of lake.
Total Vegetation	6
Trees Total	5
Dominant Trees	PSME, ALRU2, TSHE, THPL, ABGR
emergent	0
maincanopy	5
subcanopy	0
Shrubs Total	4
Dominant Shrubs	ARUV, ACCI, TABR2, MANE2, COCO6, AMAL2, SPBEL, VAME
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	2
Dominant Graminoids	CARU, FEOC
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	LIBO3, ACTR, HYPE, CEDI
Forbs Perennial	2
Forbs Annual	1
Ferns Total	2
Ferns Evergreen	1
Ferns Deciduous	2
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	1
Water	0
Rock Outcrop	0
Gravel	3
Bare Ground	4
Moss Lichen	3
Litter	90
Logging	4
Stand Age	1
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
CEDI
Secondary Exotic
HYPE
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ABGR/ACTR (Lillybridge)	40	Matrix	1
2. TSHE/VAME (PBI)	30	Small	1
3. PSME/ARUV (Lillybridge)	30	Small	1

Notes: Ferns: POMU, PTAQ. Structures and roads

Polygon Number	**21**
Survey Intensity	2
Observer	PM
Date	9/23/2006
Specific Location	
Total Vegetation	6
Trees Total	5
Dominant Trees	PSME, TSHE, THPL, ABGR
emergent	3
maincanopy	4
subcanopy	3
Shrubs Total	4
Dominant Shrubs	SPBEL, ACCI, AMAL2, MANE2, CHUM, GAOV2
> 1.5' tall	3
< 1.5' tall	3
Graminoids Total	2
Dominant Graminoids	CARU
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	LIBO3, ACTR
Forbs Perennial	2
Forbs Annual	1
Ferns Total	2
Ferns Evergreen	0
Ferns Deciduous	2
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	1
Water	0
Rock Outcrop	0
Gravel	2
Bare Ground	3
Moss Lichen	5
Litter	90
Logging	5
Stand Age	5
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	2
Recreation Type	4
Hydrology	1

Exotic Species

Primary Exotic
HYPE
Secondary Exotic
CEDI
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME/SPBEL/CARU (Lillybridge)	40	Matrix	2
2. ABGR/ACTR (Lillybridge)	30	Large	2
3. TSHE/VAME (PBI)	30	Large	2

Notes: Ferns: PTAQ.

Polygon Number	**22**
Survey Intensity	2
Observer	PM
Date	9/23/2006
Specific Location	
Total Vegetation	6
Trees Total	5
Dominant Trees	PSME, TSHE, THPL, ABGR
emergent	3
maincanopy	4
subcanopy	3
Shrubs Total	4
Dominant Shrubs	SPBEL, ACCI, AMAL2, MANE2, CHUM, GAOV2
> 1.5' tall	3
< 1.5' tall	3
Graminoids Total	2
Dominant Graminoids	CARU
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	LIBO3, ACTR
Forbs Perennial	2
Forbs Annual	1
Ferns Total	2
Ferns Evergreen	0
Ferns Deciduous	2
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	1
Water	0
Rock Outcrop	0
Gravel	2
Bare Ground	3
Moss Lichen	5
Litter	90
Logging	5
Stand Age	5
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	2
Recreation Type	4
Hydrology	1

Exotic Species

Primary Exotic
HYPE
Secondary Exotic
CEDI
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. PSME/SPBEL/CARU (Lillybridge)	40	Matrix	2
2. ABGR/ACTR (Lillybridge)	30	Large	2
3. TSHE/VAME (PBI)	30	Large	2

Notes: Ferns: PTAQ.

