



**BISHOP PROJECT  
WETLAND REPORT**

THIS REPORT HAS BEEN PREPARED BY:

**WETLANDS ENVIRONMENTAL, Inc.**

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saturated and drained as a result of seasonal fluctuations in the water table. Soil types can be identified by comparison of a soil sample to the Munsell Soil Color Chart,“ (SCS, 1988). These standardized charts identify the color components of hue, value and chroma. Hue is the main spectral color, value is the degree of lightness and chroma indicates color strength of purity. Chromas of two (2) or less are considered LOW and often indicate hydric soil conditions.

Wetland hydrology is the primary force in the creation of wetland areas and is defined as permanent or periodic inundation, or soil saturation for a significant portion of the growing season. Wetland hydrology creates anaerobic conditions in the soil, favoring the development of hydric soil indicators and proliferation of hydrophytic vegetation. Where wetland hydrology changes throughout the year, hydrologic indicators are used to define the hydrology criterion. These indicators may include visual observation of soil saturation within soil test holes, root rhizospheres, water marks, drift lines, sediment and deposition and surface scour.

## 7. SELECTION OF WETLAND DELINEATION

After reviewing the USGS topographic quadrangle map of the project area, an “on-site determination method” was selected to be used. Prior to and after initially visiting the site, a review of published information was undertaken to evaluate the potential presence of wetlands. (See Literature Reviewed)

## 8. WILDLIFE

Wildlife is a product of habitat or vegetational stages and basically there are four stages: 1) dominate vegetation consisting primarily of grasses and forbes, 2) dominate vegetation consisting of shrub species, 3) dominate vegetation is second-growth coniferous or deciduous tree species, and 4) dominate vegetation is comprised of mature old-growth timber or dense stands of second-growth that forms a closed canopy. Each vegetational stage will support a variety of wildlife species. Generally stages 2 and 3 will support a higher and more diverse wildlife community.

The property in question falls into vegetational stage I and supports an array of wildlife species. Following is a partial list of wildlife species (as classified by the Washington Administrative Code) that may inhabit the property during some portion of the year from a very brief transitory basis (i.e. to enter and exit the property within a few minutes, such as a bird passing through en-route to other habitat) to some species that might inhabit the property for an extended period of time. (NOTE: \* indicates introduced species.)

### I. Game Birds

- a) Band-tailed Pigeon (*Columba fasciata* )
- b) Ruffed Grouse (*Bonansa umbellus* )
- c) Blue Grouse (*Dendragapus obscurus*)



II. Predatory Birds

- a) Common Crow (*Corvus brachyrhynchos*)
- b) Common Raven (*Corvus corax*)
- c) \* English/House Sparrow (*Passer domesticus*)
- d) \* English Starling (*Sturnus vulgaris*)

III. Game Animals

- a) Black-tailed Deer (*Odocoileus hemionus columbianus*)
- b) Mule Deer (*Odocoileus hemionus hemionus*)
- c) \*Rocky Mountain Elk (*Cervus elaphus*)
- d) Black Bear (*Ursus Americanus*)
- e) Snowshoe/Varying Hare (*Lepus americanus*)

IV. Furbearing Animals

- a) Long-tailed Weasel (*Mustela frenata*)
- b) Mink (*Mustela vison*)
- c) Muskrat (*Ondatra zibethicus*)
- d) Raccoon (*Procyon lotor*)
- e) River Otter (*Lutra canadensis*)

V. Protected Wildlife

- a) A variety of forest-associated songbirds
- b) Chipmunk (*Entomias sp.*)
- c) Douglas Squirrel (*Tamiasciurus dowglasii*)
- d) Red-tailed Hawk (*Buteo jamaicensis*)
- e) Sharp-shinned Hawk (*Accipter striatus*)
- f) Northern Goshawk (*Accipter gentilis*)
- g) Osprey (*Pandion haliaetus*)
- h) Great-horned Owl (*Bubo virginianus*)
- i) Belted Kingfisher (*Ceryle alcyon*)
- j) Pileated Woodpecker (*Dryocopus pileatus*)

VI. Other Wildlife

- a) Coyote (*Canis latrans*)
- b) Mountain beaver (*Aplodonita rufa*)
- c) \* Virginia opossum (*Didelphis virginiana*)
- e) A variety of amphibians, reptiles, and slugs/snails

## **9. CONCLUSIONS AND RECOMMENDATIONS**

### Impact of Development

Less than 4 percent of the 50 acres will be disturbed. Any foot trails developed will have natural surface. It is in the opinion of Wetlands Environmental, Inc. that the Bishop Project will have minimal impact on the overall ecosystem of the property.

### Impact on Down-Slope Wetlands/Sensitive Areas

There is no development down-slope for eight (8) to ten (10) miles to the town of Easton. The septic system for the building(s) will be designed according to standard procedures for installation on property such as this site.

### Suggested Management/Development Considerations

As stated elsewhere in this report, as much of the property's habitat as possible will remain intact; re-forestation where necessary will be accomplished on impacted areas; fisheries habitat in the Yakima River will be enhanced; and, no additional road or building expansion is anticipated. As previously stated, every effort to minimize impact on the environment and enhance it will be accomplished.

