WETLAND ANALYSIS REPORT

FOR THE

BANNER FOREST

Kitsap County, Washington

TPN 162302-1-005-2002

Prepared For:

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Parks and Recreation
&
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INTRODUCTION

The delineated wetlands discussed in this report are on the Banner Forest (Tax Parcel No. 162302-1-005-2002) in Port Orchard, Kitsap County, Washington (Appendix A-1). The wetlands in the study area lie within the 139 acre portion managed by the Great Peninsula Conservancy and in the southeast corner of the Kitsap County managed park area. The study was conducted to delineate the current boundaries and determine the conditions of wetlands within active use areas. The largest of the wetlands is centrally located along the Tunnel Vision and Sunbelt Trails and the second largest wetland is located on the east side between Worm Hole and Lizard King Trails. Two smaller wetlands were found on the west end of the GPC property and both lay north of Echoes and west of Pit a Pat. There is also a wetland identified in the southwest of the intersection of the main trail and Banner Slough (southwestern intersection) but it was not delineated because it is just outside the study area. GPS points were collected for each wetland boundary and test hole location for eventual mapping by Kitsap County and GPC. A rough drawing depicting the wetland boundary flags and test holes is included

The park property is composed of second growth forest with many trails crossing and is currently used for passive and active recreational activities that include pedestrian travel for hiking, dog walking and bird watching and with most trails also used for mountain biking and horse back riding. The property is mostly undulating with a large depression positioned near the center of the 139 acres maintained by the Great Peninsula Conservancy. The centrally positioned depression is composed of a large scrub/shrub wetland system. The wetland, delineated as Wetland A, is actually a series of depressions that are within tiers that lie at different elevations. It is entirely composed of a scrub/shrub system that is dominated by hardhack Spiraea, which covers 100% of this wetland. Wetland B is a smaller depressional system that lies between Lizard King and Worm Hole Trails in the southeastern portion of the site. It is essentially a scrub/shrub system with several smaller forested fingers at the south end. Wetland C is located west of Wetland A and lies just north of Echoes Trail. This wetland is also a depressional scrub/shrub system and Wetland D is a smaller depressional, scrub/shrub wetland that lies south of Wetland C. None of the four wetlands identified and delineated on the study area has an inlet or an outlet so the source of water appears to be perched water table, direct rainfall and runoff. The absence of an outlet indicates that water exits the wetland via evaporation or percolation into the soils.

Wetlands A and B meet the criteria for Depressional Category II systems and Wetlands C and D meet the criteria for Depressional Category III systems. Category II wetlands require a base buffer of 100 feet and Category III wetlands require a base buffer of 50 feet. The base buffers are then increased or decreased based on the score for habitat functions and the intensity of the land use according to the Kitsap County Critical Areas Ordinance (CAO). The park is considered a low intensity land use and each wetland scores less than 20 points for habitat function so the 100 foot Category II base buffer is decreased by 50 feet and the 50 foot base buffer for Category III wetlands is decreased by 10 feet. The final buffer widths recommended for the Banner Forest wetlands include is 50 feet for Wetlands A and B and 40 feet for Wetlands C and D. Wetlands A and B are currently impacted by activities associated

with trail usage by humans on foot, bicycle and horses that bring along dogs with one trail crossing through the northern 1/3 of Wetland A. The wetlands do not appear to have been significantly impacted by trail activities in that they retain historic functions but trails that cross the wetlands or are immediately adjacent to wetland areas should be moved so that they lie at least 50 feet away from the wetlands to minimize future impacts. There seems to be very little impact to the conditions of Wetlands C or D since Echoes and Pit a Pat trails are at least 40 feet from the wetland boundaries. The forested buffers around all of the wetlands is mostly composed of dense conifer forest with a dense low shrub understory but there are some areas around the wetlands where the understory is sparse due to the intense shading by the forested overstory.

The wetland delineation was completed between October 28, 2010 and November 12, 2010 using the Department of Ecology Washington State Wetland Identification and Delineation Manual in accordance with the Kitsap County Critical Areas Ordinance (CAO). The delineation was also conducted in accordance with the US Army Corps of Engineers Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region. These manuals require the use of the three-wetland parameter methodology (wetland hydrology, hydrophytic vegetation, and hydric soils) when making wetland determinations (see Appendix C for criteria used to make wetland determinations) for delineations conducted in Western Washington. Positive indicators for all three wetland parameters must be present for an area to be considered wetland under normal circumstances. This site and wetland are under normal circumstances so the Routine Onsite Determination method was used to delineate the wetlands. This report discusses the on-site wetlands with respect to data collected in the field used in conjunction with information obtained from the Kitsap County Soil Survey and National Wetlands Inventory. This report includes wetland categorization, classification, and the buffers required by the Kitsap County CAO. It also includes a wetland functions assessment and a discussion of wetland impacts that have occurred to the wetland as a result of the active use trails and restoration suggestions.

BACKGROUND INFORMATION

Kitsap County Soil Survey

The 139 acre section of the Banner Forest included in this study contains several different soil types. The onsite soils include 14, 15, and 16 Harstine gravelly sandy loam, 0-6%, 6-15% and 15-30% slopes making up the east and northwestern sections; 22 and 23 Kapowsin gravelly loam, 0-6% and 6-15% slopes in the southeast and western sections, 32 McKenna gravelly loam in a small area on the west side and 37 Norma fine sandy loam in a small area near the middle according to the Natural Resources Conservation Service, Web Soil Survey and the Soil Conservation Service, Soil Survey of Kitsap County Area, Washington; September, 1980. Harstine and Kapowsin soils are not classified as hydric but contain inclusions of such hydric soils as Norma fine sandy loam and McKenna gravelly loam in troughs and depressions. Norma and McKenna soils are classified as hydric and are mapped

in areas identified as Wetlands A, B and C. The area of Wetland D does not lie in an area that has mapped hydric soils. See Appendix A-3 for site located on soil survey and Appendix B for soil description.

National Wetlands Inventory
The US Fish and Wildlife Service, National Wetland Inventory (NWI), On Line Wetlands Mapper, Olalla Quadrangle, maps Wetland A and classifies it as Palustrine, Emergent, Seasonally flooded (PEMC). Wetland B is also mapped on the NWI near the east edge of the Banner Forest property and it is also classified as Palustrine, Emergent Seasonally flooded. Wetlands C and D do not appear on the NWI map for the study area. No other wetland areas are identified on the Banner Forest property by the NWI. See Appendix A-4 for site located on NWI.

Priority Species
There are no Washington State Priority 1, 2, or 3 plant or animal species known to exist on the parcel (Washington Natural Heritage Program, 2007/2009 Update) nor were any identified during our field survey. This data search was conducted using the printed edition of the Natural Heritage Program and a data base search has not been completed.

WETLAND ASSESSMENT

This delineation involved identification of wetland boundaries and categorization of four wetlands on the study area. Wetlands A, C and D situated on the 139 acres managed by the Great Peninsula Conservancy and Wetland B on the east edge of greater park property managed by Kitsap County Parks. All four wetlands are scrub/shrub systems confined to closed depressions with several forested fingers within Wetland B. Global Positioning System (GPS) points were collected for each wetland boundary and test hole flag. The list of GPS points are provided in Appendix A-2d along with a map showing the position of wetland based on the points. Photos are taken of each wetland and of the trails that lie within the buffers or across wetlands and these photos are included in Appendix A-5.

The following sections describe the data collected at the test holes in the wetland and adjacent upland and used to make the wetland boundary determination. See Appendix C for methods and criteria for additional information. The wetland and upland data is described in separate sections and each section includes a description of the dominant plant species, the soil profile and whether hydric conditions are present, and the presence/absence of wetland hydrology and/or wetland hydrology indicators. The dominant plant species identified by common and botanical name along with the indicator status (See Appendix D for Definition of Indicator Status-OBL, FACW, FAC, etc.) as listed on the back of each data form. The presence of hydric soil conditions is examined in 16 inch soil holes conducted at each test hole. The hydric soil criteria is met when there is a low soil matrix chroma at 10 inches or just below the A horizon. The chromas are determined using damp soil samples that are compared to a corresponding color chip in the Munsell Soil Color Charts. The chromas were then recorded on the data sheet using Hue (YR) and Value/Chroma. Any Hue and Value with a low Chroma is typical of hydric (wetland) soils that have developed over time due to

inundation or saturation by water. The presence or absence of wetland hydrology and/or wetland hydrology indicators includes the source of hydrology and direction of flow (if evident). Wetland Classification, Wetland Category and Required Buffers follow the description of the wetland and upland data.

Wetland A

This large wetland lies roughly in the center of the 139 acre section of Banner Forest managed by the Great Peninsula Conservancy. It is a scrub/shrub system that lies in a series of four tiers at different elevations. The northern two tiers (Tiers 1 and 2) appear to be at the highest elevations and in the northern end there is what appears to be an historic trail that has grown over so is no longer used. There is a very significant drop in elevation from Tier 1 into Tier 2, which ends roughly at Echoes trail crossing the northern 1/3. Tier 3, which lies south of Echoes, appears to be at the lowest elevation and there is a narrow connection from this tier into Tier 4, which appears to lay higher in elevation than Tier 3. It appears that water would flow southerly from Tiers 1 and 2 and northerly from Tier 4 into Tier 3 when the tiers overflow. There is no outlet from any of the tiers and it appears that water remains in the wetland until it evaporates or percolates into the soil.

This wetland is delineated with 100 Wetland Boundary flags labeled WB A-1 through WB A-100, which begin and end at the very northern point of this wetland near the intersection of Sunbelt and Tunnel Vision Trails. Two test holes were conducted in the wetland to document the presence of all three wetland parameters. Test Hole 1A is located at the north end in Tier 2 and Test Hole 4A is located in a narrow finger extending from Tier 3. Upland test holes were conducted just outside the wetland in these same locations to confirm the wetland boundary delineation, with Upland Test Hole 2A just west of Wetland Test Hole 1A and Upland Test Hole 5A just north of Wetland Test Hole 4A. Additional test holes were conducted in upland area where wetland vegetation was found growing and were conducted to verify the absence of wetland conditions. Test Hole 3A is an upland sample point west of Sunbelt and Tier 3 of Wetland A and Test Hole 6A is in an upland area alongside the narrow connection between Tiers 3 and 4 where the vegetation is dominated by hardhack but is clearly too high above the wetland to contain wetland hydrology. See Appendix A-2a for location of Wetland A on Banner Forest and Appendix A-2b for wetland boundary flag and test hole locations. See Appendix G for Wetland A Data Forms 1A through 6A. Photos are taken of Wetland A from various locations along the wetland boundary and are included on photo pages in Appendix A-5.

<u>Wetland A Data Description</u>

The area sampled at Test Hole 1A is dominated by hardhack (*Spiraea douglasii*) FACW with lower percentages of Nootka rose (*Rosa nutkana*) FAC present in the shrub layer and slough sedge (*Carex obnupta*) OBL growing in the herbaceous layer. Hardhack also dominates the area sampled at Test Hole 4A but there is almost equal coverage by salmonberry (*Rubus spectabilis*) FAC in the shrub layer. Scouler's willow (*Salix scouleriana*) FAC is also present in the shrub layer with trailing blackberry (*Rubus ursinus*) FACU in the herbaceous layer. The soil hole at Test Hole 1A revealed a two layer profile consisting of a 10 inch

peaty surface that represents a histic epipedon with a matrix chroma of 10 YR 2/1 over a silt loam that has a matrix chroma of 5 YR 3/1. The soil hole at Test Hole 4A revealed a two layer sandy silt loam profile consisting of a 6 inch surface horizon that has a matrix chroma of 10 YR 2/1 and a subsurface horizon with a matrix chroma of 7.5 YR 3/2 with a few prominent mottles. Hydrology was not present during the October and November site visits but there was evidence on the dominant vegetation that indicates the presence of standing water to the edge of the wetland. Oxidized root channels were observed in the soil profile of both wetland test holes indicating the presence of soil saturation and/or inundation for a portion of the growing season. The source of hydrology for this wetland appears to be a perched water table with seasonal inputs of direct rainfall and surface water runoff originating in the upland forest. There are no inlets or outlets in this wetland to indicate association with other bodies of water including the other wetland areas identified in Banner Forest.

Upland Data Description: Wetland Boundary Verification

The upland data was collected at Test Holes 2A and 5A alongside Wetland A to verify the boundary delineation. Test Hole 2A is located on the slope above Wetland Boundary flag A-8 (WB A-8) where the vegetation is dominated by Nootka rose (*R. nutkana*) FAC with lower percentages of hardhack (*S. douglasii*) FACW and Scouler's willow (*S. scouleriana*) FAC in the shrub layer. The herbaceous layer is dominated by slough sedge (*C. obnupta*) OBL with low percentages of trailing blackberry (*R. ursinus*) FACU also present. The soil hole in this location revealed a two layer fine sandy loam profile that consists of a 9 inch surface horizon that has a matrix chroma of 10 YR 3/2 with no mottles over a 5 YR 3/2 subsurface horizon that has no mottles present. Hydrology was not present in this area and there was no evidence of wetland hydrology. Despite the dominance by slough sedge in the herbaceous layer, this area is determined to be non-wetland because there are no positive indicators present for wetland hydrology or hydric soils.

Test Hole 5A is located slightly upslope of WB flag A-25 in an area dominated by equal percentages of hardhack (*S. douglasii*) FACW and salmonberry (*R. spectabilis*) FAC with lower percentages of Scouler's willow (*S. scouleriana*) FAC in the shrub layer. Trailing blackberry (*R. ursinus*) FACU dominates the herbaceous layer and there are also low percentages of salal (*Gaultheria shallon*) FACU and sword fern (*Polystichum munitum*) FACU growing in this area. The soil test hole in this location revealed the presence of a two layer fine sandy loam profile similar to the profile revealed at Test Hole 2A and consists of a 9 inch surface horizon that has a matrix chroma of 10 YR 3/2 with no mottles over a matrix chroma of 5 YR 3/2 with no mottles. Water was not present in this area during the field delineation and there is no evidence of wetland hydrology. This area is determined to be non-wetland because it lacks positive indicators for wetland hydrology and hydric soils.

Upland Data Description: Non-wetland Determination

Test Hole 3A is located in an area west of Sunbelt and the wetland boundary where the vegetation is dominated by hardhack (*S. douglasii*) FACW and Scouler's willow (*S. scouleriana*) FAC with salal (*G. shallon*) FACU and trailing blackberry (*R. ursinus*) FACU

dominating the ground cover. Lower percentages of cascara (*Frangula purshiana*) FAC- and fireweed (*Chamerion angustifolium*) FACU+ are also present in this area. The soil test hole revealed a two layer gravelly sandy loam profile that consists of a 3 inch surface horizon that has a matrix chroma of 10 YR 3/2 with no mottles over a soil that has a matrix chroma of 10 YR 4/3. Hydrology was not present in this area during the field delineation and there is no evidence of wetland hydrology. This area is determined to be non-wetland because it lacks positive indicators for all three wetland parameters despite the dominance by FAC and FACW species in the shrub layer.

Test Hole 6A is located upslope of WB A-34 in an area dominated by hardhack (*S. douglasii*) FACW with lower percentages of Scouler's willow (*S. scouleriana*) FAC and trailing blackberry (*R. ursinus*) FACU. The soil hole revealed a profile similar to that revealed at Test Hole 5A with a third layer beginning at 16 inches in the hole that consists of a silt loam that has a matrix chroma of 10 YR 4/3. Hydrology was not present in this area and there was no evidence of wetland hydrology. This area is determined to be non-wetland despite the high coverage by a FACW species because there are no positive indicators present for wetland hydrology or hydric soils.

Wetland B

Wetland B is a smaller depressional wetland situated along the east edge of Banner Forest between Worm Hole and Lizard King Trails. It is a closed depressional system that is composed of a scrub/shrub system with fingers of forest in the north and south ends. There are a few conifer trees growing in the depression presumably on hummocks. There is no inlet or outlet for this wetland indicating it is fed by a perched water table with seasonal inputs from direct rainfall and surface water runoff. It has a seasonally flooded hydrologic regime because of these sources and during the November 12, 2010 delineation, water was present to the edge of the wetland. There is no outlet from this wetland and there is no surface water connection to the other wetlands on Banner Forest. This wetland is delineated with 50 flags labeled WB B-1 through WB B-50 that begin and end at the northeast corner along Worm Hole Trail. A total of 4 test holes are conducted in and around this wetland with Test Hole 1B conducted in the northern portion of Wetland B near WB B-8 and Test Hole 4B in the southwestern forested finger near WB B-22. Upland Test Holes 2B and 3B are conducted near Wetland Test Holes 1B and 4B, respectively, to verify the wetland boundary delineation. No additional upland test holes were conducted around Wetland B. See Appendix A-2b for delineation of Wetland B as well as the location of Test Holes 1B through 4B. See Appendix A-5 for photos taken of Wetland B. See Appendix G for Wetland B Data Forms 1B through 4B.

<u>Wetland B Data Description</u>

Test Holes 1B and 4B conducted in Wetland B are in forested areas. The wetland in general is dominated by hardhack (*Spiraea douglasii*) FACW with areas containing Pacific willow (*Salix lucida, var. lasiandra*) FACW and occasional pine and cedar trees on hummocks near the middle. Slough sedge (*Carex obnupta*) OBL dominates the herbaceous layer in most of the wetland including the hardhack dominated areas. Data was not collected in the hardhack

dominated area of this wetland because it is clearly wetland as it is dominated by FACW plant species and water was present to the wetland edge. Test Hole 1B is located at the northern tip where forest dominates and Test Hole 4B is located in the southwestern finger of wetland. The vegetation at Test Hole 1B is dominated by a western red cedar (*Thuja plicata*) FAC canopy with no vegetation growing beneath it except a single evergreen huckleberry (*Vaccinium ovatum*) FACU growing on a nurse log. The soil test hole revealed a sandy muck that has a matrix chroma of 10 YR 2/1. Water was present within 2 inches of the soil surface with evidence of standing water for a portion of the growing season (debris lines, water lines on vegetation and cleared understory).

The area sampled at Test Hole 4B is dominated by salmonberry (*Rubus spectabilis*) FAC and low percentages of Scouler's willow (*Salix scouleriana*) FAC in the shrub layer beneath a mostly overhanging red alder (*Alnus rubra*) FAC and western red cedar (*T. plicata*) FAC forested canopy. Lady fern (*Athyrium filix-femina*) FAC dominates the herbaceous layer and there are also low percentages of slough sedge (*Carex obnupta*) OBL and salal (*Gaultheria shallon*) FACU. The soil hole in this area consists of a two layer silty sandy loam profile with a 6 inch surface horizon that has a matrix chroma of 10 YR 2/1 and a subsurface horizon having a matrix chroma of 7.5 YR 2.5/2 with no mottles visible. Water was present about 1 inch below the soil surface so soil saturation is present in this area and standing water was present nearby to a depth of about 6 inches. The source of hydrology appears to be a perched water table, surface water runoff and direct rainfall. There is no inlet or outlet to indicate a stream association and it appears that water exits the wetland via percolation into the underlying soils and along the edge of the wetland.

Upland Data Description

The upland data collected around this wetland was used to confirm the wetland boundary delineation so are nearly adjacent to those test holes conducted within the wetland. Test Hole 2B is located northeast of Test Hole 1B in the same type of forested community. The vegetation in this sample area includes western red cedar (*T. plicata*) FAC and red alder (*A. rubra*) FAC in the forest canopy with nearly bare understory containing only low percentages of evergreen huckleberry (*V. ovatum*) FACU and salal (*G. shallon*) FACU. The soil test hole revealed a three layer profile that consists of a 4 inch duff surface horizon over a 5 inch thick silty clay loam in the middle horizon that has a matrix chroma of 10 YR 2/2 with no visible mottles. The bottom layer is a somewhat compacted silt loam that has a matrix chroma of 10 YR 3/2 with no mottles. Water was not present in the soil hole and there was no evidence of wetland hydrology in this area. This sample area is determined to be upland because there are no positive indicators present for wetland hydrology or hydric soils.

Test Hole 3B is located west of Test Hole 4B in an area of upland dominated by salmonberry (*R. spectabilis*) FAC below a forest canopy of red alder (*A. rubra*) FAC. There are lower percentages of such species as cascara (*Frangula purshiana*) FAC-; holly (*Ilex opaca*) FACU; red elderberry (*Sambucus racemosa*) FACU; red huckleberry (*Vaccinium parvifolium*) UPL; salal (*G. shallon*) FACU; lady fern (*A. filix-femina*) FAC and bracken

fern (*Pteridium aquilinum*) FACU also growing in this upland area. The soil hole revealed a three layer profile consisting of a 4 inch duff surface horizon over a 6 inch thick intermediate horizon that has a matrix chroma of 10 YR 4/3, which in turn is over a sandy loam that has a matrix chroma of 10 YR 2/2 with no mottles. Water was present at the very bottom of the soil hole but there was no evidence in the upper soil horizons to indicate the presence of soil saturation within 10 inches of the soil surface during the growing season. This area is determined to be upland because there are no positive indicators present for wetland hydrology or hydric soils.