Polygon Number	**23**
Survey Intensity	1
Observer	PM
Date	9/23/2006
Specific Location	Fairly recent clearcut with powerline through it.
Total Vegetation	5
Trees Total	4
Dominant Trees	PSME, POTR15, PICO, TSHE, LAOC, THPL
emergent	2
maincanopy	4
subcanopy	4
Shrubs Total	4
Dominant Shrubs	ACCI, SASC, RUUR, ALSI3, COCO6, PAMY, SPBEL, SYAL
> 1.5' tall	3
< 1.5' tall	3
Graminoids Total	3
Dominant Graminoids	FEOC, CARU, AICA, BRTE, CAGE2
Graminoids Perennial	3
Graminoids Annual	1
Forbs Total	2
Dominant Forbs	ACTR, ANMA, TRLA6, LIBO3, CIAR, PLLA, VETH
Forbs Perennial	2
Forbs Annual	1
Ferns Total	4
Ferns Evergreen	0
Ferns Deciduous	4
ExoticsTotal	2
Exotics Perennial	1
Exotics Annual	2
Water	0
Rock Outcrop	1
Gravel	5
Bare Ground	10
Moss Lichen	2
Litter	82
Logging	3
Stand Age	1
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	3
Recreation Type	1
Hydrology	1

Exotic Species

Primary Exotic
VETH
Secondary Exotic

Noxious Exotic
CIAR

Plant Associations

	Percent	Pattern	Rank
1. ABGR/ACCI (Lillybridge)	100	Matrix	1
2.	0		0
3.	0		0

Notes: Ferns: PTAQ. Roads and powerline

Polygon Number	**24**
Survey Intensity	2
Observer	PM
Date	9/23/2006
Specific Location	
Total Vegetation	6
Trees Total	6
Dominant Trees	PSME, TSHE, THPL
emergent	3
maincanopy	5
subcanopy	3
Shrubs Total	2
Dominant Shrubs	MANE2, ACCI, ROGY, SOSI2
> 1.5' tall	2
< 1.5' tall	2
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	PYPI2, LIBO3, GOOB2, CHUM
Forbs Perennial	2
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	1
Gravel	2
Bare Ground	1
Moss Lichen	15
Litter	81
Logging	0
Stand Age	6
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. TSHE/ACCI/CLUN (Lillybridge)	80	Matrix	3
2. TSHE/MANE2 (Lillybridge)	20	Large	3
3.	0		0

Notes:

Polygon Number	**25**
Survey Intensity	1
Observer	PM
Date	9/23/2006
Specific Location	Clearcut at mtn. top.
Total Vegetation	5
Trees Total	3
Dominant Trees	PSME, THPL, PICO
emergent	0
maincanopy	3
subcanopy	3
Shrubs Total	4
Dominant Shrubs	ACCI, VAME, MANE2, ARUV, ROGY, RUID
> 1.5' tall	3
< 1.5' tall	3
Graminoids Total	2
Dominant Graminoids	
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	EPAN, LIBO3, HIAL2
Forbs Perennial	2
Forbs Annual	0
Ferns Total	3
Ferns Evergreen	0
Ferns Deciduous	3
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	1
Bare Ground	2
Moss Lichen	3
Litter	94
Logging	3
Stand Age	1
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. Recent clearcut	100	Matrix	1
2.	0		0
3.	0		0

Notes: Ferns: PTAQ.

Polygon Number	**26**
Survey Intensity	3
Observer	PM
Date	9/23/2006
Specific Location	
Total Vegetation	5
Trees Total	5
Dominant Trees	PSME, ABGR, THPL, PIMO3, LAOC, PICO
emergent	2
maincanopy	5
subcanopy	2
Shrubs Total	3
Dominant Shrubs	ACCI, MANE2, COCO6, SASC, CHUM, GASH
> 1.5' tall	3
< 1.5' tall	1
Graminoids Total	1
Dominant Graminoids	FEOC
Graminoids Perennial	1
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	LIBO3, CHUM, ACTR
Forbs Perennial	2
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	0
Ferns Deciduous	1
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	10
Gravel	3
Bare Ground	2
Moss Lichen	10
Litter	75
Logging	0
Stand Age	6
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ABGR/ACCI (Lillybridge)	50	Matrix	3
2. ABGR/MANE2 (Lillybridge)	40	Large	3
3. TALUS (PBI)	10	Small	3

Notes:

Polygon Number	**27**
Survey Intensity	2
Observer	PM
Date	9/23/2006
Specific Location	Clearcut & partial cut on W side of mtn.
Total Vegetation	5
Trees Total	3
Dominant Trees	PSME, ABGR, LAOC, PICO, THPL
emergent	2
maincanopy	3
subcanopy	0
Shrubs Total	4
Dominant Shrubs	CEVE, ACCI, SPBEL, GASH, ARUV, ROGY, SASC, ACGLD,
> 1.5' tall	3
< 1.5' tall	3
Graminoids Total	1
Dominant Graminoids	
Graminoids Perennial	1
Graminoids Annual	1
Forbs Total	3
Dominant Forbs	LIBO3, EPAN, LECO3, CEDI, CIAR
Forbs Perennial	3
Forbs Annual	0
Ferns Total	3
Ferns Evergreen	0
Ferns Deciduous	3
ExoticsTotal	1
Exotics Perennial	1
Exotics Annual	1
Water	0
Rock Outcrop	1
Gravel	3
Bare Ground	5
Moss Lichen	2
Litter	89
Logging	3
Stand Age	1
Agriculture	0
Livestock	0
Development	2
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
CEDI
Secondary Exotic
CIAR
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ABGR/ACCI (Lillybridge)	100	Matrix	1
2.	0		0
3.	0		0

Notes: Ferns: PTAQ. Part of this is a partial cut.

Polygon Number	**28**
Survey Intensity	3
Observer	PM
Date	9/23/2006
Specific Location	
Total Vegetation	5
Trees Total	5
Dominant Trees	PSME, ABGR, THPL, PIMO3, LAOC, PICO
emergent	2
maincanopy	5
subcanopy	2
Shrubs Total	3
Dominant Shrubs	ACCI, MANE2, COCO6, SASC, CHUM, GASH
> 1.5' tall	3
< 1.5' tall	1
Graminoids Total	1
Dominant Graminoids	FEOC
Graminoids Perennial	1
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	LIBO3, CHUM, ACTR
Forbs Perennial	2
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	0
Ferns Deciduous	1
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	10
Gravel	3
Bare Ground	2
Moss Lichen	10
Litter	75
Logging	0
Stand Age	6
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ABGR/ACCI (Lillybridge)	60	Matrix	3
2. ABGR/MANE2 (Lillybridge)	40	Large	3
3.			

Notes:

Polygon Number	**29**
Survey Intensity	0
Observer	PM
Date	9/23/2006
Specific Location	entrance station and park headquarters
Total Vegetation	0
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	0
Litter	0
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	0
Recreation Severity	0
Recreation Type	0
Hydrology	0

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. Developed	100	Matrix	1
2.	0		0
3.	0		0

Notes:

Polygon Number	**3**
Survey Intensity	2
Observer	PM
Date	9/23/2006
Specific Location	Flood plain area next to river, wet channels running through it.
Total Vegetation	6
Trees Total	5
Dominant Trees	PICO
emergent	0
maincanopy	5
subcanopy	0
Shrubs Total	5
Dominant Shrubs	ALIN2, COST, BEAQ, SPBEL, SPDO
> 1.5' tall	5
< 1.5' tall	2
Graminoids Total	4
Dominant Graminoids	Pucinella/Aira, Carex, PHAR
Graminoids Perennial	4
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	LYAM3, Umbel, GEMA4
Forbs Perennial	2
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	1
Ferns Deciduous	2
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	0
Water	10
Rock Outcrop	0
Gravel	0
Bare Ground	1
Moss Lichen	0
Litter	89
Logging	3
Stand Age	1
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
PHAR

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ALIN2/PHAR (Kovalchik)	50	Large	1
2. ALIN2/CAUT (Kovalchik)	50	Large	1
3.	0		0

Notes: Ferns: POMU, PTAQ, Old logging, all original trees cut, still stumps.

Polygon Number	**30**
Survey Intensity	2
Observer	PM
Date	9/23/2006
Specific Location	
Total Vegetation	6
Trees Total	5
Dominant Trees	PSME, ABGR
emergent	2
maincanopy	4
subcanopy	3
Shrubs Total	3
Dominant Shrubs	ACCI, GASH, SPBEL, VAME, COCO6, ROGY, MANE2
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	2
Dominant Graminoids	PHAR, Scirpus, CARU
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	ACTR, TRLA6
Forbs Perennial	2
Forbs Annual	0
Ferns Total	2
Ferns Evergreen	0
Ferns Deciduous	2
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	1
Water	0
Rock Outcrop	0
Gravel	1
Bare Ground	2
Moss Lichen	4
Litter	93
Logging	5
Stand Age	2
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	2