## **10. LIMITATIONS AND USE OF THIS REPORT**

This report is based largely upon two days of field survey on the site Plus an additional day with the Yakima Indian Tribe fisheries biologist), in addition to necessary literature reviews. Site conditions will vary seasonally. The results and conclusions of this report represent the professional opinion of biologists of Wetlands Environmental, Inc.

This report is based on readily observable conditions to locate existing wetlands on the subject site as part of preliminary planning process, as required by Kittitas County.

Douglas A. Bellingham  
Wetlands Environmental, Inc.

July 17, 1996

**RE: Wetland Delineation on Bishop Property..Cabin Creek..Kittitas County, WA**

**LOCATION:**

The Bishop Property is located two (2) miles from the I-90 Cabin Creek Exit, directly across from the Cabin Creek U-Fish RV Park.

Legal: Parcel B, a portion of the S 1/2 of Section 36, T21N, R12E, W.M., in the County of Kittitas, State of Washington.

**1. INTRODUCTION**

Wetlands are transitional areas in the landscape that occur between upland and aquatic environments where the water table is at or near the land surface. These areas are valued for several functions, including high quality wildlife habitat, contributions to fisheries, inorganic and organic pollution control, flood water control, and recreation and educational value. Each wetland is unique, with varying values for the different functions. In order to protect water quality in the U.S., Congress enacted the Clean Water Act to “maintain and restore chemical, physical and biological integrity of the waters of the U.S.”.

This report is prepared to meet the requirements of Kittitas County Land Use Division, Ellensburg, WA.

The property in question was evaluated for the presence and quality of wetlands using standard accepted procedures and all available data bases.

**2. SITE DESCRIPTION**

**A. Site Description**

The property lies adjacent to the Yakima River, is second growth forest, with seasonal streams, with aquifer emanating from ponds located on the site and from the Yakima River during normal periods of controlled irrigation release of Lake Keechelus.

**B. Site History and Current Land Use**

The site was previously logged in the 1920's and 1930's, and within the last 10 years. It is now forested second growth. It is zoned Commercial Forest, but this property and adjacent property is used as forest recreation.



### **C. Topography**

The property is relatively flat at approximately 2,495 feet in elevation.

## **3. METHODOLOGY**

The Bishop property was investigated in May and June of 1995. Wetland delineation techniques as per the Federal Manual for Identifying and Delineating Jurisdictional Wetlands, (January 1969), were utilized. Eastside Consultants, Issaquah, subsequently surveyed the wetlands.

The three technical criteria for delineating a wetland include the parameters of; hydric soils, hydrophytic vegetation and hydrology. These three criteria must be present in order for an area to be classified as a wetland. The method chosen to make a wetland determination depends upon the complexity of the site and the impact of the determination.

Routine on-site methodology was used to evaluate the status of wetlands on this property. The routine method is designed for the evaluation of areas equal to or less than five acres in size, or larger areas with homogenous vegetation and/or a clear wetland/upland boundary.

The wetlands can be classified as a Palustrine Emergent, Year-round Saturated.

## **4. RESULTS OF WETLAND ANALYSIS**

### **A. Soils**

N/A--See Health Department report.

### **B. Vegetation**

Please see the attached appendix for complete list of vegetation.

### **C. Hydrology and Water Quality**

Most of the water on the property flows southeast. The water quality is high, due to absence of any development within two (2) or more miles in the watershed up-slope from the property. Other than the proposed access road, natural trails and building site, no additional site disturbance is planned.

### **D. Wetlands Functions and Values**

This site would have a high classification of functions and values due to the large size of the property and its year-round wetlands and seasonal streams. The Bishop Project is making a minimal impact on the wetlands functions and values, because of the small acreage (less than 4%) of road area and building site.

## **E. Offsite Wetlands**

Directly across Cabin Creek Road (also known as U-Fish Road) from the property is the U-Fish Trout Pond and RV complex. Up-slope and down-slope are similar wetlands and seasonal streams. The Yakima River lies adjacent to the property.

## **F. Recommended Wetland/Stream Category**

The majority of the wetlands would be considered Class I, due to their year-round existence and high quality. The seasonal streams would be considered Class II. Wetlands Environmental, Inc. has delineated wetlands adjacent to the proposed road access and were surveyed by Eastside Consultants (see blueprint).

# **5. PROPOSED ACTIVITY**

## **A. Proposed Activity**

1. A retreat lodge (1 building) and garage/barn (1 building) is planned on less than two (2) acres of the property, including road access.
2. Road access to the building is addressed by three (3) alternatives:

Alternative A. Road to the building site along the route as surveyed by Eastside Consultants, as specified by Bishop and shown in the blueprint/road profile (see enclosed).

1) Installation of:

- One (1) 24" culvert at the beginning of the north portion of the property...the first crossing.
- Two (2) 36" culverts...the second crossing.
- Two (2) 36' culverts...the third crossing to maintain seasonal stream overflow from the Yakima River onto the property and its wetlands...the third crossing.
- One (1) 24" culvert to be located at the building site..the fourth crossing.

Alternative B.

- 1) In place of the two (2) 36" culverts at the third crossing, a railroad flat car is proposed as a bridge to provide minimal, if any impact on stream flow in this area.
- 2) A portion of the existing road be utilized, which goes around the west end of the "new pond" (see blueprint), and would have even less impact to the surrounding habitat, due to its present existence.