Wetland C

This small depressional wetland is situated on the GPC managed property west of Wetland B on the north side of Echoes and west of Pit a Pet Trails. It is a closed depression dominated by hardhack with patches of willows and several birch trees. It does not appear to have been negatively impacted by trail activities as the trails in this location are somewhat primitive and do not appear to be regularly used. There is actually a small tree across Echoes trail west of its intersection with Pit a Pet. This wetland is delineated with 21 WB flags beginning and ending at the northeast corner and a single test hole is conducted in the wetland. One test hole is located in the upland just northeast of WB C-1. See Appendix A-2c for location of wetland boundary and test hole flags and Appendix G for data forms for Test Holes 1-C and 2-C. See Appendix A-5 for photos taken of Wetland C.

Wetland C Data Description

Wetland C is dominated by hardhack (*Spiraea douglasii*) FACW with slough sedge (*Carex obnupta*) OBL dominant in the herbaceous understory. Birch trees (*Betula papyifera*) FAC are also present in several locations in and around the wetland with a couple of patches of willow (*Salix spp*.) FACW and a few western red cedar trees (*Thuja plicata*) FAC also present. The soil test hole conducted in Wetland C revealed a three layer profile consisting of a 2 inch duff layer over a 4 inch sandy silt loam soil that has a matrix chroma of 10 YR 3/1. The bottom layer beginning at 6 inches is a sandy silt loam with a matrix chroma of 10 YR 4/2 and a few faint mottles present. Water was present during the field visit as soil saturation to the surface of the soil with standing water to a depth of 6 inches along the edge of the main depression. The source of hydrology appears to be a perched water table, surface water runoff and direct rainfall. There is no inlet or outlet to indicate a stream association and it appears that water exits the wetland via percolation into the underlying soils and along the edge of the wetland.

Upland Data Description

The upland sampled at Test Hole 2-C is composed of a young conifer forest that is dominated by western white pine (*Pinus monticola*) FACU with a very sparse shrub layer containing only low percentages of evergreen huckleberry (*Vaccinium ovatum*) FACU; hardhack (*S. douglasii*) FACW; willow (*Salix scouleriana*) FAC and salal (*Gaultheria shallon*) FACU. There is no cover in the herbaceous layer except low percentages of sword fern (*Polystichum munitum*) FACU. The soil test hole in this area revealed a two layer profile that consists of a 6 inch duff/gravelly sandy loam surface horizon that has a matrix

chroma of 10 YR 2/2. The subsurface horizon is a gravelly sandy loam that has mixed matrix chroma of 10 YR 5/1 and 10 YR 4/3. Water was not present in the soil hole except at the very bottom of the test hole. There is no evidence of wetland hydrology in the soil profile so the presence of water at the bottom of the hole is attributed to seasonal rainfall. This area is determined to be upland because there are no positive indicators present for any of the three wetland parameters.

Wetland D

Wetland D is a shallow depressional wetland found when delineating Wetland C. It is nearly as long as Wetland C is wide but is very narrow and contains two distinct communities that are separated by a low rise in topography. The west end is dominated by willows with an understory of sedges and the east end is dominated by hardhack with no vegetation in the understory. It is delineated with 15 WB flags that begin and end at the west end. Test Hole 1-D is located in the upland south of Wetland D and Test Hole 2-D is located in the eastern half of Wetland D. See Appendix A-2c for location of Wetland D and the flagged test holes and wetland boundary. See Appendix G for Wetland D data forms for Test Holes 1-D and 2-D. See Appendix A-5 for photos taken of Wetland D.

Wetland D Data Description

Wetland D is a scrub/shrub system dominated by willows (*Salix spp*.) FACW and slough sedge (*Carex obnupta*) OBL in the west half and by hardhack (*Spiraea douglasii*) FACW that lacks herbaceous vegetation in the east half. Test Hole 2-D is located in the east half where there is standing water to a depth of 2 inches in the middle and saturation along the edges with water to the surface of the soil hole. The soil hole revealed a compacted gravelly sandy loam that has a matrix chroma of 10 YR 4/2. The source of water appears to be a perched water table along with seasonal inputs from rainfall and surface water runoff. There is no surface water connection to Wetland C as there is no outlet or inlet in Wetland D so water evaporates into the air, is transpired by the plants or percolates into the soil.

Upland Data Description

The upland area around Wetland D is dominated by a young conifer forest and Test Hole 1-D is located in a deciduous patch within the large conifer forest. The area sampled at Test Hole 1-D is dominated by willow (*Salix spp*.) FACW with hardhack (*S. douglasii*) FACW dominating the shrub layer with lower percentages of black twinberry (*Lonicera involucrata*) FAC; salal (*Gaultheria shallon*) FACU; and red elderberry (*Sambucus racemosa*) FACU in the shrub layer. The ground is mostly bare with low percentages of sword fern (*Polystichum munitum*) FACU and bracken fern (*Pteridium aquilinum*) FACU in the herbaceous layer. The soil test hole revealed a three layer profile consisting of a 4 inch duff surface horizon over a 6 inch gravelly sandy loam intermediate horizon that has a matrix chroma of 10 YR 2/2 with no mottles. The bottom horizon is composed of sand that has a matrix chroma of 10 YR 4/2 with no mottles present. Hydrology was present at about 10 inches in the soil but is attributed to seasonally high water table and rainfall because there is no evidence of long

term or wetland hydrology present in the soil horizon or on the surface. This area is determined to be upland because there are no positive indicators present for hydric soil despite the presence of wetland vegetation and hydrology.

Wetland Classification

These wetlands have been classified according to the U.S. Fish and Wildlife Service, Classification of Wetlands and Deepwater Habitats of the United States, Cowardin et al. December, 1979. This system describes a wetland's association with a body of water (Estuarine, Palustrine, Riverine, etc.), while the class refers to the dominant vegetation community (aquatic bed, emergent, forest). Hydrologic regime indicates the wetland's relationship to the movement of water. Both wetlands are classified as Palustrine, Emergent, Seasonally flooded by the US Fish and Wildlife Service, National Wetlands Inventory. Since the inventory was first conducted in the late 1980's these wetlands have developed into scrub/shrub communities with a couple of forested areas in Wetland B. They remain seasonally flooded. Wetland A is currently classified as Palustrine, Scrub/Shrub, Seasonally flooded, which is abbreviated PSSC. Wetland B is currently classified as Palustrine, Scrub/Shrub and Forested, Seasonally flooded, which is abbreviated PFOSSC. Neither Wetland C or D appears on the NWI and are classified as Palustrine, Scrub/Shrub, Seasonally flooded.

Wetland Category

The Kitsap County Critical Areas Ordinance requires that identified and delineated wetlands be categorized using the *revised* 2004 Washington State Wetlands Rating System for Western Washington (Publication # 04-06-025). This system utilizes hydrogeomorphic characteristics to determine the potential and opportunity for a particular wetland to perform water quality, hydrologic and habitat functions. It differentiates wetlands into four categories ranging from Category I systems that typically have high potential and opportunity to perform these functions to Category IV systems that have low potential and opportunity to perform the functions. A rating form that asks a series of questions is used to identify the wetland's position in the landscape (sloping, depressional, Riverine, etc.) and its specific characteristics that would indicate that it has potential to perform the water quality, hydrologic and habitat functions. When the wetland has opportunity to perform the functions, it receives a multiplier of 2. The scores are then added up and a category is assigned based on the number of points received as follows: Category I wetlands score 70 points or greater, Category II systems score between 51-69 points, Category III systems score 30-50 points and Category IV wetlands score less than 30 points.

Wetland A

This wetland is a depressional scrub/shrub system that does not have an inlet or outlet to indicate a stream association. It meets the criteria for a Category II system because it scores a total of 52 points on the wetland rating form (Appendix E-1a). It scores 12 points for potential to perform water quality functions because it is a closed depressional system that has persistent un-grazed vegetation over 95% of the area and over ½ the wetland is seasonally ponded. It does not have opportunity to perform water quality functions because

there is no development or grazing activities within 150 feet of the wetland boundary so there is no unfiltered runoff entering from these sources. Therefore it receives multiplier of 1 and scores a total of 12 points for this function. It scores 14 points for potential to perform hydrologic functions because it is a closed depression with at least 3 feet of water storage potential and receives water from a basin about 10 to 100 times the size of the wetland. It has opportunity to perform hydrologic functions because it has no outlet and impounds water that might otherwise flow into a stream that has flooding problems (Olalla Creek) so it receives the multiplier of 2 and scores 28 points for hydrologic functions. This wetland scores a total of 12 points for habitat functions because it is composed of a single vegetation community (scrub/shrub) and has a seasonally flooded hydrologic regime. There are snags, downed logs, less than 25% cover by invasive and at least ¼ acre of thin stemmed persistent vegetation on which amphibians can attach their eggs. The wetland is surrounded by second growth forest but there are many trails in and around this wetland that are used by mountain bikers, horseback riders and hikers with dogs so that the corridor to other habitats is considered disturbed. Activities within the buffers reduce wildlife passage between wetland and upland habitat even if it occurs infrequently. The wetland has a single priority habitat feature in the vicinity (the surrounding second growth forest) and there are three other wetlands within ½ mile of this system (including Wetlands B, C and D and the smaller depressional scrub/shrub wetland identified but not delineated in the southwestern quadrant of Banner Forest along the main trail around the site southwest of its intersection with Tunnel Vision).

Wetland B

This wetland is a depressional system that contains scrub/shrub and forested vegetation communities with no apparent inlet or outlet for water. It meets the criteria for a Category II wetland system according to the wetland rating form (Appendix E-1b) because it scores a total of 58 points. It scores more points that Wetland A because it is composed of two vegetation communities and Wetland A is composed of a single, scrub/shrub community. It scores 14 points for water quality potential because it is a closed depression and there is organic soil within the basin to increase its ability to improve water quality. Persistent vegetation and seasonal ponding over half of the wetland also gives the wetland potential to perform water quality functions. It does not have opportunity to perform water quality functions because it does not receive polluted waters from upslope development or grazed areas so receives a multiplier of 1 and scores 14 total points for water quality functions. Wetland B scores 14 points for potential to perform hydrologic functions because it is a closed depression with ponding of water between 2 and 3 feet and the size of the basin is less than 10 times the size of the wetland. It has opportunity to perform hydrologic functions because it has no outlet and is able to impound surface water that might otherwise drain into a stream with flooding problems (Olalla Creek) so receives the multiplier of 2 and scores a total of 28 points for hydrologic functions. This wetland scores 16 points for habitat functions because it is composed of two vegetation communities with at least 19 plant species present and has a seasonally flooded hydrologic regime. It also has features such as downed logs, less than 25% cover by invasive species and at least ¼ acre of thin stemmed vegetation that are important to local wildlife but lacks snags-there are a few snags in the

surrounding upland but none in the wetland. The buffers are mostly composed of upland forest with dense understory of salal and evergreen huckleberry but there are trails very close to the eastern and western boundaries of the wetland that impact the wildlife usage as the use of the trails decrease the abilities of wildlife species to cross from one habitat to another.

Wetland C

Wetland C meets the criteria for a depressional, Category III wetland because it scores a total of 45 points on the rating form (Appendix E-1c). It lacks an outlet and has a seasonally flooded hydrologic regime that along with an organic soil and persistent vegetation over more than ½ of the wetland give it the potential to perform water quality function. It receives a multiplier of 1 because it receives no unfiltered storm water so lacks opportunity and scores 14 points for water quality functions. The absence of an outlet, the potential to store up to 3 feet of water and the size of the basin gives the wetland potential to perform hydrologic functions so scores a total of 10 points. It receives a multiplier of 2 because it stores water that would otherwise flow into a stream with flooding problems (Olalla Creek) so has opportunity and scores 20 points for hydrologic functions. The wetland scores 4 points for habitat function potential because it is composed of a single vegetation community with a seasonally flooded hydrologic regime, 5 to 19 plant species, downed logs, and less than 25% cover by invasive plant species. It lacks a connection to an undisturbed corridor and there is good buffer around most of the wetland, which gives it relatively low opportunity to perform habitat functions. This wetland scores 11 total points for habitat functions.

Wetland D

Wetland D meets the criteria for a depressional, Category III system because it scores 43 points on the wetland rating form (Appendix E-1d). It is a seasonally flooded depression that lacks an outlet, lacks organic soils, and has persistent vegetation over $1/10^{th}$ of the wetland area so has relatively low potential for water quality functions scoring 8 points. It receives a multiplier of 1 because the wetland receives no unfiltered storm water from upslope so does not have opportunity to perform water quality functions. The absence of a surface water outlet along with 1.5 feet of storage and a large basin in comparison with the size of the wetland gives Wetland D the potential to perform hydrologic functions and it scores 12 points for hydrologic functions. It receives a multiplier of 2 for opportunity because it stores water that might otherwise flow into a stream with flooding problems (Olalla Creek) and scores a total of 24 points for hydrologic functions. Wetland D scores 4 points for habitat potential because it is composed of a single vegetation community with low plant species diversity and a seasonally flooded hydrologic regime. It has only a few special features that can be used by wildlife species. It scores 7 points for habitat opportunity because it is within an undeveloped forest but the corridor is interrupted by trails, which decreases its opportunity. It scores a total of 11 points for habitat functions.

Wetland Buffer Requirements

The Kitsap County Critical Areas Ordinance Section 19.200.220 (Table 19.200.220 A, B and C) requires buffers based on the category, points received for habitat functions and land use intensity. Land use intensity ranges from low to high and is based on the size of property and density of development. High intensity land uses including commercial, industrial and residential subdivisions with more than 1 unit per acre, moderate intensity land uses include transportation enhancement projects, parks and residential subdivisions with 1 unit per acre or less and low intensity land uses include forestry, open space and natural resource preservation. Category II wetlands require a base buffer of 100 feet and Category III wetlands require a base buffer of 50 feet. The buffers of Category II and III wetlands identified on Banner Forest are presented in the following table.

Required Buffer Widths	Wetlands A and B Category II 100 foot base buffer	Wetlands C and D Category III 50 foot base buffer	Final Buffer Widths	
			Cat II	Cat III
Low Intensity	Decrease by 50 feet	Decrease by 10 feet	50 feet	40 feet
Moderate Intensity	Decrease by 25 feet	Increase by 10	75 feet	60 feet
High Intensity	No Change	Increase by 30 feet	100 feet	80 feet

Based on best available science and through research about buffer widths, Banner Park appears to be considered a low intensity land use because it is largely forest with trails used by local residents for walking, biking and horseback riding. There are many trails but not all trails are used on a daily basis so the low intensity buffer widths of 50 feet for the Category II wetlands (Wetlands A and B) and 40 feet for the Category III wetlands (Wetlands C and D) are recommended. Wetland buffers are measured horizontally from the delineated wetland boundary. Buffers are considered part of the designated critical areas and are generally to remain undeveloped so as provide protection for the wetland and its functions from the activities on properties. The Kitsap County Critical Areas Ordinance, Section 19.200.225 provides a list of additional development standards for regulated uses, which includes trails and related facilities. In general, trails and related facilities are generally not permitted in the buffers of wetlands and where they are permitted, they are to be located in the outer portion of the buffer and a minimum of 30 feet from the wetland edge, except where crossing or viewing areas have been approved. These types of features are generally permitted where there are existing disturbances and no new impact will occur to the wetland as a result. The trails are limited to pedestrian use unless more intensive uses such as bike or horse trails are allowed with mitigation required to compensate for expected impacts. Additional trail standards are provided in Appendix E-2, which includes the wetland section of the Kitsap County Critical Areas Ordinance.

Off-Site Wetlands

This project involved identification of wetland boundaries on the Great Peninsula Conservancy site and the wetland on the east side of the Kitsap County Parks property. A third depressional wetland was identified southwest of the intersection of the main Banner

Forest Trail and Tunnel Vision Trail in the southwestern quadrant. This wetland was not delineated as part of this project and would likely meet the criteria for a Category II or III system with buffers of 40 to 50 feet required. There appears to be a single trail into the wetland but around the remainder, there is a vegetated buffer of least 100 feet.

WETLAND FUNCTIONS ASSESSMENT

Flood control, groundwater recharge/discharge, water quality maintenance, biological support, and many other functions are performed by wetlands. The table below lists the most common values and functions of wetlands and provides a value rating for each function and the rationale used to make the rating determination. Function rating and rationale has been determined using professional knowledge in conjunction with the Department of Ecology Wetland Rating System and WET Methodology. All of the wetlands function in the same manner so receive similar ratings for functions with Wetland A rating generally slight higher for storm and flood water storage because it is a much larger and deeper depressional system than the other three wetlands. See Appendix F for additional information concerning wetland functional values.

Function or Value	Rating and Rationale
Storm & Flood Water Storage	**HIGH** All four of the identified wetlands are closed depressional systems that function to store water and prevent it from flowing into a stream or other water body that has flooding problems. There is greater potential for storage within Wetland A as it is much deeper and larger than the smaller areas delineated as Wetlands B, C and D.
Water Quality Protection	**MODERATE** In general, the ability of these wetlands to retain water for long periods of times increases their potential to protect water quality by allowing settling of sediments that may enter the wetlands via runoff from the nearby trails. The dominant herbaceous understory (mostly slough sedge) facilitates filtration of pollutants that may also be entering particularly from those areas where horses are ridden on trails next to the wetlands. The wetlands appear to receive little in the way of pollutants because there are not high levels of pollutants or sediments entering either wetland from the adjacent trails, which reduces its opportunity to perform water quality functions.
Groundwater Discharge	**LOW** The wetlands have a seasonally flooded hydrologic regime that is fed by a seasonally perched water table, rainfall and surface water runoff so it does not appear that they function as groundwater discharge areas. No seepage areas were identified during the delineation that would indicate the discharge of groundwater into these wetlands.

Function or Value	Rating and Rationale
Groundwater Recharge	**MODERATE** The absence of an outlet for water indicates that recharge may be occurring via the soils along the wetland boundaries when the wetlands flood to the point where water is able to reach the permeable upland soils. There may also be some percolation of water through the soils beneath each wetland but this is likely a very small amount due to the impermeable soils that underlay many wetland systems.
Biological Support	**MODERATE** These wetlands rate moderate because they are composed mostly of a single vegetation community (scrub/shrub with some forested areas present only in Wetland B) and have seasonally flooded hydrologic regime with no association to other wetlands or streams. Wetland A contains many snags and downed logs while Wetlands B, C and D only contain downed logs with an occasional snag in the surrounding uplands. The buffers are impacted by trails and usage by pedestrians, horseback riders and bicyclists so the use by wildlife is affected by these activities including interruption of corridors between habitat areas by walking through and the noise that is generated by these activities (dogs barking, people talking, horses neighing, etc.) reduces usage by wildlife.
Aesthetic, Educational, & Recreational Values	**MODERATE** The wetlands are on properties that are used by local residents for enjoyment of nature while they walk, hike, bike ride and horseback ride through the forest. These activities increase both the aesthetic nature of the wetlands and the educational opportunities that are available. There is recreational value but it is limited to the use of the trails by humans and domestic animals with no opportunity for fishing, hunting or boating.

TRAIL RELATED WETLAND IMPACTS AND RESTORATION RECOMMENDATIONS

The wetlands identified as part of this delineation are situated along trails that are used by hikers, mountain bike riders and horseback riders for enjoyment of their respective sport/activity. The trails are in close proximity to the wetlands in several locations as documented on the Banner Forest trail map and confirmed during the field delineation. The trails are generally not within the wetland areas except in Wetland A where Echoes crosses between Tunnel Vision and Sunbelt at the north end of this wetland. It does not appear that the trail has had significant adverse impact to the function of this wetland but it does reduce the corridor travel by wildlife species. There has been some impact to the vegetation immediately along the trail where it crosses Wetland A but in general, the wetland retains its thick scrub/shrub composition. Noise generated on the trails where they cross, run next to or within 50 feet of the wetlands is the main impact that has and does occur to the wetland

functions with specific impact to biological support or wildlife usage. There are some potential water quality issues that could arise where more frequently used trails are next to the wetland boundary and some drainage of surface water appears to be occurring, particularly on the west side of Wetland A where Sunbelt runs alongside the boundary and of Wetland B where Lizard King is 5 feet from the wetland boundary at WB B31. Wetlands C and D seem to be less impacted by trail activities because the section of Echoes Trail crossing nearby does not appear to be as heavily used as it is in other locations as it was blocked by a small tree during the field visit and the canopy over the trail is more enclosed. Pit a Pat Trail is at least 50 feet from the wetland and the buffer between the trail and wetland remains well vegetated so there has been no impact to the wetland by use of this trail.

The intensity of the trail usage on the Banner Forest is not clear because trail systems with daily use by bicyclists and horseback riders is considered a moderate intensity land use whereas infrequent use by trails would be considered a low intensity land use. Typically, wider buffers are desired for any type of land use activity to avoid or minimize impacts to wetland communities. The current State of Washington Department of Ecology wetland rating and buffer system specifies buffer widths based on the current functions of a wetland so the buffer widths vary within the category depending on the habitat scores and occasionally on the water quality function score. The Kitsap County Critical Areas Ordinance uses this rating and buffer system and specifically has base buffers for each category of wetland with increased or decreased widths based on the scores for habitat functions and the land use intensity. Parcels under forestry designation or have low impact parks systems are considered low intensity land uses and therefore buffers are lower as the expected impacts are less. It is clear that every trail in the Banner Forest is not used on a daily basis and that most use probably occurs on the main perimeter trail because it is the widest and most improved trail on the site. The main trail is well outside the buffers of all wetlands identified on Banner Forest. The inability to determine the actual daily use of the trails makes it difficult to recommend final buffer widths but since it appears that most of the trails including those alongside the wetlands may be infrequently used so the low intensity land use buffer of 50 feet (100 foot base buffer minus 50 feet) would be the regulated width for Wetlands A and B and 40 feet (50 foot base buffer minus 10 feet) is the regulated width for Wetlands C and D according to the CAO.