Exotic Species

Primary Exotic
PHAR
Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ABGR/ACTR (Lillybridge)	90	Matrix	2
2. PHAR wetland (PBI)	10	linear	1
3.	0		0

Notes: Ferns: PTAQ. Includes river margin, flooded by reservoir. Trails and powerline

Polygon Number	**31**
Survey Intensity	1
Observer	PM
Date	9/24/2006
Specific Location	Talus slope on south parcel.
Total Vegetation	4
Trees Total	3
Dominant Trees	PSME, TSHE
emergent	2
maincanopy	3
subcanopy	0
Shrubs Total	2
Dominant Shrubs	ACCI, PAMY, ARUV, BEAQ, PEFR3
> 1.5' tall	2
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	0
Ferns Deciduous	1
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	40
Gravel	2
Bare Ground	0
Moss Lichen	45
Litter	13
Logging	0
Stand Age	3
Agriculture	0
Livestock	0
Development	0
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. TALUS (PBI)	50	Matrix	3
2. PSME/ARUV (Lillybridge)	30	Large	3
3. TSHE/ACCI/CLUN (Lillybridge)	20	Small	3

Notes: Ferns: collected.

Polygon Number	**32**
Survey Intensity	3
Observer	PM
Date	9/23/2006
Specific Location	Partially cut forest on hill at west side of park
Total Vegetation	5
Trees Total	4
Dominant Trees	PSME, ALRU2, TSHE, THPL, ABGR
emergent	3
maincanopy	4
subcanopy	3
Shrubs Total	4
Dominant Shrubs	ARUV, ACCI, TABR2, MANE2, COCO6, AMAL2, SPBEL, VAME
> 1.5' tall	4
< 1.5' tall	2
Graminoids Total	2
Dominant Graminoids	CARU, FEOC
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	LIBO3, ACTR, HYPE, CEDI
Forbs Perennial	2
Forbs Annual	1
Ferns Total	2
Ferns Evergreen	1
Ferns Deciduous	2
ExoticsTotal	2
Exotics Perennial	2
Exotics Annual	1
Water	0
Rock Outcrop	2
Gravel	10
Bare Ground	10
Moss Lichen	3
Litter	75
Logging	2
Stand Age	5
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic
CEDI
Secondary Exotic
HYPE
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. TSHE/VAME (PBI)	40	Matrix	1
2. ABGR/ACTR (Lillybridge)	30	Small	1
3. PSME/ARUV (Lillybridge)	30	Small	1

Notes: Ferns: POMU, PTAQ. Structures and roads

Polygon Number	**4**
Survey Intensity	1
Observer	PM
Date	9/23/2006
Specific Location	
Total Vegetation	6
Trees Total	6
Dominant Trees	PSME, ABGR, THPL, TSHE
emergent	3
maincanopy	5
subcanopy	3
Shrubs Total	4
Dominant Shrubs	RUID, VAME, ARUV, ACCI, COCO6, MANE2, CHUM,
> 1.5' tall	4
< 1.5' tall	3
Graminoids Total	2
Dominant Graminoids	FEOC, CARU
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	3
Dominant Forbs	LIBO3, TRLA6, SMST, ACTR, GOOB2, LUNA5, ARMA18
Forbs Perennial	3
Forbs Annual	1
Ferns Total	2
Ferns Evergreen	1
Ferns Deciduous	2
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	1
Bare Ground	2
Moss Lichen	6
Litter	91
Logging	2
Stand Age	6
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	2
Recreation Type	1
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ABGR/ACTR (Lillybridge)	50	Matrix	2
2. ABGR/MANE2 (Lillybridge)	40	Large	2
3. ABGR/ACCI (Lillybridge)	10	Small	2

Notes: Ferns: POMU, PTAQ. Motorcycle & ATV activity here. Otherwise, good stand of mature/OG.