## Alternative C.

- 1) It was original proposed that an easement be requested across a small portion of U.S. Forest land, but this has been denied, so this is not a feasible alternative.

It is the opinion of Wetlands Environmental that Alternative B offers the better solution for access.

4. As per request of the Bureau of Indian Affairs Yakima Tribal local fisheries biologist, feasible trees cut will be placed in the Yakima River to enhance fish habitat. This will be accomplished with direction of local fisheries biologists.
5. Re-vegetation with natural flora will be accomplished, as necessary, with direction and supervision from Department of Fish and Wildlife biologists.

## 6. CRITERIA FOR WETLAND DELINEATION

Presently accepted wetland identification is based on three mandatory criteria established in the Federal Interagency Committee for Wetland Delineation (1989), FICWD; the federal manual for identifying and delineating jurisdictional wetlands.

These criteria include;

- ... **a predominance of hydrophytic vegetation,**
- ... **the presence of hydric soils, and**
- ... **evidence of wetland hydrology.**

A predominance of hydrophytic vegetation is defined by determining a plant species' frequency of occurrence. Plants growing within a wetland area (hydrophytic vegetation) have adapted to living in permanently or periodically inundated or saturated soils. The majority of plants growing in wetland areas possess physiological mechanisms that allow for productive growth, even during prolonged periods of anaerobic soil conditions. Wetland plants indicator status has been designated by the US Fish and Wildlife Service (Reed, 1988). The hydrophytic vegetation criteria is determined when more than 50 percent of the dominant vegetation is considered hydrophytic according to the indicator status.

Hydric soils are soils that have been developed under set site conditions. Hydric soils can be either organic or mineral in origin. Because of long-term wetness, hydric soils usually develop certain morphological features that can be observed in the field at any time of year. These features include organic horizons, gleying and low matrix chromas, with or without mottling. Gleyea soil colors are predominantly neutral gray to greenish or bluish gray. This gleyed nature is an indication that prolonged soil saturation has converted soil minerals to their reduced forms and anaerobic conditions. These reduced minerals are then removed from the soil by water movement. Mottles are blotches of different colors interspersed with the dominant matrix color. Mottles occur when soils are alternately



# WASHINGTON STATE WETLANDS FLORA CHECKLIST

JOB NUMBER : 04/06/95  
CLIENT : Bill and Kathy Bishop  
DATE OF SURVEY : May and June, 1995  
BY : Douglas A. Bellingham

## PLANTS

\* Introduced Species

Key To: National List of Plants that Occur in Wetlands

- NA = No Agreement: Regional panel not able to agree.  
NO = Not Occur: Does not occur in this region, but occurs in another region.  
NI = No Indicator: Insufficient information to determine indicator status.  
OBL = Obligate Wetland: Occur almost always (99%) under natural conditions.  
FACW = Facultative Wetland: Usually occur in wetlands (67-99%), but occasionally found in non-wetlands.  
FAC = Facultative: Equally likely to occur in wetlands or nonwetlands (34-66%).  
FACU = Facultative Upland: Usually occur in nonwetlands (67-99%), but occasionally found in wetlands (1-33%).  
UPL = Obligate Upland: Occur in wetlands in another region, but occur almost always (99%) under natural conditions in nonwetlands in the region specified (Region 9 .. WA. & OR)  
[nl] = Species not listed in the register. Scientific name verified with Vascular Plants of the Pacific Northwest. Hitchcock, et al., the definitive five volume treatise on Northwest plants.

(Species) in parenthesis with wetlands listing and no common name indicate Hitchcock does not list it, but that the National Wetlands List does.

Flower species are not categorized, however all are wetland associated in varying degrees.