The trails that exist within the 50 foot buffer and most particularly those that lie very close to the wetland boundaries should be blocked from future usage and re-constructed so that they are 40 feet outside Wetlands C and D and 50 feet from the boundaries of Wetlands A and B. In addition, those trails should be maintained at the minimum width (5 feet per the CAO) for use by pedestrians and bike and horseback riders should utilize trails more than 50 feet from the wetlands per the CAO. The Echoes Trail across the north half of Wetland A should also be blocked so that no additional crossing is permitted. The existing trails to be abandoned can be planted to recover lost vegetation but they will all likely recover on their own if blocked off from future use. Echoes Trail south of Wetlands C and D appears to be at least 40 feet from both wetlands so may not require replacement in another location and no special

restoration activities are necessary in this area. No new trails should be constructed except where they replace abandoned trails so as to minimize the removal of existing forested vegetation and to avoid creating any new corridor disruptions.

SUMMARY

The wetlands delineated and categorized for this report are located on the 139 acre portion of the Banner Forest managed by the Great Peninsula Conservancy (GPC) and the area between the Lizard King and Worm Hole Trails on the Kitsap County managed part of Banner Forest in the Port Orchard area of Kitsap County, Washington. The delineation was conducted to identify the boundaries of each wetland and determine what impacts have occurred as a result of trail usage in and near the wetland areas. The categorization was conducted to determine the appropriate buffer widths intended to provide protection of the wetlands per the Kitsap County Critical Areas Ordinance. The Banner Forest is made up of second growth forest through which many trails have been constructed for use by pedestrians, mountain bike riders and horseback riders. There is a wide main trail that extends along the north, west and south edges of the park and essentially connects the northeast and southeastern entrances of the park and many of the smaller trails connect in some way to the main trail. Four wetlands were identified within the GPC and Kitsap County Park areas and each lays in a depression that lacks inlets or outlets that would indicate a direct connection or association with a stream system. There is another depressional wetland identified west of the main trail where it intersections with Banner Slough (at the south end) but it was not delineated as it lies just outside the area of study. It appears to be similar in size and composition to Wetland C so would likely be a Category III that would require a 40 foot buffer. There is good buffer vegetation around this wetland with only a single trail near it so it does not appear to be negatively impacted by too many trail activities.

Wetland A lies near the center of the 139 acres managed by the GPC and is a multi-tiered system that lies in a north to south orientation between Sunbelt and Tunnel Vision Trails. The tiers lie at different elevations with the highest elevations occurring in the northern tier (Tier 1) and the lowest elevation in the third tier from the north (Tier 3). It is composed entirely of a scrub/shrub system that is dominated by hardhack spiraea with slough sedge occurring in the herbaceous layer. The source of hydrology appears to be a seasonally perched water table with winter inputs from rainfall and surface water runoff. Water exits the wetland via the water table as well as evaporation/transpiration and percolation into the upland and underlying wetland soils. It meets the criteria for a Depressional, Category II system that scores 12 points for habitat functions and has potential to perform water quality and both potential and opportunity to perform hydrologic functions.

Wetland B is a small, closed depressional wetland that lies in the southeastern quadrant of the Banner Forest on land that is managed by Kitsap County Parks and Recreation. It lies between Lizard King and Worm Hole Trails with the existing trails laying next to the wetland in several locations. It is composed of both scrub/shrub and forested communities with the forested areas occurring in several fingers at the south end and one finger at the north end. It is dominated mostly by hardhack with western red cedar and red alder

dominating the forested communities. Slough sedge is the most common herbaceous species in this wetland. The source of hydrology is a seasonally perched water table with additional inputs from rainfall and runoff originating on the adjacent upland. Water exits the wetland via the water table as well as evaporation/transpiration and percolation into the upland and underlying wetland soils. This wetland meets the criteria for a Depressional, Category II system that scores 16 points for habitat functions (more than Wetland A because it contains a second vegetation community-forested) with potential for water quality functions and both potential and opportunity for hydrologic functions.

Wetlands C and D are in close proximity to one another on the west side of the GPC managed area and north of Echoes Trail. They are both small closed depressional wetlands that are dominated by willows and/or hardhack with slough sedge dominating the understories of both wetlands. Wetland D is narrow, shallow system that lies south of Wetland C and is roughly as long as Wetland C is wide. They are fed by a perched water table along with seasonal direct rainfall and surface water runoff and there is no outlet so water exits via the underlying soils and surrounding upland soils. Both wetlands meet the criteria for Category III wetlands because they score a total of 43 to 45 points on the rating forms.

Base buffers of 100 feet are required for Category II wetlands per the Kitsap County CAO that is decreased or increased according to the score for habitat functions and the intensity of the land use activity. Wetlands A and B meet the criteria for Category II systems and because they score less than 20 points for habitat functions and are positioned on a site that has low intensity land uses, the 100 foot buffer is decreased by 50 feet so that a buffer of 50 feet would be required from these wetlands according to the CAO. Category III wetlands require base buffers of 50 feet that is also decreased or increased based on the score for habitat functions and intensity of the land use. The 50 foot buffer is reduced by 10 feet for Wetlands C and D because they score less than 20 points for habitat functions and the park activities are considered low intensity land uses for a final buffer width of 40 feet for both wetlands. Buffers of 50 feet are recommended from Wetlands A and B and 40 feet for Wetlands C and D on Banner Forest. Trails that lay within 50 feet and most particularly those that are next to the wetlands or cross through the wetland (Echoes through Wetland A) should be re-located so they are at least 50 feet from the wetlands. The abandoned trails will re-vegetate on their own but planting may be conducted if desired, which should speed up the re-vegetation process.

LIMITATIONS

This report has been prepared for Kitsap County Department of Parks and Recreation and the Great Peninsula Conservancy. It is important to acknowledge that definition of plant community boundaries is not an exact science. Different agencies and individuals may often disagree on exact boundaries and/or plant community classifications. It is the responsibility of the various resource agencies that regulate development activities in wetlands to make the final determination of wetland boundaries. Therefore, the information presented in this report should be reviewed by the appropriate regulatory agencies prior to detailed site planning and/or construction activities.

Given the constraints of schedules and scope of work, Wiltermood Associates warrants that the work performed is in accordance with the technical guidelines and criteria in effect at the time this report was prepared. The results and recommendations of this report represent professional opinion based upon the information provided by the client, the client's consultants, and that gathered through the course of this wetland study. No other warranty, expressed or implied, is made.

Signed

Joanne Bartlett

Joanne Bartlett
Professional Wetland Scientist

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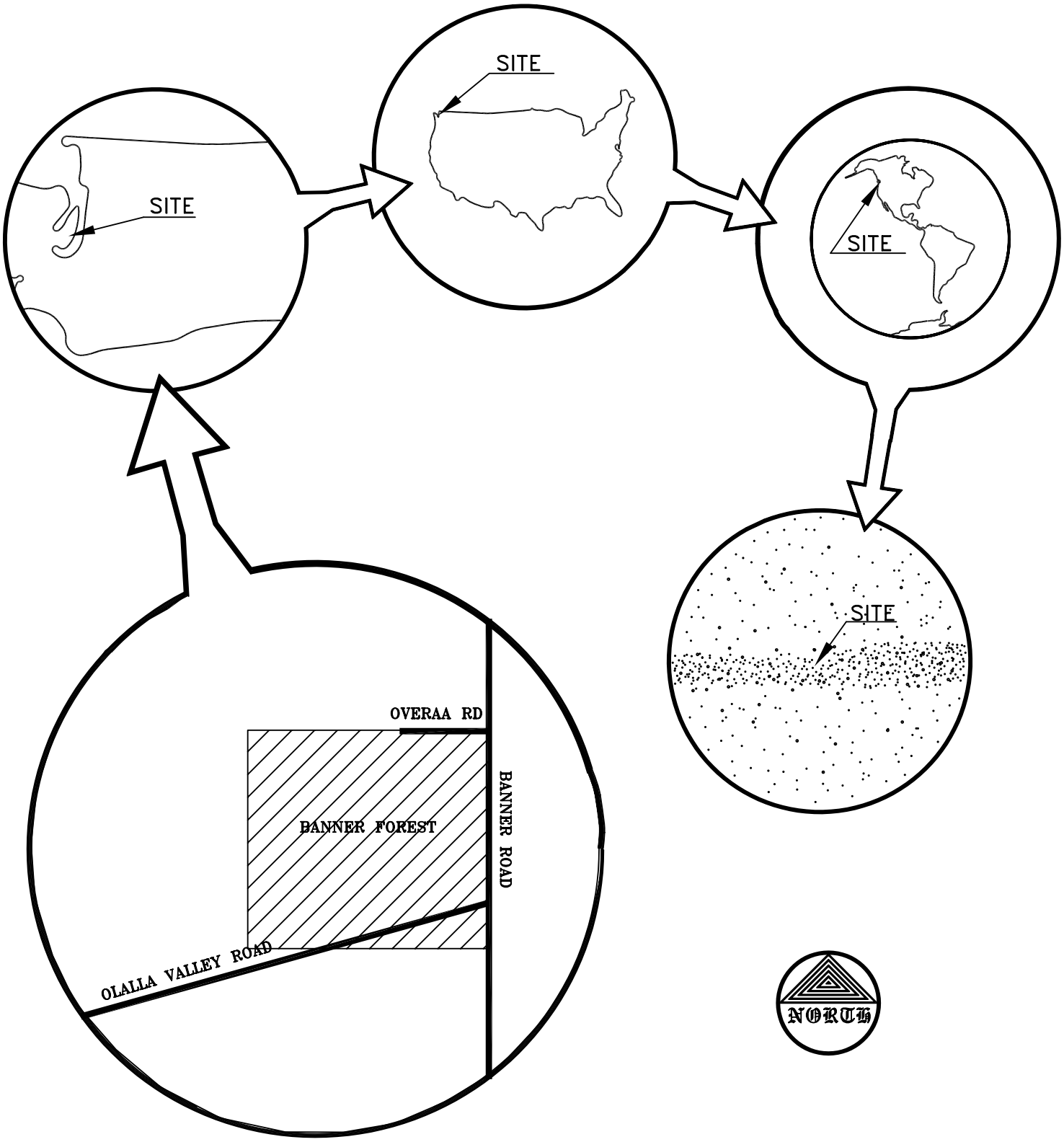
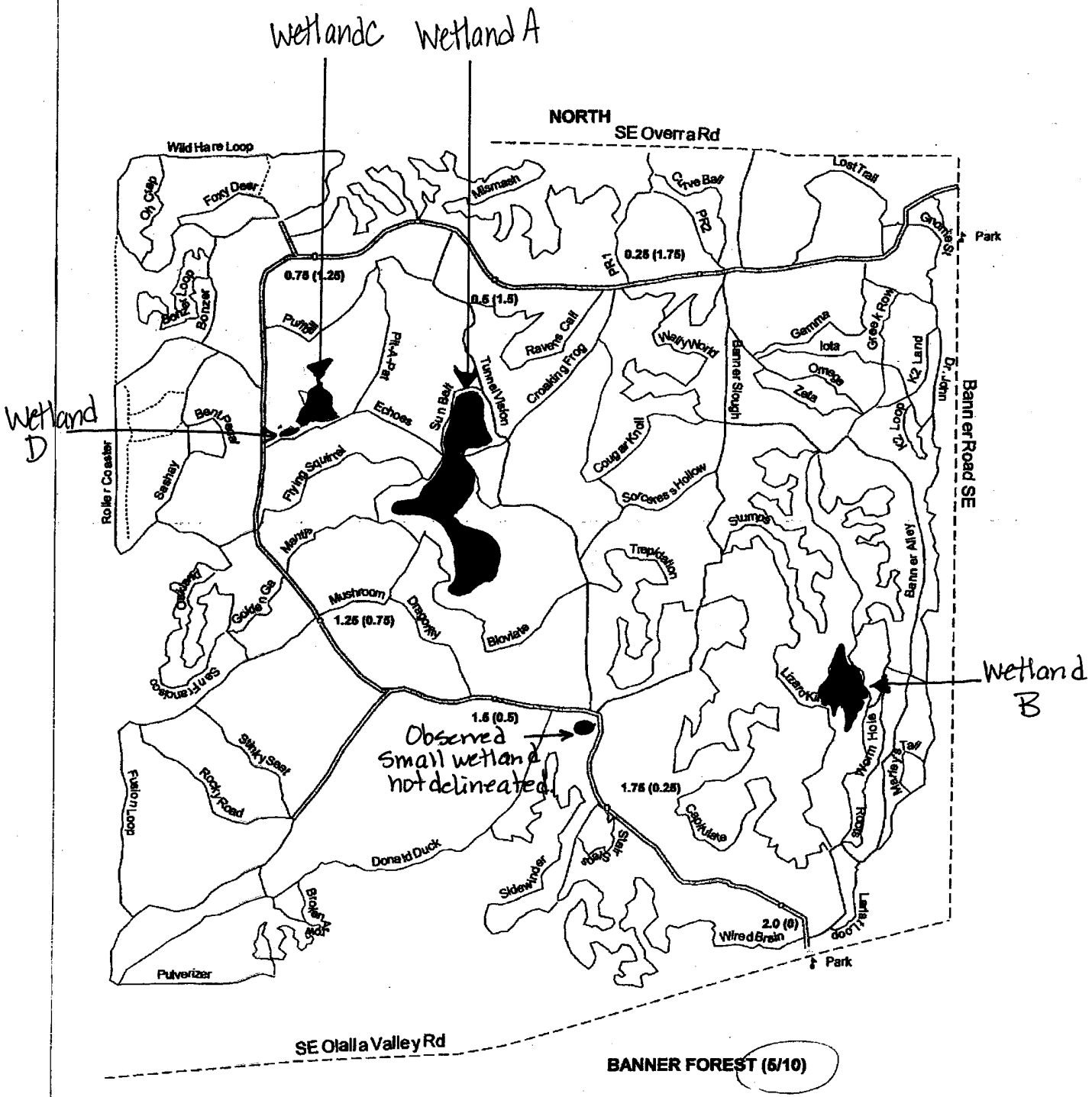


APPENDIX A-1

VICINITY MAP

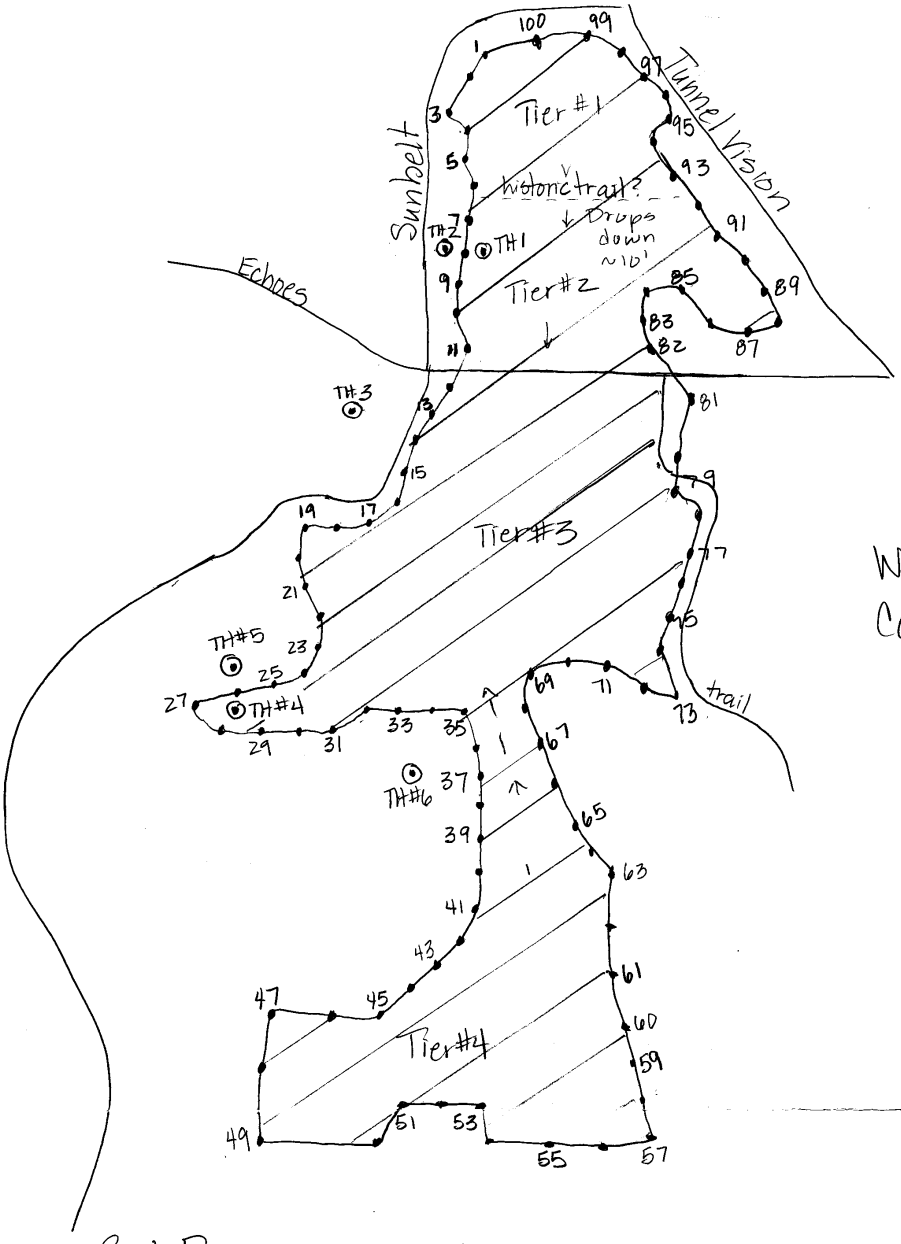
Wiltermood Associates, Inc.
1015 SW Harper Rd.
Port Orchard, WA 98367
(360) 876-2403



Approximate Location and Boundaries of Wetlands
See Appendix A-2b & A2c for flagged boundaries of both wetlands.

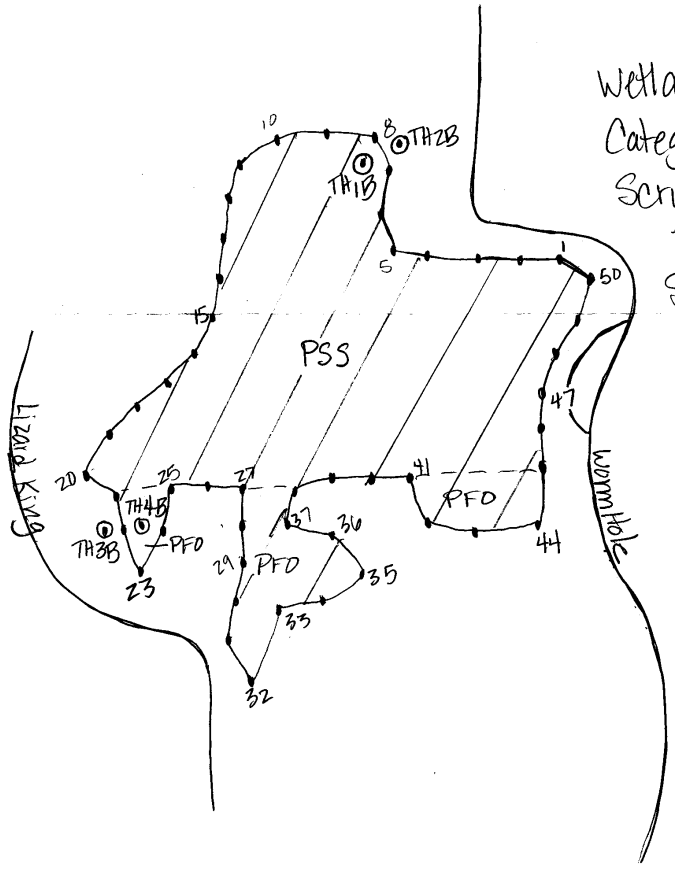
Appendix A-2a

Wiltermood Associates, Inc.
1015 S.W. Harper Road
Port Orchard, WA 98367-9306
(360) 876-2403 Fax (360) 876-2053



Wetland A - 100 flags
Category II, Depressional
Scrub/Shrub
Seasonally flooded

Rough Drawing
Not To Scale
Not A Survey



Wetland B - 50 flags
Category II, Depressional
Scrub/Shrub +
Forested
Seasonally flooded