Polygon Number	**6**
Survey Intensity	1
Observer	PM
Date	9/23/2006
Specific Location	freeway and right-of-way

Total Vegetation	0
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	0
Litter	0
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	0
Recreation Severity	0
Recreation Type	0
Hydrology	0

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. Developed	100	Matrix	1
2.	0		0
3.	0		0

Notes:

Polygon Number	**7**
Survey Intensity	2
Observer	DV
Date	5/31/2006
Specific Location	NW corner
Total Vegetation	5
Trees Total	5
Dominant Trees	PSME
emergent	2
maincanopy	5
subcanopy	2
Shrubs Total	4
Dominant Shrubs	ACCI, LIBO3, MANE2
> 1.5' tall	4
< 1.5' tall	4
Graminoids Total	2
Dominant Graminoids	Melica sp., POBU
Graminoids Perennial	2
Graminoids Annual	1
Forbs Total	3
Dominant Forbs	ACTR, PTAQ
Forbs Perennial	3
Forbs Annual	0
Ferns Total	1
Ferns Evergreen	0
Ferns Deciduous	1
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	0
Rock Outcrop	0
Gravel	0
Bare Ground	2
Moss Lichen	3
Litter	95
Logging	3
Stand Age	2
Agriculture	0
Livestock	0
Development	3
Wildlife	3
Recreation Severity	3
Recreation Type	3
Hydrology	1

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. TSHE/MANE2 (Lillybridge)	100	Matrix	2
2.	0		0
3.	0		0

Notes: SOME OG PSME - 30" DBH IN THIS POLY.

Polygon Number	**8**
Survey Intensity	0
Observer	PM
Date	9/23/2006
Specific Location	reservoir and bridge
Total Vegetation	0
Trees Total	0
Dominant Trees	
emergent	0
maincanopy	0
subcanopy	0
Shrubs Total	0
Dominant Shrubs	
> 1.5' tall	0
< 1.5' tall	0
Graminoids Total	0
Dominant Graminoids	
Graminoids Perennial	0
Graminoids Annual	0
Forbs Total	0
Dominant Forbs	
Forbs Perennial	0
Forbs Annual	0
Ferns Total	0
Ferns Evergreen	0
Ferns Deciduous	0
ExoticsTotal	0
Exotics Perennial	0
Exotics Annual	0
Water	100
Rock Outcrop	0
Gravel	0
Bare Ground	0
Moss Lichen	0
Litter	0
Logging	0
Stand Age	0
Agriculture	0
Livestock	0
Development	0
Wildlife	0
Recreation Severity	0
Recreation Type	0
Hydrology	0

Exotic Species

Primary Exotic

Secondary Exotic

Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. Water	90	Matrix	1
2. Developed	10	Small	1
3.	0		0

Notes:

Polygon Number	**9**
Survey Intensity	1
Observer	PM
Date	9/23/2006
Specific Location	Utility hook-up campground and adjacent forest.
Total Vegetation	5
Trees Total	5
Dominant Trees	PSME, ABGR, THPL, TSHE, POTR15, PIPO
emergent	1
maincanopy	5
subcanopy	2
Shrubs Total	4
Dominant Shrubs	ACCI, COCO6, PREM, SASC, PAMY, MANE2, HODI, ARUV,
> 1.5' tall	3
< 1.5' tall	2
Graminoids Total	2
Dominant Graminoids	CARU, FEOC, BRTE
Graminoids Perennial	2
Graminoids Annual	0
Forbs Total	2
Dominant Forbs	LIBO3, TRLA6
Forbs Perennial	2
Forbs Annual	1
Ferns Total	1
Ferns Evergreen	0
Ferns Deciduous	1
ExoticsTotal	2
Exotics Perennial	1
Exotics Annual	2
Water	0
Rock Outcrop	0
Gravel	5
Bare Ground	5
Moss Lichen	15
Litter	75
Logging	2
Stand Age	6
Agriculture	0
Livestock	0
Development	6
Wildlife	3
Recreation Severity	1
Recreation Type	4
Hydrology	1

Exotic Species

Primary Exotic
BRTE
Secondary Exotic
VETH
Noxious Exotic

Plant Associations

	Percent	Pattern	Rank
1. ABGR/ACCI (Lillybridge)	40	Large	1
2. PSME/PAMY (Lillybridge)	40	Large	1
3. PSME/ARUV (Lillybridge)	20	Small	1

Notes: Ferns: PTAQ. Campground, roads, trails