## TREES (Canopy Layer)

<input type="checkbox"/> Alder, black	<i>Alnus glutinosa</i> (NO)
<input checked="" type="checkbox"/> Alder, red	<i>Alnus ruba</i> (FAC)
<input type="checkbox"/> Alder, Sitka	<i>Alnus sinuata</i> (FACW)
<input type="checkbox"/> Ash, Oregon	<i>Fraxinus latifolia/oregona</i> (FACW)
<input type="checkbox"/> Aspen, bigtooth	<i>Populus grandidentata</i> (NO)
<input type="checkbox"/> Aspen, quaking/trembling	<i>Populus tremuloides/tremula</i> (FAC+)
<input type="checkbox"/> Birch, western white	<i>Betula papyrifera commutata</i> (FACU)
<input type="checkbox"/> Birch, western low	<i>Betula papyrifera glandulifera</i> (FACU)
<input type="checkbox"/> Birch, northwestern white	<i>Betula papyrifera subcordata</i> (FACU)
<input type="checkbox"/> Cascara	<i>Rhamnus purshiana</i> (NI)
<input checked="" type="checkbox"/> Cottonwood, northern black	<i>Populus trichocarpa/balsamifera</i> (FAC)
<input type="checkbox"/> Crabapple, Pacific	<i>Malus diversifolia</i> [nl]
	<i>Malus fusca</i> (FACW)
<input type="checkbox"/> Crabapple, Western	<i>Pyrus fusca</i> [nl]
<input checked="" type="checkbox"/> Cedar, western red	<i>Thuja plicata</i> (FAC)
<input type="checkbox"/> Cedar, yellow	<i>Chamaecyparis nootkatensis</i> (FAC)
<input type="checkbox"/> Cherry, bitter	<i>Prunus emarginata</i> [nl]
<input checked="" type="checkbox"/> Dogwood, Pacific	<i>Cornus nuttallii</i> [nl]
<input type="checkbox"/> Dogwood (no common name/Hitch.)	<i>Cornus canadensis</i> (FAC-)
	<i>Cornus glabrata</i> (FACW)
<input type="checkbox"/> Elder, box	<i>Acer negundo</i> (FAC+)
<input checked="" type="checkbox"/> Fir, Douglas	<i>Pseudotsuga menziesii/taxifolia</i> [nl]
<input type="checkbox"/> Fir, grand	<i>Abies grandis</i> [nl]
<input type="checkbox"/> Fir, Pacific silver	<i>Abies amabilis</i> (FACU)
<input type="checkbox"/> Hawthorn, black	<i>Crataegus douglasii</i> (FAC)
<input checked="" type="checkbox"/> Hemlock, western	<i>Tsuga heterophylla</i> (FACU-)
<input type="checkbox"/> Larch, western	<i>Larix occidentalis</i> (FACU+)
<input type="checkbox"/> Madrone/Arbutus	<i>Arbutus menziesii</i> [nl]
<input checked="" type="checkbox"/> Maple, broadleaf/bigleaf	<i>Acer macrophyllum</i> (FACU)
<input type="checkbox"/> Maple, Douglas	<i>Acer glabrum douglasii</i> (FAC)
<input checked="" type="checkbox"/> Maple, vine	<i>Acer circinatum</i> (FACU+)
<input type="checkbox"/> Oak, Garry	<i>Quercus garryana</i> [nl]
<input type="checkbox"/> Pine, lodgepole	<i>Pinus contorta latifolia</i> (FAC-)
<input type="checkbox"/> Pine, ponderosa/western yellow	<i>Pinus ponderosa</i> (FACU-)
<input type="checkbox"/> Pine, western white	<i>Pinus monticola</i> (FACU)
<input type="checkbox"/> Spruce, Sitka	<i>Picea stchensis</i> (FAC)
<input type="checkbox"/> Willow, Pacific/western black/black	<i>Salix lasiandra</i> (FACW+)
<input type="checkbox"/> Yew, western	<i>Taxus brevifolia</i> (FACU-)
<input type="checkbox"/> Walnut, black	<i>Juglans nigra</i> (NO)



## VINES (Shrub Layer)

<input type="checkbox"/> Blackberry, evergreen (white-purple)	Rubus laciniatus (FACU+)
<input type="checkbox"/> Blackberry, Himalayan (white)	Rubus discolor (FACU-)
<input checked="" type="checkbox"/> Blackberry, trailing (white)	Rubus vitifolius (NI)
<input type="checkbox"/> Cucumber, wild (white)	Micrampelis oregana [nl]
<input type="checkbox"/> Honeysuckle, purple (purple-red)	Lonicera hispidula [nl]
<input type="checkbox"/> Ivy, poison (white berries)	Rhus radicans rydbergii [nl]
<input type="checkbox"/> Morning glory (blue)	Convolvulus spp. [nl]

## SHRUBS (Shrub / Sub-Canopy Layer)

<input type="checkbox"/> Azalea, false (copper)	Menziesia ferruginea (FACU+)
<input type="checkbox"/> Bamboo, false*	Polygonum sachalinense (NI)
<input type="checkbox"/> Box, false/myrtle leaf (greenish or red)	Pachystima myrsinites [nl]
<input type="checkbox"/> Broom, Scotch/Scots* (yellow)	Cytisus scoparius [nl]
<input type="checkbox"/> Ceanothus, redstem (white)	Ceanothus sanguineus (NI)
<input type="checkbox"/> Cranberry (pink)	Vaccinium oxycoccus intermedium
<input type="checkbox"/> Cranberry, high bush (white)	Viburnum trilobum (FAC+)
<input type="checkbox"/> Currant	Ribes bracteosum (FAC)
<input type="checkbox"/> Current	Ribes hudsonianum (OBL)
<input type="checkbox"/> Current, red flower (red)	Ribes sanguineum [nl]
<input type="checkbox"/> Currant, stink/blue (blue)	Ribes bracteosum (FAC)
<input checked="" type="checkbox"/> Devil's club (white/red berries)	Opopanax horridus (FAC)
<input checked="" type="checkbox"/> Dogwood, red osier (white)	Cornus stolonifera (FACW)
<input checked="" type="checkbox"/> Elderberry, blue (cream)	Sambucus glauca [nl]
<input type="checkbox"/> Elderberry, red (yellowish-white)	Sambucus callicarpa [nl]
<input type="checkbox"/> Gale, sweet (greenish catkins)	Myrica gale (OBL)
<input type="checkbox"/> Goat's beard (white, brown seeds)	Aruncus sylvestris [nl]
<input type="checkbox"/> Gooseberry, common/wild (greenish)	Aruncus dioicus (FACU+)
<input type="checkbox"/> Gooseberry, gummy (whitish)	Ribes divaricatum (NI)
<input type="checkbox"/> Gooseberry, swamp (whitish)	Ribes lobbiai [nl]
<input checked="" type="checkbox"/> Hardhack/Douglas spirea (pinkish)	Ribes lacustre (FAC+)
<input type="checkbox"/> Hazelnut/hazel (yellow catkins)	Spiraea douglasii (FACW)
<input type="checkbox"/> Honeysuckle, Oregon/orange (orange)	Corylus cornuta californica [nl]
<input type="checkbox"/> Honeysuckle, purple (purplish-red)	Lonicera ciliosa [nl]
<input type="checkbox"/> Honeysuckle (no common name/Hitch.)	Lonicera hispidula [nl]
<input type="checkbox"/> Honeysuckle (no common name/Hitch)	Lonicera caerulea (FAC+)
<input type="checkbox"/> Honeysuckle (no common name/Hitch)	Lonicera conjugialis (FAC)
<input type="checkbox"/> Huckleberry, evergreen (pink-white)	Lonicera involucrata (FAC)
<input type="checkbox"/> Huckleberry, dwarf (pinkish)	Vaccinium ovatum [nl]
<input type="checkbox"/> Huckleberry, red (red berries)	Vaccinium caespitosum [nl]
<input checked="" type="checkbox"/> Huckleberry, tall blue (pinkish)	Vaccinium parvifolium [nl]
	Vaccinium ovalifolium (UPL)