Appendix A-26

Wiltermood Associates, Inc
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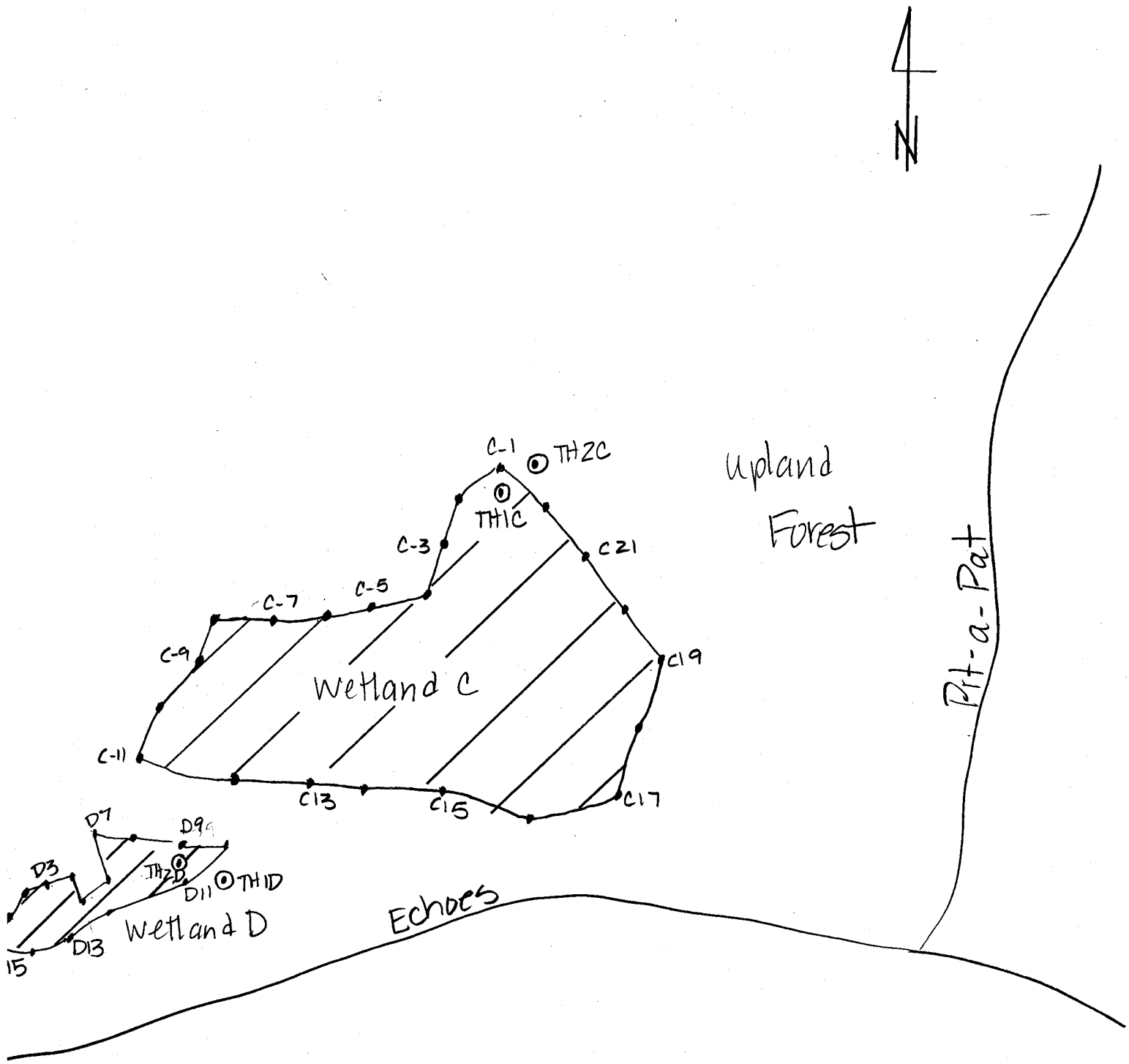
(360) 876-2403 Fax (360) 876-2053



Wetland C: 22 WB flags
Wetland D: 15 WB flags

Appendix A-2c

Wiltermood Associates, Inc.
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Port Orchard, WA 98367-9306
(360) 876-2403 Fax (360) 876-2053

APPENDIX A-2d

GPS COORDINATES
FOR
BANNER FOREST WETLANDS

GPS Point Name	Latitude	Longitude		( )	Elevation
NE parking area	N 47 29.477’	W 122 32.767’	47.49128333	122.5461167	
Main trail/Lost Trail East	N 47 29.317’	W 122 32.996’	47.48861667	122.5499333	425’
Main trail/Banner Slough	N 47 29.318’	W 122 33.096’	47.48863333	122.5516	
Main trail/Tunnel Vision	N 47 29.355’	W 122 33.515’	47.48925	122.5585833	388’
Tunnel Vision/Puffball	N 47 29.307’	W 122 33.547’	47.48845	122.5591167	388’
Tunnel Vision/Sunbelt	N				
WB A1	N 47 29.188’	W 122 33.507	47.48646667	122.55845	348’
WB A2	47 29.182	122 33.510	47.48636667	122.5585	341’
WB A3	47 29.181’	122 33.512’	47.48635	122.5585333	334’
WB A4	47 29.176	122 33.510	47.48626667	122.5585	334’
WB A5	47 29.168	122 33.514	47.48613333	122.5585667	333’
WB A6	47 29.164	122 33.510	47.48606667	122.5585	328’
WB A7	47 29.154	122 33.513	47.4859	122.55855	321’
WB A8	47 29.142	122 33.508	47.4857	122.5584667	307’
WB A9	47 29.138	122 33.525	47.48563333	122.55875	295’
WB A10	47 29.128	122 33.512	47.48546667	122.5585333	299’
WB A11	47 29.122	122 33.518	47.48536667	122.5586333	300’
Trail across wetland	47 29.122	122 33.515	47.48536667	122.5585833	299’
WB A12	47 29.119’	122 33.518	47.48531667	122.5586333	299’
Sunbelt/Echoes	47 29.122’	122 33.530’	47.48536667	122.5588333	299’
Test Hole #3	47 29.115’	122 33.542	47.48525	122.5590333	298’
WB A13	47 29.113’	122 33.528’	47.48521667	122.5588	297’
A14	47 29.109’	122 33.531	47.48515	122.55885	295’
A15	47 29.104’	122 33.539’	47.48506667	122.5589833	291’
A16	47 29.097	122 33.539	47.48495	122.5589833	290’
A17	47 29.096	122 33.547	47.48493333	122.5591167	291’
A18	47 29.089	122 33.557	47.48481667	122.5592833	288’
A19	47 29.096	122 33.564	47.48493333	122.5594	290’
A20	47 29.088	122 33.562	47.4848	122.5593667	290’
A21	47 29.080	122 33.555	47.48466667	122.55925	293’
A22	47 29.051	122 33.514	47.48418333	122.5585667	291’
A23	47 29.068	122 33.552	47.48446667	122.5592	296’
A24	47 29.064	122 33.555	47.4844	122.55925	300’
A25	47 29.058	122 33.537	47.4843	122.55895	310’
A26	47 29.048	122 33.568	47.48413333	122.5594667	320’
A27	47 29.044	122 33.573	47.48406667	122.55955	358’
A28	47 29.054	122 33.572	47.48423333	122.5595333	364’
A29	47 29.057	122 33.563	47.48428333	122.5593833	368’
A30	47 20.061	122 33.560	47.48435	122.5593333	372’
A31/abandoned trail	47 29.058	122 33.549	47.4843	122.55915	380’
GPS Point Name	Latitude	Longitude			Elevation
A32	47 29.062	122 33.539	47.48436667	122.5589833	379’
A33	47 29.064	122 33.528	47.4844	122.5588	380’
Test Hole 6	47 29.057	122 33.520	47.48428333	122.5586667	382’
A34	47 29.060	122 33.525	47.48433333	122.55875	380’

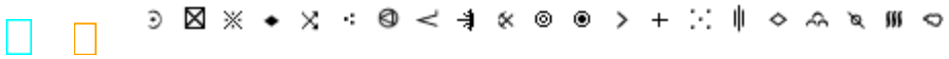
A35	47 29.063	122 33.514	47.48438333	122.5585667	381’
A36	47 29.061	122 33.516	47.48435	122.5586	372’
A37	47 29.062	122 33.510	47.48436667	122.5585	368’
A38	47 29.059	122 33.497	47.48431667	122.5582833	355’
A39	47 29.052	122 33.488	47.4842	122.5581333	350’
A40	47 29.039	122 33.481	47.48398333	122.5580167	354’
A41	47.29037	122 33.487	47.48395	122.5581167	394
A42	47 29.036	122.33468	47.48393333	122.5578	391
A43	47.29032	122.3347	47.48386667	122.5578333	388
A44	47.29035	122.33471	47.48391667	122.55785	387
A45	47.29019	122.33459	47.48365	122.55765	386
A46	47.29023	122.33478	47.48371667	122.5579667	383
A47	47.29013	122.33479	47.48355	122.5579833	382
A48	47.29008	122.33469	47.48346667	122.5578167	381
A49	47.28995	122.33479	47.48325	122.5579833	377
A50	47.28997	122.33468	47.48328333	122.5578	374
A51	47 29.006	12233475	47.48343333	122.5579167	392
A52	47.29013	122.33461	47.48355	122.5576833	395
A53	47.2901	122.3347	47.4835	122.5578333	396
A54	47.20009	122.33464	47.48348333	122.5577333	391
A55	47.29022	122.33459	47.4837	122.55765	375
A56	47.29022	122.33458	47.4837	122.5576333	364
A57	47.29022	122.3346	47.4837	122.5576667	352
A58	47.29026	122.33457	47.48376667	122.5576167	350
A59	47.29027	122.3347	47.48378333	122.5578333	349
A60	47.29031	122.33474	47.48385	122.5579	351
A61	47.29033	122.33495	47.48388333	122.55825	356
A62	47.29041	122.33479	47.48401667	122.5579833	362
A63	47.29048	122.33476	47.48413333	122.5579333	363
A64	47.29053	122.33482	47.48421667	122.5580333	361
A65	47.29057	122.33493	47.48428333	122.5582167	369
A66	47.29055	122.33495	47.48425	122.55825	374
A67	47.29054	122.3351	47.48423333	122.5585	372
A68	47.29052	122.33549	47.4842	122.55915	378
A69	47.2906	122.33549	47.48433333	122.55915	387
A70	47.20071	122.33522	47.48451667	122.5587	396
A71	47.29079	122.33517	47.48465	122.5586167	399
A72	47.29086	122.33512	47.48476667	122.5585333	413
A73	47.29074	122.33496	47.48456667	122.5582667	425
A74	47.29079	122.33494	47.48465	122.5582333	437
A75	47.29092	122.33465	47.48486667	122.55775	414
A76	47.29099	122.3347	47.48498333	122.5578333	406
GPS Point Name	Latitude	Longitude			Elevation
A77	47.291	122.33478	47.485	122.5579667	407
A78	47.29112	122.33483	47.4852	122.55805	404
A79	47.29108	122.33495	47.48513333	122.55825	399
A80	47.29111	122.33505	47.48518333	122.5584167	395

A81	47.29118	122.33504	47.4853	122.5584	393
A82	47.29121	122.33503	47.48535	122.5583833	389
A83	47.29136	122.33512	47.4856	122.5585333	373
A84	47.29155	122.33509	47.48591667	122.5584833	372
A85	47.29144	122.33497	47.48573333	122.5582833	368
A86	47.29141	122.33499	47.48568333	122.5583167	362
A87	47.29149	122.33486	47.48581667	122.5581	362
A88	47.29147	122.33484	47.48595	122.5580667	363
A89	47.29149	122.33496	47.48581667	122.5582667	361
A90	47.29155	122.33499	47.48591667	122.5583167	360
A91	47.29164	122.33494	47.48606667	122.5582333	358
A92	47.29163	122.33486	47.48605	122.5581	353
A93	47.29169	122.3349	47.48615	122.5581667	346
A94	47.29174	122.33493	47.48623333	122.5582167	348
A95	47.29177	122.33491	47.48628333	122.5581833	347
A96	47.29179	122.3349	47.48631667	122.5581667	340
A97	47.29183	122.33494	47.48638333	122.5582333	343
A98	47.29194	122.33486	47.48656667	122.5581	342
A99	47.29186	122.33488	47.48643333	122.5581333	354
A100	47.29186	122.33488	47.48643333	122.5582	354
WETLAND B					
WB B1	47.28892	122.32892	47.48153333	122.5482	335
WB B2	47.28895	122.32899	47.48158333	122.5483167	336
WB b3	47.28897	122.32905	47.48161667	122.5484167	346
WB B4	47.28907	122.32913	47.48178333	122.54855	343
WB B5	47.28909	122.32914	47.48181667	122.5485667	347
WB B6	47.28907	122.3292	47.48178333	122.5486667	352
WB B7	47.28914	122.32917	47.4819	122.5486167	361
TH 1B	47.28914	122.32912	47.4819	122.5485333	363
WB B8	47.28923	122.32927	47.48205	122.5487833	361
TH 2B	47.28923	122.32916	47.48205	122.5486	345
WB B9	47.28925	122.3292	47.48208333	122.5486667	341
WB B10	47.28922	122.32922	47.48203333	122.5487	339
WB B11	47.28909	122.32949	47.48181667	122.5415333	336
WB B12	47.28913	122.32941	47.48188333	122.5490167	337
WB B13	47.28913	122.32933	47.48188333	122.5488833	343
WBB14	47.28905	122.32927	47.48175	122.5487833	354
WB B15	47.28896	122.32929	47.4816	122.5488167	361
WB B16	47.28898	122.32939	47.48163333	122.5489833	379
WB B17	47.2888	122.32936	47.48133333	122.5489333	397
WB B18	47.28883	122.32949	47.48138333	122.54915	437
WB B19	47.28881	122.32941	47.48135	122.5490167	449
GPS Point Name	Latitude	Longitude			Elevation
WB B20	47.28881	122.32948	47.48135	122.5491333	452
WB B21	47.28876	122.3294	47.48126667	122.549	461
TH 3B	47.28872	122.32948	47.4812	122.5491333	446
WB B22/TH 4B	47.28867	122.32945	47.48111667	122.5490833	463

WB B23	47.28865	122.32939	47.48108333	122.5489833	444
WB B24	47.28868	122.32939	47.48113333	122.5489833	444
WB B25	47.28879	122.32936	47.48131667	122.5489333	453
WB B26	47.28867	122.32926	47.48111667	122.5487667	452
WB B27	47.2887	122.32916	47.48116667	122.5486	450
WB B28	47.28866	122.32921	47.4811	122.5486833	446
WB B29	47.28859	122.32922	47.48098333	122.5487	443
WB B30	47.28856	122.32927	47.48093333	122.5487833	444
WB B31	47.28848	122.32932	47.4808	122.5488667	444
WB B32	47.28846	122.32924	47.48076667	122.5487333	442
WB B33	47.2885	122.32922	47.48083333	122.5487	442
WB B34	47.28845	122.32915	47.48075	122.5485833	444
WB B35	47.28844	122.3291	47.48073333	122.5485	441
WB B36	47.28854	122.32919	47.4809	122.54865	441
WB B37	47.28858	122.32921	47.48096667	122.5486833	442
WB B38	47.28867	122.32917	47.48111667	122.5486167	447
WB B39	47.28866	122.32904	47.4811	122.5484	445
WB B40	47.28873	122.32907	47.48121667	122.54845	430
WB B41	47.28871	122.32895	47.48118333	122.54825	426
WB B42	47.2887	122.32894	47.48116667	122.5482333	428
WB B43	47.28876	122.32888	47.48126667	122.5481333	435
WB B44	47.2887	122.3288	47.48116667	122.548	429
WB B45	47.28865	122.32883	47.48108333	122.54805	425
WB B46	47.28873	122.32895	47.48121667	122.54825	414
WB B47	47.28876	122.32899	47.48126667	122.5483167	410
WB B48	47.28886	122.32884	47.48143333	122.5480667	408
WB B49	47.28892	122.32887	47.48153333	122.5481167	407
WB B50	47.28894	122.32891	47.48156667	122.5481833	406
	Wetland C				
WB C1	47.29182	122.337	47.48636667	122.5616667	384
TH 1 C	47.29185	122.33707	47.48641667	122.5617833	387
TH 2 C	47.29178	122.33701	47.4863	122.5616833	391
WB C2	47.29179	122.33707	47.48631667	122.5617833	395
WB C3	47.29174	122.33715	47.48623333	122.5619167	399
WB C4	47.29181	122.33732	47.48635	122.5622	403
WB C5	47.29179	122.33749	47.48631667	122.5624833	407
WB C6	47.29182	122.33748	47.48636667	122.5624667	412
WB C7	47.29175	122.33747	47.48625	122.56245	418
WB C8	47.29179	122.33753	47.48631667	122.56255	425
WB C9	47.29185	122.33753	47.48641667	122.56255	428
WB C10	47.29179	122.33761	47.48631667	122.5626833	428
WB C11	47.29184	122.33754	47.4864	122.5625667	429
WB C12	47.29188	122.33744	47.48646667	122.5624	432
WB C13	47.2918	122.33754	47.48633333	122.5625667	433
WB C14	47.2918	122.33744	47.48633333	122.5624	433
WB C15	47.29171	122.33724	47.48618333	122.5620667	435
WB C16	47.29171	122.33736	47.48618333	122.5622667	432

WB C17	47.29177	122.33726	47.48628333	122.5621	434
WB C18	47.29161	122.33723	47.48601667	122.56205	436
WB C19	47.2916	122.3372	47.486	122.562	441
WB C20	47.29159	122.33723	47.48598333	122.56205	444
WB C21	47.29169	122.33713	47.48615	122.5618833	441
	Wetland D				
WB D1	47.29154	122.33781	47.4859	122.5630167	428
WB D2	47.29154	122.33782	47.4859	122.5630333	428
WB D3	47.29157	122.33783	47.48595	122.56305	427
WB D4	47.29157	122.33772	47.48595	122.5628667	424
WB D5	47.29153	122.33776	47.48588333	122.5629333	423
WB D6	47.29168	122.33771	47.48613333	122.56285	422
WB D7	47.29162	122.33776	47.48603333	122.5629333	420
WB D8					
WB D9	47.29171	122.33767	47.48618333	122.5627833	415
WB D10	47.29163	122.33762	47.48605	47.48605	417
TH 1 D	47.29163	122.33759	47.48605	122.56265	415
TH 2 D	47.29167	122.33767	47.48618333	122.5627833	416
WB D11	47.29162	122.33771	47.48603333	122.56285	417
WB D12	47.29149	122.33772	47.48581667	122.5628667	421
WB D13	47.29152	122.33772	47.48586667	122.5628667	421
WB D14	47.29148	122.33775	47.4858	122.5629167	427
WB D15	47.29147	122.33769	47.48578333	122.5628167	431

Soil Map—Kitsap County Area, Washington
(Banner Forest Soil Survey)



U.S. Fish and Wildlife Service
National Wetlands Inventory

Oct 22, 2010

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deetwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

User Remarks:

APPENDIX A-5
BANNER FOREST
WETLAND AND TRAIL PHOTOS

BANNER FOREST
WETLAND A PHOTOS

These photos are taken from the very north end of this multi-tiered wetland system near Wetland Boundary Flag A-1 (WB A-1), which appears in Photo #A-3. They look easterly (Photo #A-1) to southerly (Photo #A-4) with Sunbelt Trail appearing along the wetland boundary in Photos A-1 and A-4. As these photos indicate, this area of wetland is composed of a nearly monotypic scrub/shrub community with second growth forest in the buffer with a fairly thick shrub understory.

Photo #A-1

Photo #A-2

Photo #A-3

Photo #A-4

BANNER FOREST
WETLAND A PHOTOS

These photos are taken from WB A-7, which lies along the west edge of Tier 1 of Wetland A. They look northeasterly (Photo #A-5) to southerly (Photo #A-9) across this wetland area. There appears to be an old road or some sort of division between the northern tier and the next tier to the south that appears (but is not readily visible) across the background of Photos A-7 and A-8. This old road is not currently used as a trail and there does not appear to be any activity in that location.

Photo #A-5

Photo #A-6

Photo #A-7

Photo #A-8

Photo #A-9

BANNER FOREST
WETLAND A PHOTOS

These photos are taken at the intersection of Sunbelt and Echoes near the south end of Tier 2 of this wetland system. They look north (Photo #A-10) to south (Photo #A-14) with Sunbelt in Photos A-10 and A-14. Echoes appears in the middle of Photo #A-12. They mostly show the intersection of the trails and their rough proximity to the wetland. Echoes actually crosses through the wetland and there is evidence of recent horse and bicycle traffic. Sunbelt lies along the west edge of the wetland and in some locations, it is immediately along the wetland boundary. Photo #A-15 shows the area sampled at Test Hole 3-A to document the absence of wetland conditions in an area dominated by hardhack.

Photo #A-10

Photo #A-11

Photo #A-12

Photo #A-13

Photo #A-14

Photo #A-15

BANNER FOREST
WETLAND A PHOTOS

These photos are taken from the along the south edge of Tier 3 of this wetland system. They are specifically taken from between WB A-30 and WB A-32 and look west (Photo #A-16) to northeast (Photo #A-19) to show the continued dominance by hardhack. It appears that this tier lies at the lowest elevation and receives water from Tiers 1 and 2 to the north and Tier 4 to the south when they reach their storage capacities. Wetland Boundary flag A-31 is visible as the orange flag hanging from a shrub on the left half of Photo #A-16 and WB A-32 is visible on the right half of Photo #A-18.

Photo #A-16

Photo #A-17

Photo #A-18

Photo #A-19

BANNER FOREST
WETLAND A PHOTOS

These photos are taken from the very southwest corner of Tier 4 of this multi-tiered depressional wetland system between WB flags A48 and A49. They are taken from the same point and complete a circle to document the wetland and upland conditions. The wetland is visible in Photos A-20 to A-23, which show a nearly monotypic stand of hardhack (*Spiraea douglasii*) that is surrounded by an upland forest dominated by Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*) and western white pine (*Pinus monticola*).