<input type="checkbox"/> Huckleberry, dwarf	Vaccinium cespitosum (FACU)
<input type="checkbox"/> Huckleberry/Common cranberry*	Vaccinium macroparpon (OBL)
<input type="checkbox"/> Huckleberry, mountain	Vaccinium membranaceum (FACU+)
<input type="checkbox"/> Huckleberry, western	Vaccinium occidentale (FAC+)
<input type="checkbox"/> Huckleberry/Wild cranberry	Vaccinium oxycoccos (OBL)
<input type="checkbox"/> Huckleberry/Grouseberry/Whortleberry	Vaccinium scoparium (FACU-)
<input type="checkbox"/> Huckleberry/Bog blueberry	Vaccinium uliginosum (FACW+)
<input type="checkbox"/> Kinnikinnick/bearberry pinkish)	Arctostaphylos uva-ursi (FACU-)
<input type="checkbox"/> Laurel	Kalmia microphylla FACW+)
<input type="checkbox"/> Laurel, swamp (rose)	Kalmia polifolia (OBL)
<input type="checkbox"/> Mahonia/Oregon grape (yellow)	Mahonia nervosa
<input type="checkbox"/> Mahonia/Tall Oregon grape (yellow)	Mahoniaaquifolium
<input type="checkbox"/> Manzanita, hairy (white)	Arctostaphylos columbiana [nl]
<input checked="" type="checkbox"/> Mock orange (white)	Philadelphus gordonianus [nl]
<input checked="" type="checkbox"/> Ninebark (white)	Physocarpus capitatus (FAC+)
<input type="checkbox"/> Oak, poison (greenish white berries)	Rhus diversiloba
<input checked="" type="checkbox"/> Oceanspray	Holodisus discolor [nl]
<input type="checkbox"/> Raspberry, black/black cap	Rubus leucodermis
<input type="checkbox"/> Rhododendron, red (pink purple)	Rhododendron macrophyllum [nl]
<input type="checkbox"/> Rose, common wild (deep rose)	Rosa nutkana
<input type="checkbox"/> Rose, dwarf (deep rose)	Rosa gymnocarpa
<input type="checkbox"/> Rose, swamp (deep rose)	Rosa pisocarpa
<input checked="" type="checkbox"/> Salal (pink white)	Gaultheria shallon [nl]
<input checked="" type="checkbox"/> Salmonberry (red)	Rubus spectabilis (FAC)
<input checked="" type="checkbox"/> Snowberry, creeping/Maidenhairberry	Gaultheria hispidula (FACW)
<input type="checkbox"/> Tea, Labrador (white)	Ledum groenlandicum (OBL)
<input type="checkbox"/> Tea, Trapper's	Ledum var. glandulosum (FAC+)
<input type="checkbox"/> Tea	Ledum var. columbianum (OBL)
<input checked="" type="checkbox"/> Thimbleberry (white)	Rubus parviflorus
<input type="checkbox"/> Twinberry, black (yellow twin)	Lonicera involucrata (FAC)
<input type="checkbox"/> Twin flower (pink twin)	Linnaea borealis FACU-)
<input type="checkbox"/> Wintergreen, alpine/matted	Gaultheria humifusa (FAC+)
<input type="checkbox"/> Wintergreen, Oregon/slender	Gaultheria ovatifolia ((FAC)

### GRASSES / CLOVERS (Forb Layer)

<input type="checkbox"/> Fescue	Festuca spp. (FAC and FACU)
<input type="checkbox"/> Fescue, alta	Festuca altaica (UPL)
<input type="checkbox"/> Clover, alside	Trifolium hybridum (FACU+)
<input type="checkbox"/> Grass	Elymus spp. (FAC/FACU/FACW)
<input type="checkbox"/> Grass	Eriophorum spp. (OBL)
<input type="checkbox"/> Clover, red	Trifolium pratense (FACU)
<input type="checkbox"/> Grass, barnyard	Echinochloa crusgalli (FACW)
<input checked="" type="checkbox"/> Grass, bent	Agrostis tenuis [nl]



<input type="checkbox"/> Grass, cotton	<i>Eriophorum chamissonis</i> (OBL)
<input checked="" type="checkbox"/> Grass, orchard	<i>Dactylis glomerata</i> (FAU)
<input type="checkbox"/> Grass, perennial rye/Wild rye/Rye grass	<i>Elymus hirsutus</i> [nl]
<input checked="" type="checkbox"/> Grass, Reed canary	<i>Phalaris arundinacea</i> (FACW)
<input checked="" type="checkbox"/> Grass, velvet	<i>Holcus lanatus</i> (FAC)
<input type="checkbox"/> Timothy	<i>Phleum pratense</i> (FACU)

### FERNS / HERBACEOUS (Shrub / Forb Layer)

<input checked="" type="checkbox"/> Fern, bracken	<i>Pteridium aquilinum pubescens</i> (FACU)
<input type="checkbox"/> Fern, deer	<i>Struthiopteris spicant</i> [nl]
<input type="checkbox"/> Fern, holly	<i>Polystichum lonchitis</i> (FACU)
<input checked="" type="checkbox"/> Fern, lady	<i>Athyrium felix-femina</i> (FAC)
<input checked="" type="checkbox"/> Fern, maidenhair	<i>Adiantum pedatum aleuticum</i> (FAC)
<input checked="" type="checkbox"/> Fern, sword	<i>Polystichum munitum</i> [nl]
<input checked="" type="checkbox"/> Skunk Cabbage	<i>Lystichum americanum</i> (OBL)
<input type="checkbox"/> Triple Sugarscoop	<i>Tiarella trifoliata</i> (FAC)

### PERMANENT WATER DEPENDANT (Shrub / Forb Layer)

<input type="checkbox"/> Bulrush	<i>Scirpus</i> spp. (OBL)
<input type="checkbox"/> Bulrush, river	<i>Scirpus fluviatilis</i> (OBL)
<input checked="" type="checkbox"/> Bulrush, soft-stemmed	<i>Scirpus validus/actus</i> (OBL)
<input type="checkbox"/> Buttercup	<i>Ranunculus</i> spp. (OBL/all other indicators)
<input checked="" type="checkbox"/> Buttercup, watercrowfoot (yellow)	<i>Ranunculus aquatilis</i> (OBL)
<input checked="" type="checkbox"/> Cattail	<i>Typha</i> spp. (OBL)
<input type="checkbox"/> Cattail, narrow-leaved	<i>Typha angustifolia</i> (OBL)
<input type="checkbox"/> Cattail, wide-leaved	<i>Typha latifolia</i> (OBL)
<input type="checkbox"/> Duckweed	<i>Lemna</i> spp. (OBL)
<input type="checkbox"/> Hemlock, water	<i>Cicuta bulbifera</i> (OBL)
<input type="checkbox"/> Hemlock, water (white)	<i>Cicuta douglasii/occidentalis</i> (OBL)
<input type="checkbox"/> Iris	<i>Iris missouriensis</i> (FACW+)
<input type="checkbox"/> Iris, yellow water flag/Fleur de Lis*	<i>Iris pseudacorus</i> (OBL)
<input type="checkbox"/> Milfoil*	<i>Myriophyllum</i> spp. (OBL)
<input type="checkbox"/> Parsnip*	<i>Sium suave</i> (OBL)
<input type="checkbox"/> Parsnip, common*	<i>Pastinaca sativa</i> [nl]
<input type="checkbox"/> Parsnip, water* (white)	<i>Sium cicutaefolium</i> [nl]
<input type="checkbox"/> Plantain, water (white)	<i>Alisma plantago-aquatica</i> (OBL)
<input type="checkbox"/> Rushes	<i>Janicus</i> spp. (OBL/all other indicators)
<input checked="" type="checkbox"/> Sedge, slough	<i>Carex obnupta</i> (OBL)
<input type="checkbox"/> Sedges	<i>Carex</i> spp. (OBL/all other indicators)
<input type="checkbox"/> Smartweed/Water smartweed/Doorweed	<i>Polygonum amphibium</i> (OBL)
<input checked="" type="checkbox"/> Smartweed	<i>Polygonum</i> sp. (OBL/all other indicators)
<input type="checkbox"/> Watercress*	<i>Nasturtium officinale</i> (OBL)

\_\_\_ Waterlily, yellow pond (yellow)  
\_\_\_ Waterlily  
\_\_\_ Water shield/Water target

*Nymphaea polysepala* [nl]  
*Nymphaea* spp. (OBL)  
*Brasenia schreberi* (OBL)

## FLOWERS (Forb Layer)

### (White color)

\_\_\_ Alumroot, small flower  
\_\_\_ Anemone, three-leaved  
\_\_\_ Anemone, western  
\_\_\_ Baneberry  
\_\_\_ Buckbean  
\_\_\_ Bugbane, false  
\_\_\_ Bunchberry/Pigeon berry  
\_\_\_ Chamomile, field  
✓ Coltsfoot  
\_\_\_ Daisy, oxeye  
\_\_\_ Fairy bells, Oregon  
\_\_\_ Fennel, dog\*  
\_\_\_ Foam flower  
\_\_\_ Gorse  
\_\_\_ Hawkweed, white  
\_\_\_ Indian pipe  
\_\_\_ Ladies' tresses  
✓ Lady's slipper  
✓ Lily, Easter  
✓ Lily-of-the-valley, false/wild  
✓ Miner's lettuce  
\_\_\_ Miner's lettuce, Siberian  
\_\_\_ Orchid, white bog  
\_\_\_ Osoberry  
✓ Oxalis, Oregon  
\_\_\_ Parsnip, cow  
✓ Pearly everlasting  
\_\_\_ Plantain, buckhorn  
\_\_\_ Plantain, rattlesnake  
\_\_\_ Plantain, rippleseed  
\_\_\_ Pussytoes, white  
\_\_\_ Saxifrage  
\_\_\_ Silver-green/Path finder  
\_\_\_ Solomon's seal, false  
\_\_\_ Solomon's seal, star-flowered  
✓ Snowberry