Photo #A-20

Photo #A-21

Photo #A-22

Photo #A-23

BANNER FOREST
WETLAND A PHOTOS

These photos represent the south, west and northwest photos that continue from the photos on the previous page. Wetland Boundary flag A-48 is visible on the right side of Photo #A-26 with wetland to the right of the flag and upland to the left.

Photo #A-24

Photo #A-25

Photo #A-26

BANNER FOREST
WETLAND B PHOTOS

These photos are taken of Wetland B at its northern point near WB flag B8. Photo # B-1 looks southerly along the wetland boundary with WB Flag B7 in the bushes just left of the center. Photo #B-2 looks southwesterly toward the area sampled at Test Hole 1B, which is marked by a flag that is in the cedar branches to the left of the trunk of the large cedar tree. Photo # B-3 looks westerly at WB Flag B8 which is the start of the very north line of this wetland system. Photo #B-4 looks back at Test Hole 2B, which documents the presence of upland conditions just outside the wetland boundary marked by WB Flag B8.

Photo #B-1

Photo #B-2

Photo #B-3

Photo #B-4

BANNER FOREST
WETLAND B PHOTOS

These photos are taken from WB B21 to show the predominant scrub/shrub vegetation community. They look from westerly (Photo #B-5) to northeasterly (Photo #B-8) across the scrub/shrub area. The trees and shrubs in the foreground of each photo are pretty much growing in the upland surrounding this wetland and willows are present in portions as indicated in Photo #B-8. Photo #B-9 looks easterly across the short finger delineated between WB B21 and B25 toward the southern boundary of the wetland just before the boundary curves again to form the finger delineated between WB B27 and WB B37.

Photo #B-5

Photo #B-6

Photo #B-7

Photo #B-8

Photo #B-9

BANNER FOREST
WETLAND B PHOTOS

These photos are taken from Lizard King Trail on the west side of Wetland B. Photos #B-10 through #B-16 are taken about 50 feet south of WB flag B25, which appears in the far background of Photo #B-13. Photos #B-10 through #B-13 are presented on this page and document the trail and forested conditions between Lizard King and the southern boundary of Wetland B. The wetland is in the bright background of Photos #B-12 and #B-13.

Photo #B-10

Photo #B-11

Photo #B-12

Photo #B-13

BANNER FOREST
WETLAND B PHOTOS

These photos represent a continuation of Photos #B-10 through #B-13 taken from Lizard King south of WB B25. Photos #B-14 and #B-15 look from northeasterly and easterly, respectively, into the upland forest between the southernmost finger of Wetland B and this trail. The wetland lies just beyond the fir trees on the right half of Photo #B-15. Photo #B-16 looks southerly along Lizard King to document the conditions of the trail in this area of the buffer.

Photo #B-14

Photo #B-15

Photo #B-16

BANNER FOREST
WETLAND B PHOTOS

These photos are taken from WB B31 and look from north along Lizard King (Photo #B-17) to southeasterly into the upland south of the wetland finger (Photo #B-20) with WB flag B31 occurring in Photo #B-19. These photos basically document the conditions of the trail and forest alongside this area of Wetland B.

Photo #B-17

Photo #B-18

Photo #B-19

Photo #B-20

BANNER FOREST
WETLAND B PHOTOS

Photos #B-21 through #B-23 are taken from WB B41, which lays at the start of the finger occupying the southeastern portion of Wetland B They look from northwesterly (Photo #B-21) to northeasterly (Photo #B-23) across the southeasterly portion of this wetland system. Photo #B-24 is taken from WB B43 and looks easterly into the short finger at the southeast corner of Wetland B to document the condition of the understory.

Photo #B-21

Photo #B-22

Photo #B-23

Photo #B-24

BANNER FOREST
WETLAND C PHOTOS

Wetland C is a small depressional wetland west of Wetland A and just north of Echoes Trail. These photos are taken from the southwest corner of Wetland C with Photo #C-1 looking northeasterly along the north edge of the wetland, Photo #C-2 looks easterly across the scrub/shrub wetland and Photo #C-3 looks along the south boundary of Wetland C. Like Wetlands A and B, this wetland is dominated by hardhack (appearing in the background of Photo #C-2) with slough sedge dominating the herbaceous layer (foreground of Photo #C-2). The upland around the wetland is dominated by conifer trees visible in the background of Photo #C-2 with a thick understory of salal on the north edge as indicated in Photo #C-1. The remainder of the conifer forest around this wetland has sparse shrub and herbaceous layers.

Photo #C-1

Photo #C-2

Photo #C-3

BANNER FOREST
WETLAND C PHOTOS

These photos are taken from Echoes Trail about 40 feet south of WB C-25 to document conditions in the forest buffer between the trail and southern wetland boundary. Photo #C-4 looks northwesterly into the wetland lying beyond the trees in the foreground while Photo #C-5 looks north into Wetland C, which again lays beyond the trees with WB C-25. Photo #C-6 looks northeasterly and shows a portion of Echoes Trail in which a puddle has formed. These photos give an idea of the buffer conditions south of Wetland C, which is dominated by conifer trees with sparse shrub and herbaceous layers.

Photo #C-4

Photo #C-5

Photo #C-6

BANNER FOREST
WETLAND D PHOTOS

Wetland D is a linear depressional wetland that lies south of Wetland C. This wetland has a willow/slough sedge dominated community at the west end and a hardhack dominated community in the east half. These photos are taken from the west end of the wetland between WB flags D-1 and D-15. Photo #D-1 looks northerly along the very west end of the wetland with WB flag D-1 visible on the left edge and WB flag D-2 in the background. Photo #D-2 looks easterly into the wetland where standing water is visible in the lower half beneath the branches. Photo #D-3 looks southeasterly toward the buffer between Echoes Trail and the delineated wetland boundary.

Photo #D-1

Photo #D-2

Photo #D-3

BANNER FOREST
WETLAND D PHOTOS

These photos are taken from the east end of Wetland D and look into the buffer south of the wetland (Photo #D-4), into the middle of the hardhack dominated community (Photo #D-5) and northwesterly into the northeastern portion of Wetland D (Photo #D-6). The buffer around this wetland is dominated by mixed coniferous/deciduous forest.

Photo #D-4

Photo #D-5

Photo #D-6

APPENDIX B

KITSAP COUNTY SOIL SURVEY
DESCRIPTION OF SOIL TYPES

The soils described in this appendix are excerpts, considered applicable to urban development, taken from the Soil Conservation Service, Soil Survey of Kitsap County Area, September 1980. For further information see pages 16-19, 22-23, 28, and 31of the Soil Survey.

14 Harstine gravelly sandy loam, 0-6% slopes. This soil is moderately deep and moderately well drained on broad uplands. It formed in sandy glacial till and mapped areas average about 50 acres. Included with this soil in mapping are about 5 percent Alderwood, 5 percent Indianola soils, and 5 percent McKenna and Norma soils. Also included in some areas are as much as 5 percent Harstine soils that have slopes of more than 6 percent. Harstine soils are not classified although McKenna and Norma soils are hydric. Permeability is moderate to the hardpan and very slow through the pan. The available water capacity is low, runoff is slow, and the hazard of water erosion is slight. A perched water table develops for short periods during the rainy season in winter and spring. This Harstine soil is mainly used for woodland, cropland, and urban development. Hay and pasture are the main crops. Wetness and depth to the cemented pan are the main limitations for use of this soil for urban development. In areas of moderate to high population density, on-site sewage disposal systems fail or do not function properly during periods of high rainfall because of the depth to the cemented pan and the seasonal perched water table. This soil has adequate strength to support a heavy load.

15 Harstine gravelly sandy loam, 6-15% slopes. This soil is moderately deep and moderately well drained on broad uplands, formed in sandy glacial till. Mapped areas average about 100 acres and most slopes are about 8 percent. Included with this soil in mapping are 5 percent Indianola and Neilton soils on side slopes and 2 percent Norma and McKenna soils in troughs. Also included are some areas of Harstine soils that have slopes of less than 6 percent or more than 15 percent. Although Harstine soils are not classified as hydric, there are inclusions of two hydric soils (Norma and McKenna). Permeability of this Harstine soil is moderate to the hardpan and very slow through the pan. The available water capacity is low, surface runoff is slow, and the hazard of water erosion is slight. A perched water table develops for short periods during the rainy season in winter and spring. This soil is used mainly for woodland, cropland, and urban development. Hay and pasture are the main crops. Slope and depth to the seasonal perched water table are the main limitations for use of this soil for urban development. In areas of moderate or high population density, on-site sewage disposal systems fail or do not function properly during periods of heavy rainfall in winter. Excavation for basements and utility lines is difficult. Topsoil needs to be stockpiled and subsequently used to cover excavated soil material. This soil has adequate strength to support a heavy load.

16 Harstine gravelly sandy loam, 15-30% slopes. This soil is moderately deep and moderately well drained on broad uplands. It formed in sandy glacial till. Mapped areas are long and narrow, and are along drainageways and on breaks between areas of other less sloping Harstine

soils. Slopes are about 150 to 300 feet in length. Included in the mapping on the lower parts of slopes are 5 percent Neilton, Indianola, and Ragnar soils. Some areas of Harstine soils that have slopes of less than 15 percent are also included. Harstine soils are not classified as hydric and do not have hydric soil inclusions in the mapping of the steeper sloped Harstine soils. Permeability is moderate to the hardpan and very slow through the pan. The available water capacity is low, runoff is slow, and the hazard of water erosion is slight. A perched water table develops for short periods during the rainy season of winter and spring. However, the seasonal perched water table is of short duration because water flows laterally above the cemented pan and seeps at the bottom of slopes. This Harstine soil is used mainly for woodland, pasture, and urban development. Slope and depth to a perched water table are the main limitations for the use of this soil for urban development. Excavation involves ripping the weakly cemented pan. A site preparation system that controls runoff and maintains the esthetic value is needed. During the rainy season, in winter and spring, septic effluent from on-site sewage disposal systems may seep at points downslope.

22 Kapowsin gravelly loam, 0-6% slopes. This moderately deep, moderately well drained soil is on broad uplands and terraces. It formed on glacial till and mapped areas range from 5 to more than 300 acres. Included with this soil in mapping are as much as 10 percent Harstine and Poulsbo soils and about 5 percent Kapowsin Variant soil. Also included is up to 10 percent Kapowsin soils that have slopes of more than 6 percent. These soils are not classified as hydric. Permeability is moderate above the hardpan and very slow through the pan. The available water capacity is moderate, runoff is slow, and the hazard of water erosion is slight. A perched water table is at a depth of 1 to 2 feet during the rainy season. This Kapowsin soil is used mainly for woodland, cropland, and urban development. Depth to the cemented pan and wetness are the main limitations for urban development on this soil. Community sewage systems are needed because septic tank drainage fields fail or do not function properly during the rainy season. Excavation for basements, utility lines, and drainageways is difficult because of the cemented pan. Topsoil needs to be stockpiled and subsequently used to cover excavated soil material. Proper site preparation includes planning for the safe disposal of runoff.

23 Kapowsin gravelly loam, 6-15% slopes. This moderately deep, moderately well drained soil is on broad uplands and terraces. It formed on glacial till and mapped areas range from 10 to more than 150 acres. Included with this soil in mapping are as much as 10 percent Harstine and Poulsbo soils and about 5 percent Kapowsin Variant soil. Also included is up to 10 percent Kapowsin soils that have slopes of less than 6 percent. These soils are not classified as hydric. Permeability is moderate above the hardpan and very slow through the pan. The available water capacity is moderate, runoff is slow, and the hazard of water erosion is slight. A perched water table is at a depth of 1 to 2 feet during the rainy season. This Kapowsin soil is used mainly for woodland, cropland, and urban development. Depth to the cemented pan and wetness are the main limitations for urban development on this soil. Community sewage systems are needed because septic tank drainage fields fail or do not function properly during the rainy season. Excavation for basements, utility lines, and drainageways is difficult because of the cemented pan. Topsoil needs to be stockpiled and subsequently used to cover excavated soil material. Proper site preparation includes planning for the safe disposal of runoff.

32 McKenna gravelly loam. This moderately deep, over compact glacial till, poorly drained soil formed in glacial till. It is on uplands in low lying depressions and along drainageways and is classified as hydric. Included with this soil in mapping are as much as 10 percent Norma soils, which is classified as hydric, and 3 about percent Kapowsin Variant soils, which is not. Permeability of this soil is slow to the compact glacial till and very slow in it. The available water capacity is moderate. Runoff is ponded during the winter months, and water erosion is not a hazard. This McKenna soil is used mainly for woodland, pasture, and wildlife habitat. The perched water table remains close to the surface throughout the rainy season. Undrained areas of the McKenna soil provide ideal habitat for such waterfowl as mallard, pintail, and wood ducks. Seeding of water-tolerant plants helps to improve the habitat for wildlife. This soil is poorly suited to homesites because of a perched water table and ponding during the rainy season. Restricted permeability is also a limitation for use of this soil for septic tank absorption fields.

37 Norma fine sandy loam. This deep poorly drained soil is on long, narrow stream bottoms and on till plain depressions in the uplands. It formed in mixed glacial alluvium, and is classified as hydric. Included with this soil in mapping, and making up about 10 percent of the map unit, are Bellingham, McKenna, and Shalcar soils, all are classified as hydric. Also included are small areas that have an organic surface layer as thick as 5 inches, and small areas that have a sand substratum. This soil is used for woodland, pasture, and wildlife habitat. This soil provides excellent habitat for such waterfowl as mallard, pintail, and wood ducks. Seeding of selected plants helps to improve the wetland wildlife habitat.

APPENDIX C: WETLAND DETERMINATION/DELINEATION METHODOLOGY

The definition for wetland established by the U.S. Army Corps of Engineers (COE) was used to determine the presence and extent of wetlands on this parcel. Section 404 of the Clean Water Act (1972) states that wetlands are:

> "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

This criteria is based on the Department of Ecology Washington State Wetland Identification and Delineation Manual, the 1987 Corps of Engineers (COE) Wetland Delineation Manual and the The US Army Corps of Engineers, Environmental Laboratory has prepared the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region. These manuals are prepared to establish technical procedures and guidelines for wetland determination and delineation. These guidelines as set forth in these delineation manuals requires that three technical criterion: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology must all be met for an area to be identified as wetland. A general summary of these criterion or parameters as defined within the COE and FICWD manuals include:

> Hydrophytic Vegetation Criterion: This criterion is met when, under normal circumstances 50 percent or more of the composition of the dominant species from all strata are obligate wetland (OBL), facultative wetland (FACW), and/or facultative (FAC).
>
> Hydric Soil Criterion: This criterion is met for any area having soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (USDA Soil Conservation Service, 1987).
>
> Wetland Hydrology Criterion: This criterion is met for any area having permanent or periodic inundation, or soil saturation to the surface, at least seasonally.

These three criterion are the basis for all field work and wetland delineation performed on this parcel. The specific methodology used is outlined in the next section.

WETLAND DELINEATION METHODOLOGY

The wetland delineation followed the Routine On-site and Intermediate Determination Methods as outlined in each manual. A summary of this method includes:

> **Plant Community Assessment.** The entire project site was initially walked to identify the plant community types present. This provided a rough picture of the type and extent of wetland(s) which exist on site. Also observed and noted were topographical features, hydrologic flow patterns, and any significantly disturbed areas. It was then determined whether normal environmental conditions were present, or human modifications had occurred to the wetland.

Selection of Sample Area(s). A series of sample areas or points were selected and flagged to best characterize the plant communities of suspected wetland and non-wetland areas. The approximate location of these flagged sample points were noted on a map of the project site for subsequent survey.

Characterization of Plant Communities. At each sample point the dominant plant species within the tree, shrub, and herb stratum were identified and noted on a data form. Species were identified and noted according to Flora of the Pacific Northwest (Hitchcock & Cronquist, 1973). The estimated percent areal cover and the indicator status (as listed in the National List of Plant Species that Occur in Wetlands: 1988, Washington) were also noted on the data form. It was then determined whether the hydrophytic vegetation criteria was met. When 50% or more of the dominant species have an indicator status of OBL, FACW, or FAC, the vegetation is considered hydrophytic.

Characterization of Soils. At each sample point, a hole 16 to 18 inches in depth was dug using a spade (an existing soil perk hole was used if available). Soil characteristics (matrix color, mottles, etc.) were examined and noted. It was then determined whether the hydric soil criterion was met. Hydric soil criterion is outlined on page 6 of the FICWD manual and pages 26 to 34 of the COE manual.

Determination of Hydrology Criterion. At each sample point the presence of inundation by water, soil saturation by water, or other hydrologic field indicators was noted. It was then determined whether the wetland hydrology criterion was met.

Wetland Determination. The completed data forms were then examined for each selected sample point within the plant communities. Each plant community meeting the hydrophytic vegetation, hydric soil, and wetland hydrology criteria was considered wetland. Data forms are numbered correspondingly to the sample points located on the final survey drawing.

DETERMINATION OF WETLAND-NONWETLAND BOUNDARY

After completing the determination method summarized above, the actual boundary between wetland and non-wetland was delineated. This delineation was completed by:
1. recognizing obvious wetland and non-wetland areas,
2. identification of transitional areas between the two areas,
3. final determination of the boundary by further sampling of vegetation, soils, and hydrology.

The wetland Boundary was then flagged with numbered orange flags with WB (Wetland Boundary) written on them. The approximate location of these flags was then noted on a map, if available, for subsequent survey.

* Important Note: The exact location of the boundary between wetland and non-wetland areas may be difficult to determine, especially if transition areas are more gradual. In cases such as this the wetland boundary is determined, after further sampling, by using the best possible professional judgment.

APPENDIX D

DEFINITION OF PLANT INDICATOR STATUS

The following plant indicator status categories and their symbols are derived from the Wetland Plant List, Northwest Region, USFWS, Washington, D.C. (Reed, 1988)

Symbol	Definition of Plant Indicator Status
OBL	Obligate wetland plants are nearly always found in wetlands (estimated probability 99% or more)
FACW	Facultative wetland plants usually found in wetlands (estimated probability 67-99%)
FAC	Facultative plants are equally likely in wetlands and uplands (estimated probability 34-66%)
FACU	Facultative upland plants usually in uplands (estimated probability 67-99%)
UPL	Upland plants are nearly always in uplands (estimated probability 99% or more)
NI	Not indicated plant species are not determined due to lack of sufficient information
NL	Not listed in the "National List of Plant Species that Occur in Wetlands" indicating the lack of information for this species.

Note: The "National List of Plant species that Occur in Wetlands" uses a plus (+) or minus (-) sign to specify a higher or lower portion of a particular wetland indicator frequency for the three facultative-type indicators...). (from section 2.5, page 6, Federal Manual for Identifying and Delineating Jurisdictional Wetlands)

Wetland name or number A

APPENDIX E-1a

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland A- Banner Forest Date of site visit: 10-28-10

Rated by J. Bartlett Trained by Ecology? Yes X No ___ Date of training 5/05

SEC: ___ TWNSHP: ____ RNGE: ____ Is S/T/R in Appendix D? Yes___ No X

Map of wetland unit: Figure Wetland A figure **Estimated size** ~20acres
App A-2a+b

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II X III___ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	12
Score for Hydrologic Functions	28
Score for Habitat Functions	12
TOTAL score for Functions	52

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply X

Final Category (choose the "highest" category from above) II

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	/

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1015 S.W. Harper Road
Port Orchard, WA 98367-9306
(360) 876-2403 Fax (360) 876-2053

Wetland name or number A

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number A

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?

(NO) – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

(NO) – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?

___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

___At least 30% of the open water area is deeper than 6.6 ft (2 m)?

(NO) – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?

____The wetland is on a slope (*slope can be very gradual*),

____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

____The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*

(NO) – go to 5 **YES** – The wetland class is **Slope**

Wetland name or number A

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every two years.