*Heuchera micrantha*  
*Anemone deltoides* [nl]  
*Anemone occidentalis* [nl]  
*Actaea arguta* [nl]  
*Menyanthes trifoliata*  
*Trautvetteria grandis*  
*Cornus canadensis*  
*Anthemis arvensis*  
*Petasites frigidus*  
*Chrysanthemum leucanthemum*  
*Disporum oregonum*  
*Anthemis cotula*  
*Tiarella unifoliata*  
*Ulex europaeus*  
*Hieracium gracile*  
*Monotropa uniflora*  
*Spiranthes romanzoffiana*  
*Cypripedium* sp.  
*Erythronium oregonum*  
*Maianthemum unifolium dilatatum*  
*Claytonia perfoliata*  
*Claytonia sibirica*  
*Habenaria dilatata*  
*Oemleria circinatum*  
*Oxalis oregana*  
*Heracleum lanatum*  
*Anaphalis margaritacea*  
*Plantago macrocarpa*  
*Peramium decipiens*  
*Plantago major*  
*Antennaria* spp.  
*Saxifraga integrifolia*  
*Adenocaulon bicolor*  
*Smilacina amplexicaulis*  
*Smilacina stellata*  
*Symphoricarpos albus*



Spatterdock  
 Strawberry, wild  
 Sundew  
 Trillium, western/Wake robin  
 Twisted stalk  
 Vinalla leaf/May leaves  
 Waxberry  
 Yarrow  
 Yerba buena

Nuphar luteum  
 Fraggaria spp.  
 Drosera spp.  
 Trillium ovatum  
 Streptopus amplexifolius  
 Achlys triphylla  
 Symphoricarpos albus  
 Achillea millefolium  
 Satureja douglassi

**(Pink color...variations are in parenthesis)**

Bleeding heart  
 Collomia (salmon)  
 Filaree/Storksbill (pink-purple)  
 Montia/Miner's lettuce  
 Onion, nodding (pink-purple)  
 Pipsissewa/Princes' pine (white to pink)  
 Sea blush  
 Star flower  
 Star flower, upland  
 Shooting star, few-flowered (purplish)

Dicentra formosa  
 Collomia grandiflora  
 Erodium cicutarium  
 Claytonia parviflora  
 Allium ceruum  
 Chimaphila umbellata  
 Valeriannella congesta  
 Trientalis latifolia  
 Trientalis arctica  
 Dodecatheon pauciflorum)

**(Red color...variations are in parenthesis)**

Columbine/Western columbine  
 Indian paintbrush/Painted cup  
 Indian paintbrush, miniature  
 Lily, wild tiger (orange and red also)  
 Satin flower/Grass widows  
 Sorrel, sheep (reddish pink)

Aquilegia formosa  
 Castilleja augustifolia  
 Castilleja miniata  
 Lilium parviflorum  
 Sisyrinchium grandiflorum  
 Rumex crispus

**(Yellow...variations are in parenthesis)**

Avens, large-leaved  
 Balsamroot, northwest  
 Butter and Eggs\* (orange "nose")  
 Buttercup, Bongard's  
 Buttercup, creeping  
 Buttercup, western  
 Camas, death (yellowish-white)  
 Cinquefoil, marsh  
 Goatweed/Klamath weed  
 Goldenrod

Geum macrophyllum  
 Balsamorhiza deltoidea  
 Linaria vulgaris  
 Ranunculus bongardi  
 Ranunculus repens  
 Ranunculus occidentalis  
 Zigadenus venenosus  
 Potentilla palustris  
 Hypericum perforatum  
 Soliadago elongata

<input checked="" type="checkbox"/> Groundsel, common	<i>Senecio vulgaris</i>
<input type="checkbox"/> Hairy cat's ear	<i>Hypochaeris radicata</i>
<input type="checkbox"/> Herb, yellow willow (pale yellow)	<i>Epilobium luteum</i>
<input type="checkbox"/> Monkey flower, yellow	<i>Mimulus langsdorfii</i>
<input type="checkbox"/> Mullein, great	<i>Verbascum thapus</i>
<input type="checkbox"/> Musk flower	<i>Mimulus moschatus</i>
<input type="checkbox"/> Ragwort (orange-yellow)	<i>Senecio spp.</i>
<input checked="" type="checkbox"/> Skunk cabbage	<i>Lysichiton kamtschaticense</i>
<input type="checkbox"/> Spring gold/Hog fennel	<i>Lomatium utriculatum</i>
<input type="checkbox"/> Sunflower, woolly	<i>Eriophyllum lanatum</i>
<input type="checkbox"/> St. Johnswort, common	<i>Hypericum perforatum</i>
<input type="checkbox"/> Stonecrop	<i>Sedum spp.</i>
<input type="checkbox"/> Tansy/Tansy ragwort/Common tansy*	<i>Tanacetum vulgare</i>
<input type="checkbox"/> Violet, trailing yellow (brown veins)	<i>Viola sempervirens</i>
<input type="checkbox"/> Violet, yellow (brown veins)	<i>Viola glabella</i>