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

(NO) – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 (YES) – The wetland class is **Depressional**

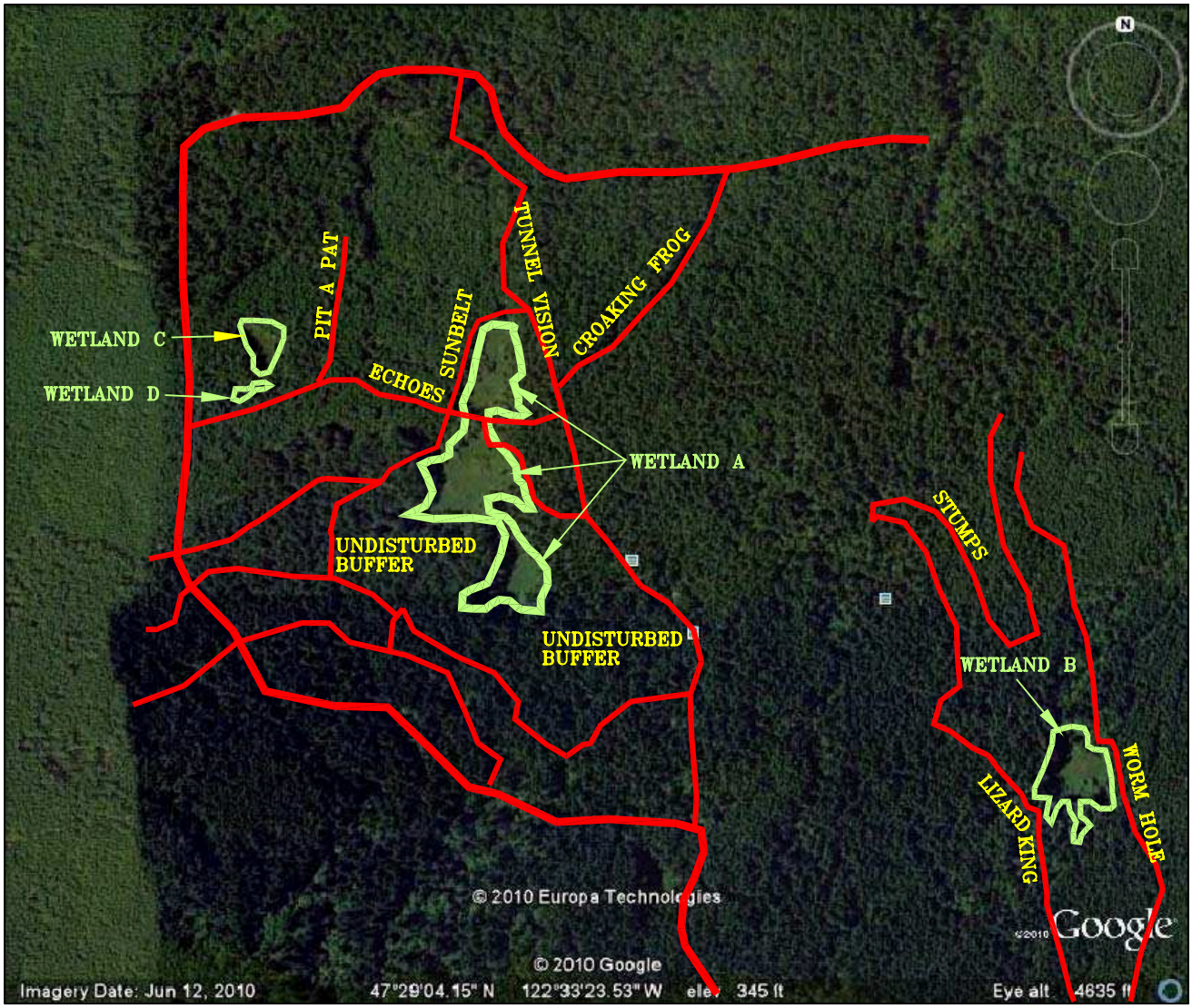
7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.



~ RATED WETLAND BOUNDARIES

All 4 wetlands are Depressional, Scrub/Shrub, Seasonally flooded
Wetland B is Riverine, Forested/Scrub-Shrub, Seasonally flooded
Vegetation is Persistent in each-dominated by Spiraea douglasii
None of the wetlands has an outlet.

EXISTING TRAILS AROUND THE WETLANDS
DISTURBANCES IN CORRIDOR AND BUFFER

FIGURE 1

NORTH

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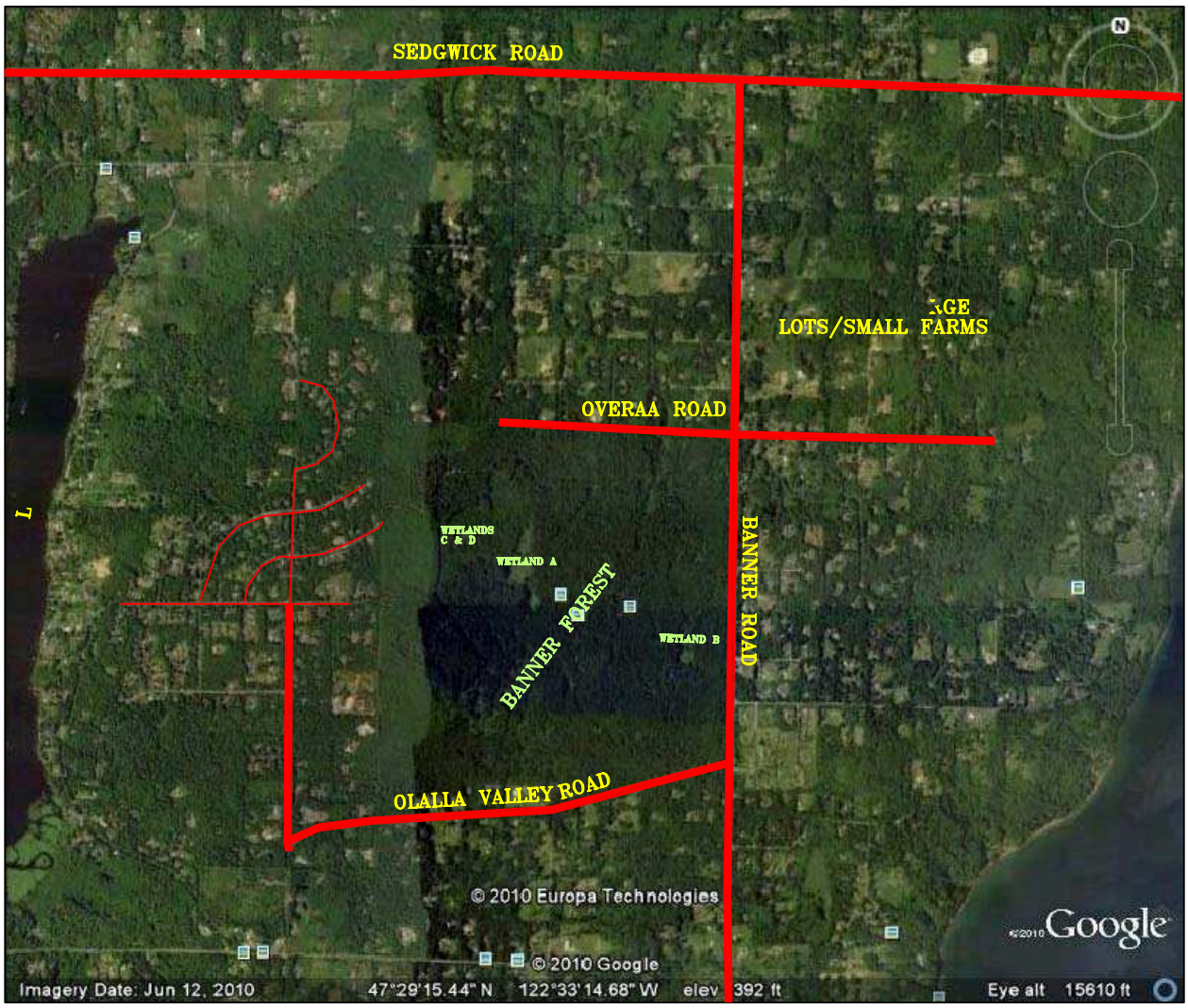

EXISTING ROADS AROUND BANNER FOREST

DISTURBANCES IN CORRIDOR TO OTHER HABITATS

LONG LAKE WITHIN 1 MILE OF WETLANDS

SALTWATER SHORELINE OF PORT ORCHARD NARROWS

WITHIN 5 MILES OF BANNER FOREST

NORTH

FIGURE 2

Wiltermood Associates, Inc.
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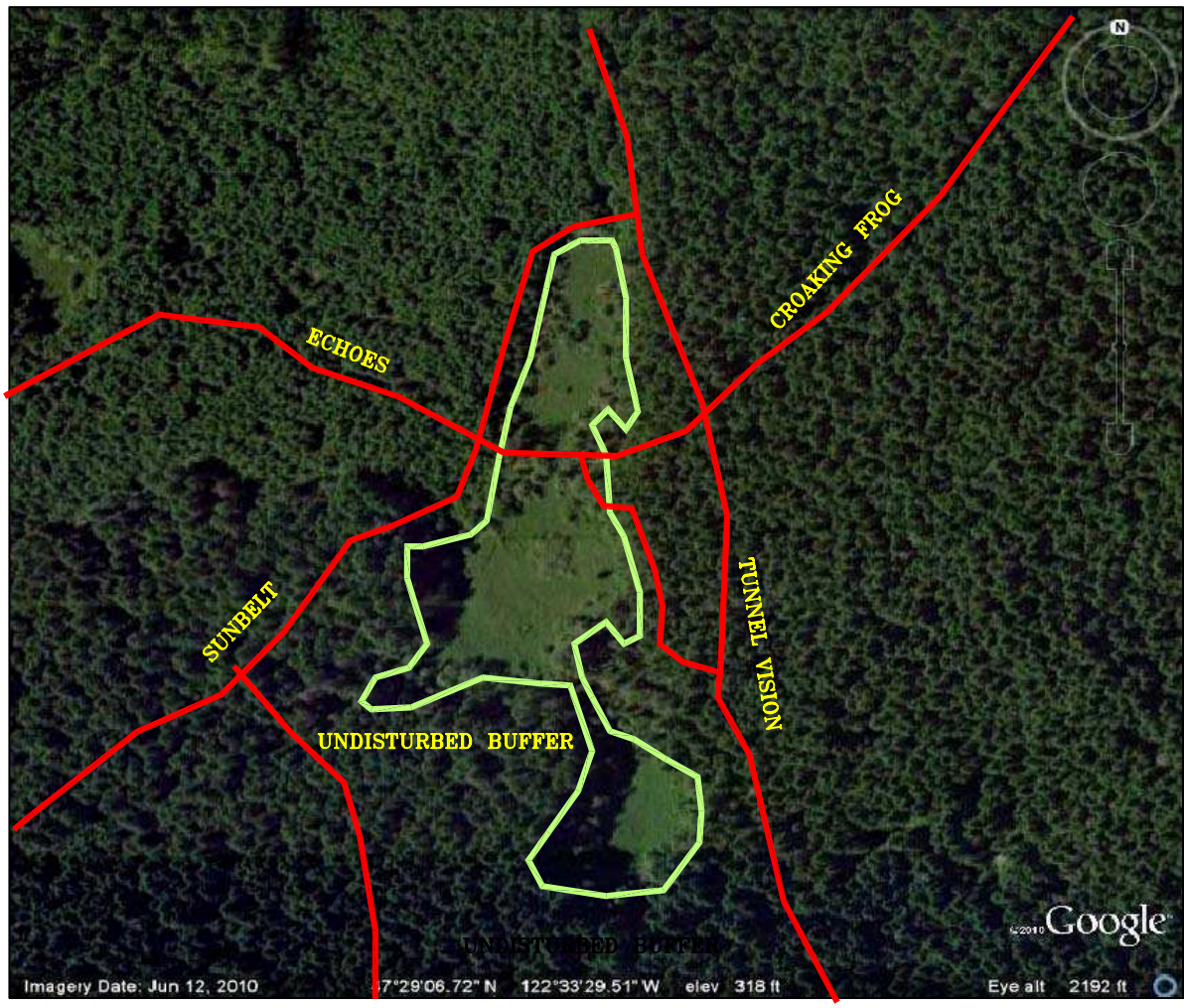

~ RATED WETLAND A BOUNDARY
Depressional, Scrub/Shrub, Seasonally flooded
Persistent Scrub/Shrub vegetation >1/2 of the wetland
dominated by Spiraea douglasii
No outlet from wetland

EXISTING TRAILS AROUND THE WETLANDS
DISTURBANCES IN CORRIDOR AND BUFFER

WETLAND A
FIGURE

NORTH

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Wetland name or number A

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) (points = 3) Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure 1 & WL A Figure 3
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 NO (points = 0)	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area (points = 5) Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure 1 + WL A Figure 5
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland (points = 4) Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure 1 + WL A Figure 4
D	**Total for D 1** *Add the points in the boxes above*	12
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ **YES** multiplier is **2** (**NO**) multiplier is **1**	*(see p. 44)* multiplier 1
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	12

Wetland name or number A

D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) (points = 4) Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* points = 0	4
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet (points = 7) The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	7
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of unit points = 5 The area of the basin is 10 to 100 times the area of the unit (points = 3) The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	14
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ (YES) multiplier is **2** **NO** multiplier is **1**	*(see p. 49)* multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	28

Wetland name or number A

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ____Emergent plants __X__Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ____The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* 4 structures or more points = 4 3 structures points = 2 2 structures points = 1 1 structure points = 0 Map of Cowardin vegetation classes	Figure 1 + WLA Figure 0
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated __X__Seasonally flooded or inundated ____Occasionally flooded or inundated ____Saturated only 4 or more types present points = 3 3 types present points = 2 2 types present point = 1 1 type present points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____***Lake-fringe wetland* = 2 points** ____***Freshwater tidal wetland* = 2 points** Map of hydroperiods	Figure 1 + WLA Figure 0
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: > 19 species points = 2 *List species below if you want to:* 5 - 19 species points = 1 < 5 species points = 0	1

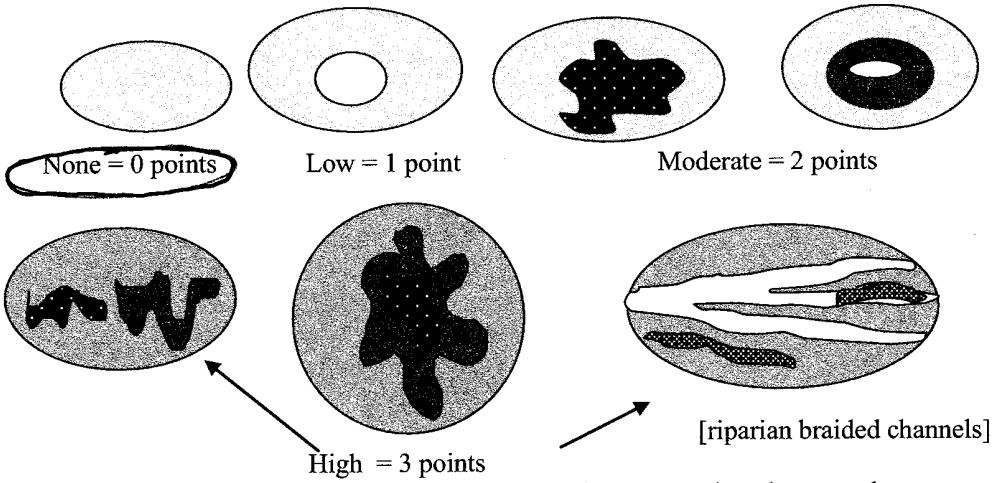
Total for page 1

Wetland name or number A

H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

Figure 1 HWLA Figure



NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

0

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

X Standing snags (diameter at the bottom > 4 inches) in the wetland

___ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

X At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

X Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

4

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

5

Comments

Wetland name or number A

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** X 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure 1, WLA Figure + Figure 2 3
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	Figure 1+2 1

Buffers have trails where people walk or bike with dogs.

Total for page 4

Wetland name or number A

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)***

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).

____**Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).

____**Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

__X__**Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).

____**Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

____**Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).

____**Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

____**Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).*

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.

____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

____**Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

1

Wetland name or number A

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 ✓ There are no wetlands within ½ mile. points = 0	
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	7
TOTAL for H 1 from page 14	5
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	12

Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO X	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number A

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO X not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No___ Is not a bog for purpose of rating	**Cat. I**

Wetland name or number A

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO X not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO X not a wetland in a coastal lagoon SC 5.1 Does the wetland meets all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number A

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO X not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	

Wetland name or number B

APPENDIX E-1b

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland B Date of site visit: 11-12-10

Rated by J. Bartlett Trained by Ecology? Yes X No ___ Date of training 5/05

SEC: ___ TWNSHP: ___ RNGE: ___ Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure ~~1~~ Wetland B Figure 1 + App A-2a+b **Estimated size** 5acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II X III___ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	14
Score for Hydrologic Functions	28
Score for Habitat Functions	16
TOTAL score for Functions	58

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ **Does not Apply** X

Final Category (choose the "highest" category from above) II

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Wiltermood Associates, Inc.
1015 S.W. Harper Road
Port Orchard, WA 98367-9306
(360) 876-2403 Fax (360) 876-2053

Wetland name or number B

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number B

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?

(NO) – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

(NO) – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?

___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

___At least 30% of the open water area is deeper than 6.6 ft (2 m)?

(NO) – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?

____The wetland is on a slope (*slope can be very gradual*),

____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

____The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*

(NO) – go to 5 **YES** – The wetland class is **Slope**

Wetland name or number B

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every two years.

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

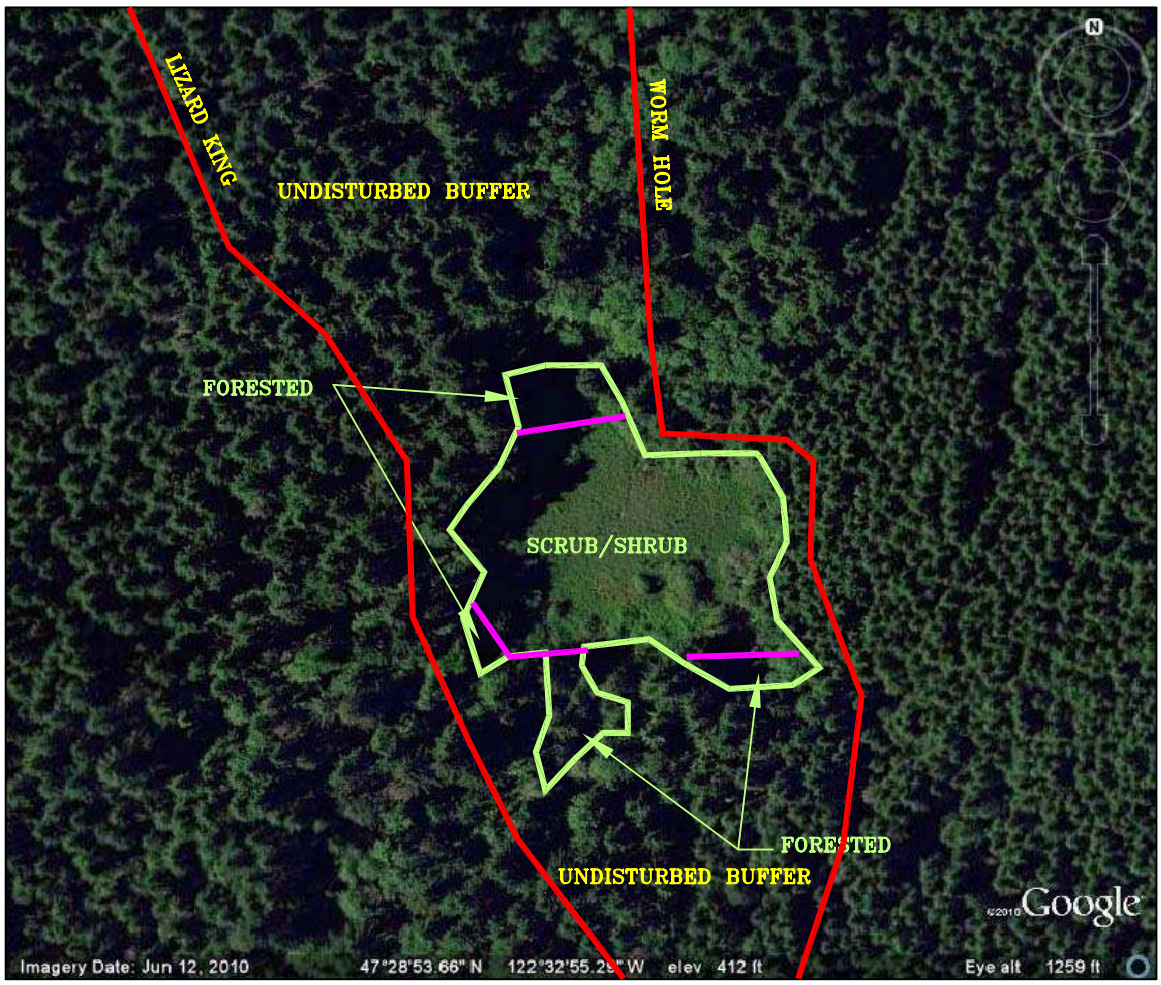
7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.



~ RATED WETLAND B BOUNDARY

Depressional, Scrub/Shrub & Forested, Seasonally flooded
Persistent Scrub/Shrub vegetation >1/2 of the wetland
dominated by Spiraea douglasii
No outlet from wetland

EXISTING TRAILS AROUND THE WETLANDS

DISTURBANCES IN CORRIDOR AND BUFFER

WETLAND B FIGURE

NORTH

Wiltermood Associates, Inc.
1015 SW Harper Rd.
Port Orchard, WA 98367

Wetland name or number B

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure 1 + WL B Figure 3
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 NO points = 0	4
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure 1 + WL B Figure 3
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure 1 + WLB Figure 4
D	**Total for D 1** *Add the points in the boxes above*	14
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* multiplier 1
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	14

Wetland name or number B

	D Depressional and Flats Wetlands HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 (circled) Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	4
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 (circled) Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	5
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of unit points = 5 (circled) The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	5
D	**Total for D 3** *Add the points in the boxes above*	14
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems X Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ (YES) multiplier is **2** **NO** multiplier is **1**	*(see p. 49)* multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	28

Wetland name or number B

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)***	Figure 1 + WL B Figure
Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.	
___ Aquatic bed	
___ Emergent plants	
X Scrub/shrub (areas where shrubs have >30% cover)	
X Forested (areas where trees have >30% cover)	
If the unit has a forested class check if:	
X The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon	
Add the number of vegetation structures that qualify. If you have:	
4 structures or more — points = 4	
3 structures — points = 2	
2 structures — points = 1	
1 structure — points = 0	
Map of Cowardin vegetation classes	3
H 1.2. Hydroperiods ***(see p. 73)***	Figure 1 + WL B Figure
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)	
___ Permanently flooded or inundated — 4 or more types present — points = 3	
X Seasonally flooded or inundated — 3 types present — points = 2	
___ Occasionally flooded or inundated — 2 types present — point = 1	
___ Saturated only — 1 type present — points = 0	
___ Permanently flowing stream or river in, or adjacent to, the wetland	
___ Seasonally flowing stream in, or adjacent to, the wetland	
___ ***Lake-fringe wetland*** **= 2 points**	
___ ***Freshwater tidal wetland*** **= 2 points**	
Map of hydroperiods	0
H 1.3. Richness of Plant Species ***(see p. 75)***	
Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)*	
You do not have to name the species.	
Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle	
If you counted: > 19 species — points = 2	
5 - 19 species — points = 1	
< 5 species — points = 0	
List species below if you want to:	2

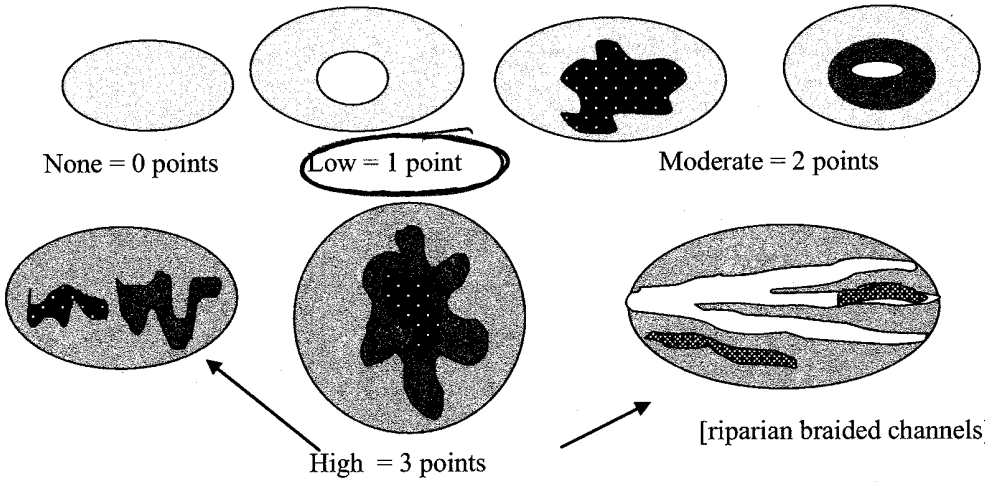
Total for page 5

Wetland name or number B

H 1.4. Interspersion of habitats *(see p. 76)*

Figure 1 + WLB Figure

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

1

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

___ Standing snags (diameter at the bottom > 4 inches) in the wetland

___ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

X At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

X Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

3

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

9

Comments

Wetland name or number B

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** X 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure 1 WL B Figure + Figure 2 3
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*) YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Trails in buffers + in several locations next to the wetland that are used by hikers + bikers w/ dogs. Horses also use the trails.

Total for page 4

Wetland name or number B

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)***

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

___**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).

___**Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).

___**Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

X **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

___**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).

___**Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

___**Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).

___**Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

___ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).*

___**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

___**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.

___**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

___**Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

1

Wetland name or number B

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	2
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	7
TOTAL for H 1 from page 14	9
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	16

Wetland name or number B

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO X	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I (NO) go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number B

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO X not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 (No) - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 (No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No___ Is not a bog for purpose of rating	**Cat. I**

Wetland name or number B

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO X not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO X not a wetland in a coastal lagoon SC 5.1 Does the wetland meets all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number B

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO X not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	

Wetland name or number C

APPENDIX E-1c

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland C Date of site visit: 11-19-10

Rated by JBartlett Trained by Ecology? Yes X No ___ Date of training 5/05

SEC: ___ TWNSHP: ___ RNGE: ___ Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure 1 Wetland C+D Figure **Estimated size** ~½-1 acre
Appendix A-2c

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	14
Score for Hydrologic Functions	20
Score for Habitat Functions	11
TOTAL score for Functions	45

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply___

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Wetland name or number C

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number C

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?

(NO) – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

(NO) – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?

___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

___At least 30% of the open water area is deeper than 6.6 ft (2 m)?

(NO) – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?

____The wetland is on a slope (*slope can be very gradual*),

____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

____The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*

(NO) – go to 5 **YES** – The wetland class is **Slope**

Wetland name or number C

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every two years.

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

NO - go to 6 **YES** - The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

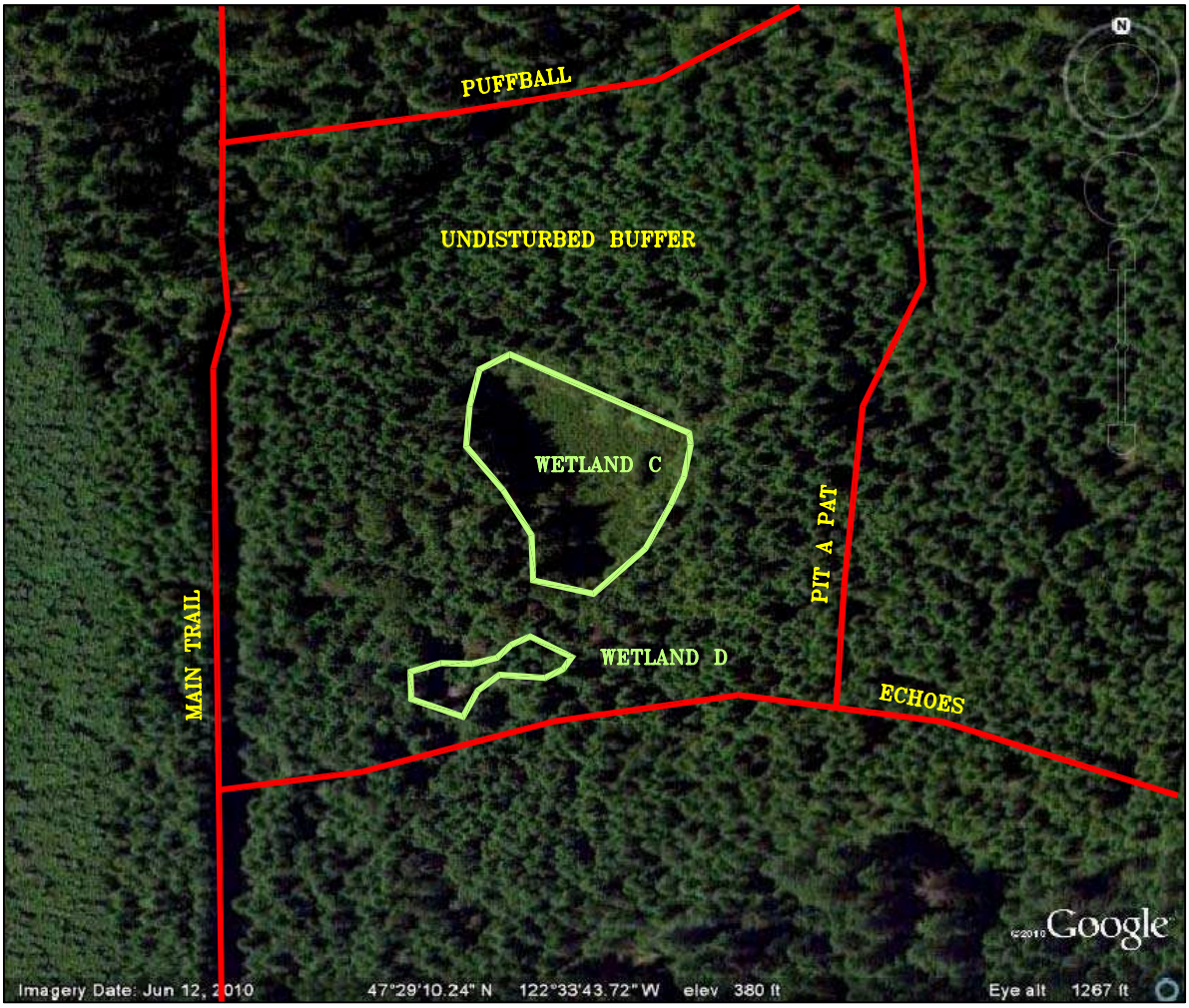
7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.



~ RATED WETLANDS C AND D BOUNDARIES
Depressional, Scrub/Shrub, Seasonally flooded
Persistent Scrub/Shrub vegetation >1/2 of Wetland C
& >1/10th of Wetland C.
No outlet from either wetland & no surface connection.

EXISTING TRAILS AROUND THE WETLANDS
DISTURBANCES IN CORRIDOR AND BUFFER

WETLANDS C & D FIGURE

NORTH

Wiltermood Associates, Inc.
1015 SW Harper Rd.
Port Orchard, WA 98367

Wetland name or number C

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) (points = 3) Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure 1 & WL C+D Figure 3
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES (points = 4) NO points = 0	4
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = (1/2 of area) points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure 1 Wetland C+D Figure 3
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland (points = 4) Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure 1 Wetland C+D Figure 4
D	**Total for D 1** *Add the points in the boxes above*	14
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ **YES** multiplier is **2** (**NO**) multiplier is **1**	*(see p. 44)* multiplier 1
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	14

Wetland name or number C

		Points (only 1 score per box)
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) (points = 4) Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	4
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet (points = 5) Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	3
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of unit points = 5 The area of the basin is 10 to 100 times the area of the unit (points = 3) The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	10
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems X Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ (YES) multiplier is **2** **NO** multiplier is **1**	*(see p. 49)* multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	20

Wetland name or number C

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)***	Figure 1 Wetland C+D Figure
Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.	
____Aquatic bed	
____Emergent plants	
_X_Scrub/shrub (areas where shrubs have >30% cover)	
____Forested (areas where trees have >30% cover)	
If the unit has a forested class check if:	
____The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon	
Add the number of vegetation structures that qualify. If you have:	
4 structures or more — points = 4	
3 structures — points = 2	
2 structures — points = 1	
1 structure — points = 0 (circled)	0
Map of Cowardin vegetation classes	
H 1.2. Hydroperiods ***(see p. 73)***	Figure 1 Wetland C+D Figure
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)	
____Permanently flooded or inundated — 4 or more types present — points = 3	
_X_Seasonally flooded or inundated — 3 types present — points = 2	
____Occasionally flooded or inundated — 2 types present — point = 1	
____Saturated only — 1 type present — points = 0 (circled)	
____ Permanently flowing stream or river in, or adjacent to, the wetland	
____ Seasonally flowing stream in, or adjacent to, the wetland	
____ ***Lake-fringe wetland* = 2 points**	
____***Freshwater tidal wetland* = 2 points**	0
Map of hydroperiods	
H 1.3. Richness of Plant Species ***(see p. 75)***	
Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)*	
You do not have to name the species.	
Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle	
If you counted: > 19 species — points = 2	
List species below if you want to: 5 - 19 species — points = 1 (circled)	
< 5 species — points = 0	1

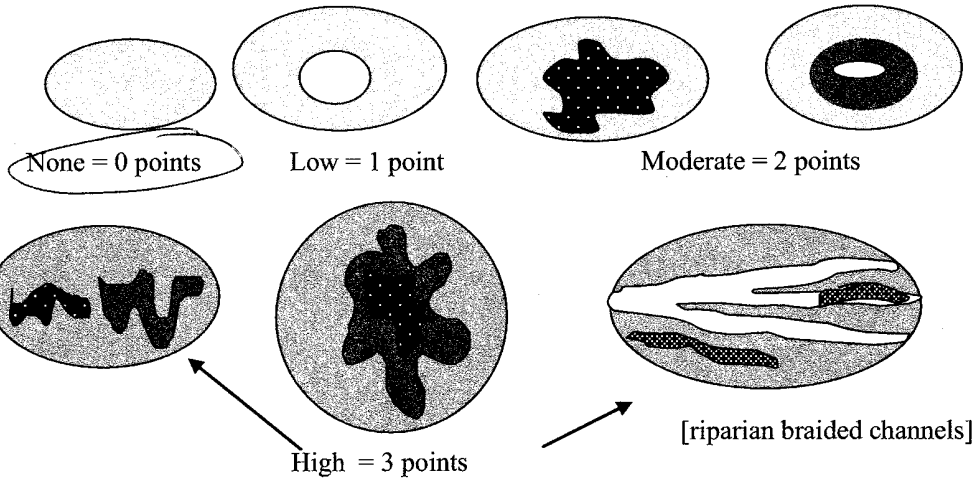
Total for page 1

Wetland name or number C

H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

Figure 1 Wetland C+D Figure



None = 0 points Low = 1 point Moderate = 2 points

[riparian braided channels]

High = 3 points

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

0

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

___ Standing snags (diameter at the bottom > 4 inches) in the wetland

___ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

X At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

X Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

3

H 1. TOTAL Score - potential for providing habitat

Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

4

Comments

Wetland name or number C

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** X 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure 1 Wetlands C+D Figure 3
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*) YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 4

Wetland name or number C

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____**Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____**Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____**Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ____**Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____**Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____**Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____**Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats = **4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat = **1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	0

Wetland name or number C

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	7
TOTAL for H 1 from page 14	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	11

Wetland name or number C

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO X	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number C

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO X not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No___ Is not a bog for purpose of rating	**Cat. I**

Wetland name or number C

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO X not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO X not a wetland in a coastal lagoon SC 5.1 Does the wetland meets all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number C

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO X not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	

Wetland name or number D

APPENDIX E-1d

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Wetland D Date of site visit: 11/19/10

Rated by J. Bartlett Trained by Ecology? Yes X No ___ Date of training 5/05

SEC: ___ TWNSHP: ___ RNGE: ___ Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure 1 Wetland C+D Figure App. A-2c **Estimated size** ~4,000 sq. ft.

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	8
Score for Hydrologic Functions	12
Score for Habitat Functions	11
TOTAL score for Functions	43

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply X

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Wetland name or number D

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number D

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?

(NO) – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

(NO) – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?

___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

___At least 30% of the open water area is deeper than 6.6 ft (2 m)?

(NO) – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?

____The wetland is on a slope (*slope can be very gradual*),

____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

____The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*

(NO) – go to 5 **YES** – The wetland class is **Slope**

Wetland name or number D

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every two years.

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

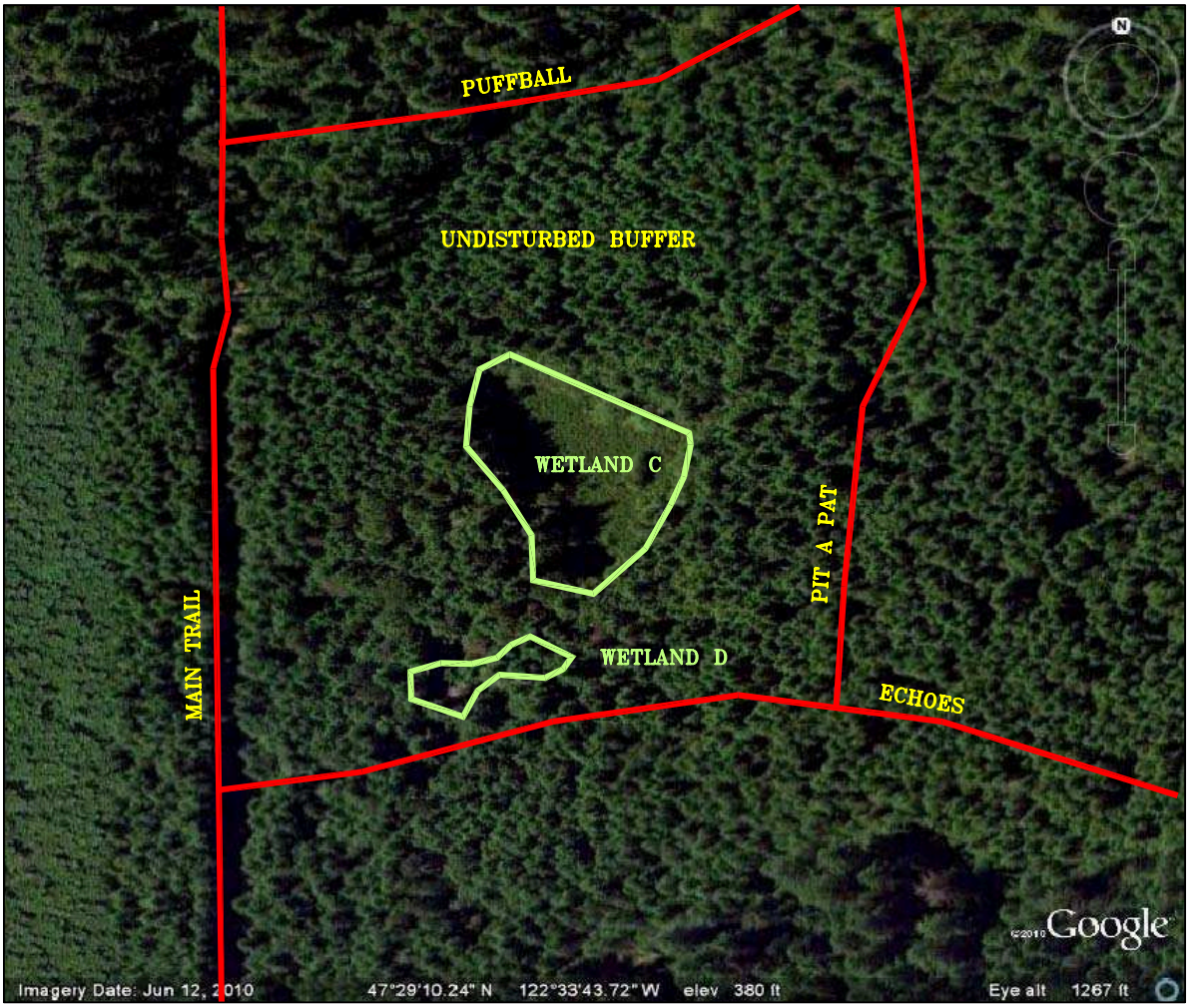
7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.



~ RATED WETLANDS C AND D BOUNDARIES
Depressional, Scrub/Shrub, Seasonally flooded
Persistent Scrub/Shrub vegetation >1/2 of Wetland C
& >1/10th of Wetland C.
No outlet from either wetland & no surface connection.

EXISTING TRAILS AROUND THE WETLANDS
DISTURBANCES IN CORRIDOR AND BUFFER

WETLANDS C & D FIGURE

NORTH

Wiltermood Associates, Inc.
1015 SW Harper Rd.
Port Orchard, WA 98367

Wetland name or number D

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure 1 wetland C+D Figure 3
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure 1 wetland C+D Figure 1
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure 1 wetland C+D Figure 4
D	**Total for D 1** *Add the points in the boxes above*	8
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 1
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	8

Wetland name or number D

	D Depressional and Flats Wetlands HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	Points (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	4
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	3
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	5
D	**Total for D 3** *Add the points in the boxes above*	12
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems X Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 49)* multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	24

Wetland name or number D

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)***	**Figure** 1
Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.	Wetland CTD Figure
____Aquatic bed	
____Emergent plants	
_X_Scrub/shrub (areas where shrubs have >30% cover)	
____Forested (areas where trees have >30% cover)	
If the unit has a forested class check if:	
____The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon	
Add the number of vegetation structures that qualify. If you have:	
4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 1 structure — points = 0 (circled)	0
Map of Cowardin vegetation classes	
H 1.2. Hydroperiods ***(see p. 73)***	**Figure** 1
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)	Wetland CTD Figure
____Permanently flooded or inundated — 4 or more types present — points = 3	
_X_Seasonally flooded or inundated — 3 types present — points = 2	
____Occasionally flooded or inundated — 2 types present — point = 1	
____Saturated only — 1 type present — points = 0 (circled)	
____ Permanently flowing stream or river in, or adjacent to, the wetland	
____ Seasonally flowing stream in, or adjacent to, the wetland	
____ ***Lake-fringe wetland* = 2 points**	
____***Freshwater tidal wetland* = 2 points**	0
Map of hydroperiods	
H 1.3. Richness of Plant Species ***(see p. 75)***	
Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)*	
You do not have to name the species.	
Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle	
If you counted: > 19 species — points = 2 5 - 19 species — points = 1 (circled) < 5 species — points = 0	
List species below if you want to:	1

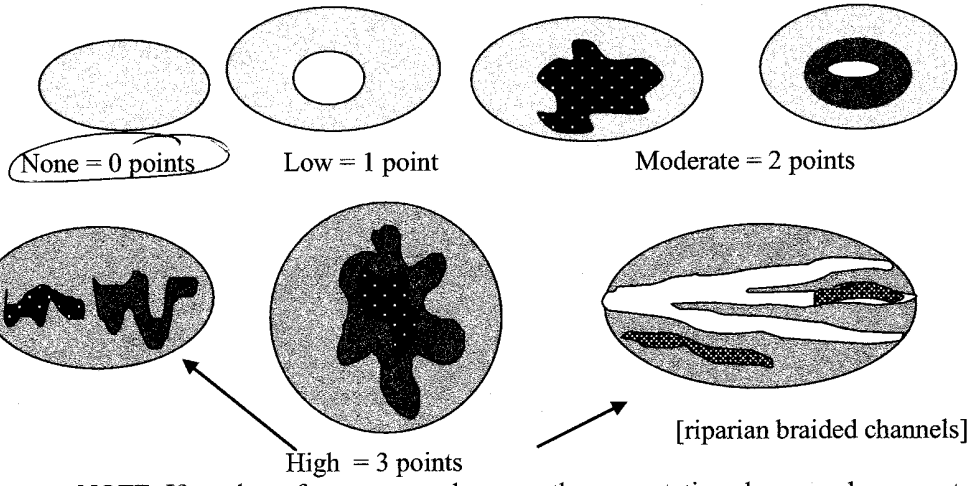
Total for page 1

Wetland name or number D

H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

Figure 1 Wetland C+D Figure



NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

D

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

___ Standing snags (diameter at the bottom > 4 inches) in the wetland

___ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

X At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

X Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

3

H 1. TOTAL Score - potential for providing habitat

Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

4

Comments

Wetland name or number D

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** X 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure 1 Wetland C+D Figure 3
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*) YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 4

Wetland name or number D

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)***

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).