**(Blue...variations in parenthesis)**

<input type="checkbox"/> Anemone, blue	<i>Anemone orefgana</i>
<input type="checkbox"/> Blue-eyed Mary	<i>Collinsia parviflora</i>
<input type="checkbox"/> Blue sailors (light blue)	<i>Cichorium intybus</i>
<input type="checkbox"/> Brodiaea, bicolored/Bicolored cluster lily	<i>Brodiaea bicolor</i>
<input type="checkbox"/> Brodiaea (blue-purple)	<i>Brodiaea coronaria</i>
<input type="checkbox"/> Brooklime, American/Spreadwell	<i>Veronica americana</i>
<input type="checkbox"/> Camas (Purplish-blue)	<i>Camassia quamash/leichtlinnii</i>
<input type="checkbox"/> Delphinium/Larkspur (dark blue)	<i>Delphinium menziesii</i>
<input type="checkbox"/> Gentian, northern	<i>Gentiana acuta/amarella</i>
<input type="checkbox"/> Iris, blue	<i>Iris virginicum [nl]</i>
<input type="checkbox"/> Jacob's ladder, blue/Blue skunkleaf	<i>Polemonium humile</i>
<input type="checkbox"/> Larkspur, low (blue-purplish)	<i>Delphinium bicolor</i>
<input type="checkbox"/> Larkspur, pale (lt. blue or violet-purple)	<i>Delphinium glaucum</i>
<input type="checkbox"/> Lupines (light blue or purple)	<i>Lupinus spp.</i>
<input type="checkbox"/> Lungwort, western	<i>Mertensia platyphylla</i>
<input type="checkbox"/> Self-heal/Heal-all (blue-purple)	<i>Prunella vulgaris</i>
<input type="checkbox"/> Synthyris, round-leaved (light purple)	<i>Synthyris reniformis</i>
<input type="checkbox"/> Violet, blue	<i>Viola adunca</i>
<input type="checkbox"/> Violet, blue swamp	<i>Viola palustris</i>

**(Purple..variations in parenthesis)**

<input type="checkbox"/> Aster, Douglas	<i>Aster douglasii</i>
<input type="checkbox"/> Broom-rape, naked/One-flowered cancer root	<i>Orobanche uniflora</i>
<input checked="" type="checkbox"/> Burdock, common/Dock	<i>Arctium minus</i>
<input checked="" type="checkbox"/> Coltsfoot/Butterbur (purplish-white)	<i>Petasites speciosa</i>

<input type="checkbox"/> Coral root (reddish-purple)	Corallorhiza spp.
<input checked="" type="checkbox"/> Foxglove (white, pinkish)	Digitalis purpurea
<input checked="" type="checkbox"/> Ginger, wild	Asarum caudatum
<input type="checkbox"/> Ground-cone (purplish)	Boschniakia strobiliacea
<input type="checkbox"/> Lady's slipper, false/Calyпсо orchid (pink purple)	Calypso bulbosa
<input type="checkbox"/> Meadow rue (purplish/male, greenish/female)	Thalictrum occidentale
<input type="checkbox"/> Mint, Canada (pale purple)	Mentha canadensis
<input checked="" type="checkbox"/> Nettle, hedge	Stachys ciliata
<input type="checkbox"/> Nightshade, bittersweet*	Solanum dulcamara
<input type="checkbox"/> Penstemon, Cascade	Penstemon serrulatus/diffusus
<input type="checkbox"/> Penstemon, woodland	Penstemon nemorosus
<input type="checkbox"/> Phacella (mauve)	Phacelia linearis
<input type="checkbox"/> Purple pea	Lathyrus nuttallii
<input type="checkbox"/> Thistle, common/pasture (red-purple)	Cirsium lanceolatum
<input type="checkbox"/> Thistle, Indian/Edible (reddish-purple)	Cirsium edule
<input checked="" type="checkbox"/> Trillium, long-stemmed	Trillium petiolatum
<input checked="" type="checkbox"/> Youth-On-Age/Pig-a-back (greenish w/purple lines)	Tolmiea menziesii

(Brown-Green..variations are in parenthesis)

<input checked="" type="checkbox"/> Dock, curled	Rumex crispus
<input type="checkbox"/> Hellebore, Indian/Green/False (greenish-yellow)	Veratrum eschocholtzii/viride
<input type="checkbox"/> Horsetail, common	Equisetum arvense
<input type="checkbox"/> Pigweed/Lamb's Quarters/Goosefoot (greenish)	Chenopodium sp.
<input type="checkbox"/> Lily chocolate/Rice root	Fritillaria lanceolata
<input checked="" type="checkbox"/> Nettle, stinging (greenish)	Urtica lyallii
<input checked="" type="checkbox"/> Sorrel, sheep	Rumex acetosella



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