____**Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).

____**Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

____**Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).

____**Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

____**Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).

____**Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

____**Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).*

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.

____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

____**Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

0

Wetland name or number D

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	7
TOTAL for H 1 from page 14	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	11

Wetland name or number D

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO X	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number D

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ____not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No X Is not a bog for purpose of rating	**Cat. I**

Wetland name or number D

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO X not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO X not a wetland in a coastal lagoon SC 5.1 Does the wetland meets all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number D

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO X not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	

APPENDIX E-2
KITSAP COUNTY CAO-WETLANDS

19.150.720 Wildlife Biologist. "Wildlife biologist" means a person with experience and training within the last ten years in the principles of wildlife management and with practical knowledge in the habits, distribution and environmental management of wildlife. Qualifications include:

A. Certification as Professional Wildlife Biologist through The Wildlife Society; or

B. Bachelor of Science or Bachelor of Arts degree in wildlife management, wildlife biology, ecology, zoology, or a related field from an accredited institution and two years of professional field experience; or

C. Five or more years of experience as a practicing wildlife biologist with a minimum of three years of practical field experience.

Section 18. Kitsap County Code Section 19.200.205 last amended by Ordinance No. 217-1998 is amended as follows:

19.200.205 Purpose

This chapter applies to all regulated uses within or adjacent to areas designated as wetlands, as defined in Section 19.150.685. The intent of this chapter is to:

A. Achieve no net loss and increase the quality and function and values of wetland acreage, within Kitsap County and maintain and enhance the biological and physical functions and values of wetlands with respect to water quality maintenance, stormwater and floodwater storage and conveyance, fish and wildlife habitat, primary productivity, recreation, and education;

B. Protect the public's health, safety and welfare, while preventing public expenditures that could arise from improper wetland uses and activities;

C. Plan wetland uses and activities in a manner that allows property holders to benefit from wetland property ownership wherever allowable under the conditions of this chapter and the ordinance from which it derives.

D. Prevent turbidity and pollution of wetlands, and fish or shellfish bearing waters and to maintain the wildlife habitat.

Section 19. Kitsap County Code Sections 19.200.215 and 19.200.220 last amended by Ordinance

No. 217-1998 are repealed and reenacted as Section 19.200.210 with changes as follows:

19.200.210 Wetland Identification and Functional Rating

A. General.

1. Wetlands are those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, estuaries, marshes, bogs, and similar areas. For regulatory purposes, wetland delineations shall be determined by the *Washington State Wetlands Identification and Delineation Manual*, March 1997, or as amended hereafter.

2. Kitsap County uses the Washington Department of Ecology *Washington State Wetland Rating System for Western Washington, revised 2004*, or as amended hereafter, to categorize wetlands for the purposes of establishing wetland buffer widths, wetland uses and replacement ratios for wetlands. Wetlands shall be generally designated as follows:

B. Regulated Wetlands. (See Chapter 19.800 Appendix A for more detailed description).

1. Category I Wetlands: Category I wetlands are those regulated wetlands that include but are not limited to rare, unique wetland types that are more sensitive to disturbance than most wetlands and that contain ecological attributes that are impossible to replace within a human lifetime. Category I wetlands score 70 points or more out of 100 on the wetlands ratings systems.

2. Category II Wetlands: Category II wetlands are those regulated wetlands that score between 51-69 points out of 100 on the wetlands ratings system.

3. Category III Wetlands: Category III wetlands are those regulated wetlands, 2,500 square feet or greater, that score between 30-50 points on the wetlands ratings system.

4. Category IV Wetlands: Category IV wetlands are those regulated wetlands, 7,500 square feet or greater, that score less than 30 points out of 100 on the wetlands ratings system.

5. Wetlands intentionally created from non-wetland areas to mitigate conversion of other wetlands.

6. Mosaic wetlands as defined at 19.150.695.

C. Non-Regulated Wetlands.

1. Category III Wetlands: Isolated wetlands less than 2,500 square feet.

2. Category IV Wetlands: Isolated wetlands less than 7,500 square feet.

3. Created Wetlands: Wetlands created intentionally from a non-wetland site that were not required to be constructed as mitigation for adverse wetland impacts. These may include, but not limited to irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment ponds, farm ponds not contiguous, as defined in this title, and landscape amenities.

D. Criteria for Determining Wetlands Divided by a Manmade Feature.

1. When a wetland is divided by a manmade feature (e.g., a road embankment), the wetland shall be rated as if it is not divided, if there is a perennial or intermittent surface water connection between the two wetlands and either of the following criteria is met:

   a. It can be demonstrated that the separate wetlands were one discrete wetland prior to construction of the manmade feature. This may be accomplished through an analysis of secondary information such as aerial photographs and soils maps; or

   b. The two separated wetlands can be shown to function as one wetland. This shall be determined based on normal conditions (i.e., in the absence of unauthorized activity, the wetlands possess similar vegetative or wildlife assemblages or hydrologic regime).

2. Separated wetland areas may be rated jointly in the absence of a perfectly level culvert where it can be demonstrated that a level surface water connection is present within the culvert that permits flow of water, fish, or other organisms in both directions. Separated wetland areas may also be rated jointly in the absence of a perfectly level culvert with two-way water flow if the bottom of the culvert is below the high water marks in the receiving wetland or if the high water marks on either side differ by six inches or less in elevation.

3. Connecting Mosaic Pattern Wetlands. In cases where the wetlands to be categorized are smaller than one acre in size and separated from each other by 100 feet or less (on average), the DOE mosaic methodology shall be used to determine the wetland category. The area of the wetlands must be greater than 50 percent of the total combined area of wetland and upland for the patchwork to be categorized as one wetland. The boundary of the mosaic wetlands must reflect the ecological interconnectedness of the wetlands within the mosaic. The County will not accept mosaic boundaries drawn to minimize the area of wetland within the mosaic.

Section 20. Kitsap County Code Section 19.200.245 "Application Requirements" and 19.200.250 "Determination of Wetland Boundaries" last amended by Ordinance No. 217-1998 are repealed and reenacted as Section 19.200.215 "Wetland Review Procedures" with changes, as follows:

19.200.215 Wetland Review Procedures

A. Application Requirements.

1. Application Procedures for New Development. Any new development, except as provided in C.1 below, containing a regulated wetland or its buffer, or proposed within the largest potential wetland buffer width, shall provide the special reports listed below, as required by the department, prior to any development authorization by the department. Additional reports or information to further identify potential impacts to any part of the environment may also be required.

   a. Wetland delineation report (19.700.710);

   b. Wetland mitigation report (19.700.715); and,

   c. Erosion and sedimentation control measures and/or a site development activity permit as required by Title 12 Kitsap County Code (Stormwater Management).

2. Time Limitations. Special reports submitted in accordance with this section shall be valid for a period of three years from the date of the report unless a longer or shorter period is specified by the department. An extension of an original report may be granted upon submittal of a written request to the department prior to expiration. Prior to granting any extension, the department may require updated studies if, in its judgment, the original intent of the application is altered, enlarged or if circumstances relevant to the review and issuance of the original permit have changed substantially, or if the applicant failed to abide by the terms of the original approval. Time extensions shall be granted in writing and documented in the file.

B. Delineation of Wetland Boundaries.

1. For regulatory purposes, wetland delineations shall be determined by using the Washington State Wetlands Identification and Delineation Manual, March 1997, or as hereafter amended.

2. The applicant shall be responsible for hiring a qualified wetlands specialist to determine the wetland boundaries by means of a wetland delineation. This specialist shall stake or flag the wetland boundary. When required by the department, the applicant shall hire a professional land

surveyor licensed by the state of Washington to survey the wetland boundary line. The regulated wetland boundary and regulated wetland buffer shall be identified on all grading, landscaping, site, on-site septic system designs, utility or other development plans submitted in support of the project.

3. The department may perform a delineation of a wetland boundary on parcels where no more than one single-family dwelling unit is allowed.

4. Where the applicant has provided a delineation of a wetland boundary, the department may verify the wetland boundary at the cost of the applicant and may require that a wetland specialist make adjustments to the boundary.

C. Wetland Review Process for Single-family Dwellings.

1. Expedited Approval. Applicants proposing a single-family dwelling may receive expedited approval by the department if they choose to adopt the largest buffer width from the appropriate wetland category. Expedited approval removes the requirements of the wetland certification process for single-family dwellings (subsection 2, below) provided that the wetland delineation and/or wetland rating is not disputed. Administrative buffer reductions or variance will not apply.

2. Wetland Certification Process for Single-family Dwellings (No Encroachment into a Regulated Wetland or its Standard Buffer).

   a. Prior to issuance of a building permit, site development permit, or on-site sewage system permit, the applicant may submit a single-family wetland certification form completed by a wetland specialist that certifies either:

      (1) No regulated wetlands are present within 250 feet of the project area; or

      (2) Wetlands are present within 250 feet of the project area, but all regulated activities associated with the dwelling (e.g., landscaped areas, septic facilities, outbuildings, etc.) will occur outside of the standard buffer of the identified wetland.

   b. If regulated wetland buffers extend onto the site, the wetland specialist shall place permanent, clearly visible, wetland buffer signs at the edge of the buffer. A wetland buffer sign affidavit, signed by the wetland specialist, shall be submitted to the department as verification that the wetland buffer signs have been placed on the site.

   c. A survey will not be required.

d. The single-family certification form may be used only to authorize single-family dwellings and associated home site features such as driveways, gardens, fences, wells, lawns, and on-site septic systems. It may not be used for new agricultural activities, expansion of existing agricultural activities, forest practice activities, commercial projects, land divisions, buffer width modifications, or violations.

e. The single-family certification process will be monitored by the department for accuracy, and enforcement actions will be initiated should encroachment into a regulated wetland or buffer occur.

f. The applicant/property owner assumes responsibility for any and all errors of the single-family certification form and all associated mitigation imposed by the department.

g. Single-family certification forms shall be filed with the Kitsap County Auditor's Office.

Section 21. Kitsap County Code Section 19.200.225 "Development Standards" last amended by Ordinance No.217-1998 is repealed and reenacted as 19.200.220 "Wetland Buffer Requirements" with changes as follows:

19.200.220 Wetland Buffer Requirements. For the purpose of this title, a regulated wetland and its buffer are subject to the regulatory provisions of this chapter.

A. Determining Buffer Widths. Buffer widths shall be measured horizontally from a perpendicular line established at the wetland edge based on the Base Buffer Width identified in Table 19.200.220 A and adjustments made from considerations contained in Table 19.200.220 B, Land Use Impact Intensity below, and as applied in Tables 19.200.220 C, through F.

Table 19.200.220 A

Category of Wetland	Base Buffer Width
Category I	200 feet
Category II	100 feet
Category III	50 feet
Category IV	30 feet

Table 19.200.220 B.: Land use impact "intensity" based on development types

Rating of impact from proposed changes in land use	Examples of land uses that cause the impact based on common zoning categories
High	Commercial, Urban, Industrial, Institutional, Retail Sales, Residential subdivisions with more than 1 unit/acre, New agriculture (high-intensity processing such as dairies, nurseries and green houses, raising and harvesting crops requiring annual tilling, raising and maintaining animals), New transportation corridors, High intensity recreation (golf courses, ball fields), hobby farms
Moderate	Single-family residential lots, residential subdivisions with 1 unit/acre or less, Moderate-Intensity Open Space (parks), New agriculture (moderate- intensity such as orchards and hay fields), Transportation enhancement projects
Low	Forestry, Open space (low-intensity such as passive recreation and natural resources preservation, minor transportation improvements)

B. Width Tables of Buffers by Category of Wetland

Table 19.200.220 C: Width of buffers required to protect Category IV wetlands.

Category IV Wetland Characteristics	Buffer Width Adjustment to 30 ft base width (based on impact of land use)
Score for functions < 30 points	Low – Decrease by 5 ft. Moderate – Increase by 10 ft. High – Increase by 20 feet

Table 19.200.220 D: Width of buffers required to protect Category III wetlands.

Category III Wetland Characteristics	Buffer Width Adjustments to 50 ft base width (by impact of land use)

Moderate level of function for habitat (score for habitat is 20 - 28 pts.)	Low - Increase by 25 ft Moderate – Increase by 60 ft High – Increase by 100 ft
Category III wetlands not meeting above criteria	Low - Decrease by 10 ft Moderate – Increase by 10 ft. High – Increase by 30 ft

Table 19.200.220 E: Width of buffers required to protect Category II wetlands.

Category II Wetland Characteristics	Buffer Widths Adjustments to 100 ft base width (by impact of land use/apply most protective)
High level of function for habitat (score for habitat is 29-36 pts.)	Low - Increase by 50 ft Moderate – Increase by 125 ft High – Increase by 100 ft
Moderate level of function for habitat (score for habitat is 20 - 28 pts.)	Low - Decrease by 25 ft Moderate – Increase by 10 ft High – Increase by 50 ft
High level of function for water quality improvement and low for habitat (score water quality is 24-32 pts and habitat is less than 20)	Low - Decrease by 50 ft Moderate – Decrease by 25 ft High – No change
Estuarine	Low - Decrease by 25 ft Moderate – Increase by 10 ft High – Increase by 50 ft
Category II wetlands not meeting above criteria	Low - Decrease by 50 ft Moderate – Decrease by 25 ft High – No Change

Table 19.200.220 F: Width of buffers required to protect Category I wetlands.

Category I Wetland Characteristics	Buffer Widths Adjustments to 200 ft base width (by impacts of land use/apply most protective)

Category I Wetland Characteristics	Buffer Widths Adjustments to 200 ft base width (by impacts of land use/apply most protective)
Natural Heritage Wetlands	Low - Decrease by 75 ft Moderate – Decrease by 10 ft High – Increase by 50 ft
Bogs	Low - Decrease by 75 ft Moderate – Decrease by 10 ft High – Increase by 50 ft
Forested	Buffer size to be based on score for habitat functions or water quality functions
Estuarine	Low - Decrease by 100 ft Moderate – No Change High – Increase by 50 ft
Wetlands in Coastal Lagoons	Low - Decrease by 100 ft Moderate – No Change High – Increase by 50 ft
High level of function for habitat (score for habitat is 29-36 pts.)	Low – Decrease by 50 ft. Moderate – Increase by 25 ft High – Increase by 50 ft
Moderate level of function for habitat (score for habitat is 20 - 28 pts.)	Low – Decrease by 125 ft Moderate – Decrease by 90 ft High – No change
High level of function for water quality improvement (WQI) (score is 24-32) and low for habitat (score for habitat is less than 20 points)	Low – Decrease by 150 ft Moderate – Decrease by 125 ft High – Decrease by 100 ft
Category I wetlands not meeting any of the above criteria	Low – Decrease by 150 ft Moderate – Decrease by 125 ft High – Decrease by 100 ft

NOTE: If the wetland meets more than one of the criteria listed in each table, the buffer needed to protect the wetland is the one that allows for the greatest protection.

C. Modification of Buffer Widths.

Modifications to buffer widths may be considered provided that mitigation sequencing is first

demonstrated to first avoid, then minimize, and as a last resort, mitigate for unavoidable reductions or alterations to the required wetland buffers.

1. Buffer Decrease Sequencing. Demonstration of unavoidable modifications to wetland buffers shall be implemented through the following methods:

    a. Buffer Averaging. Standard buffer widths may be modified by the department for a development proposal by averaging buffer widths. The total area contained within the buffer after averaging shall be no less than that contained within the standard buffer prior to averaging. The buffer shall not be reduced by more than 50 percent of the standard buffer width at any point. The department may allow wetland buffer averaging where it can be demonstrated that such averaging can clearly provide as great or greater functions and values as would be provided under the standard buffer requirement. The following standards shall apply to buffer averaging:

        (1) The decrease in buffer width is minimized by limiting the degree or magnitude of the regulated activity.

        (2) For wetlands and/or required buffers associated with documented habitat for endangered, threatened, or sensitive fish, or wildlife species, a habitat assessment report has been submitted that demonstrates that the buffer modification will not result in an adverse impact to the species of study.

        (3) Width averaging will not adversely impact the wetland.

        (4) The total buffer area after averaging is no less than the buffer area prior to averaging.

        (5) The minimum buffer width will not be less than 50 percent of the widths established after the categorization is done and any buffer adjustments applied.

        (6) If buffer width averaging is utilized and significant trees are identified on the outer edge of the reduced buffer such that their drip line extends beyond the buffer edge, the following tree protection requirements must be followed:

            i. A tree protection area shall be designed to protect each tree or tree stand during site development and construction. Tree protection areas may vary widely in shape, but must extend a minimum of five feet beyond the existing tree canopy area along the outer edge of the dripline of the tree(s), unless otherwise approved by the department.

            ii. Tree protection areas shall be added and clearly labeled on all applicable site

(1) For proposed single-family dwellings, the department may administratively reduce the buffer by up to 25 percent, pursuant to the variance criteria listed in Section 19.100.135. Where an administrative buffer reduction is granted, fencing or signage of the buffer edge shall be required. The order of sequence for such buffer reductions shall be as follows:

i. Use of buffer averaging maintaining 100 percent of the buffer area under the standard buffer requirement;

ii. Reduction of the overall buffer area by no more than 25 percent of the area required under the standard buffer requirement;

iii. Enhancement of existing degraded buffer area and replanting of the disturbed buffer area;

iv. The use of alternative on-site wastewater systems in order to minimize site clearing;

v. Infiltration of stormwater where soils permit; and,

vi. Retention of existing native vegetation on other portions of the site in order to off set habitat loss from buffer reduction.

(2) The minimum buffer shall be no less than thirty feet, except as allowed under a formal variance or reasonable use approval.

c. Variance. In cases where proposed development cannot meet the administrative buffer reduction criteria described in this section, a variance shall be required as described in 19.100.135.

D. Fencing and Signs: This section applies to regulated wetlands and their buffers.

1. Wetland buffers shall be temporarily fenced or otherwise suitably marked, as required by the department, between the area where the construction activity occurs and the buffer. Fences shall be made of a durable protective barrier and shall be highly visible. Silt fences and plastic construction fences may be used to prevent encroachment on wetlands or their buffers by construction. Temporary fencing shall be removed after the site work has been completed and the site is fully stabilized per county approval.

2. The department may require that permanent signs and/or fencing be placed on the common boundary between a wetland buffer and the adjacent land. Such signs will

development and construction drawings, submitted to the department.

iii. Temporary construction fencing at least 30 inches tall shall be erected around the perimeter of the tree protection areas prior to the initiation of any clearing or grading. The fencing shall be posted with signage clearly identifying the tree protection area. The fencing shall remain in place through site development and construction.

iv. No clearing, grading, filling or other development activities shall occur within the tree protection area, except where approved in advance by the department and shown on the approved plans for the proposal.

v. No vehicles, construction materials, fuel, or other materials shall be placed in tree protection areas. Movement of any vehicles within tree protection areas shall be prohibited.

vi. No nails, rope, cable, signs, or fencing shall be attached to any tree proposed for retention.

vii. The department may approve the use of alternate tree protection techniques if an equal or greater level of protection will be provided.

b. Administrative Buffer Reductions. Granting of a reduced buffer shall be the minimum necessary to accommodate the permitted use. In lieu of going through the formal variance process, an administrative reduction to buffer widths may be granted subject to the following criteria:

identify the wetland buffer. The department may approve an alternate method of wetland and buffer identification, if it provides adequate protection to the wetland and buffer.

E. Protection of Buffers. Buffer areas shall be protected as required by the department. The buffer shall be identified on a site plan and filed as an attachment to the notice to title as required by Section 19.100.150 (Critical Area and Buffer Notice to Title).

F. Building or Impervious Surface Setback Lines: A building or impervious surface setback line of 15 feet is required from the edge of any wetland buffer. Minor structural or impervious surface intrusions into the areas of the setback may be permitted if the department determines that such intrusions will not adversely impact the wetland. The setback shall be identified on a site plan and filed as an attachment to the notice to title as required by Section 19.100.150 (Critical Area and Buffer Notice to Title).

Section 22. Kitsap County Code Section 19.200.230 last amended by Ordinance No. 217-1998 is repealed.

Section 23. Kitsap County Code Section 19.200.235 last amended by Ordinance No. 217-1998 is renumbered as 19.200.225 and amended as follows:

19.200.225. Additional development standards for regulated uses

In addition to meeting the development standards of this chapter, those regulated uses identified below shall also comply with the standards of this section and other applicable state, federal and local ordinances.

A. Docks. Construction of a dock, pier, moorage, float or launch facility may be permitted subject to criteria in the Kitsap County Shoreline Master Program and where no existing buffer or wetland vegetation would be significantly altered.

B. Forest Practice, Class IV General, and Conversion Option Harvest Plans (COHPs). All timber harvesting and associated development activity, such as construction of roads, shall comply with the provisions of this title, including the maintenance of buffers around regulated wetlands.

C. Agricultural Restrictions. In all development proposals which would permit introduction of agricultural uses, damage to Category I, II, III and IV regulated wetlands shall be avoided. These restrictions shall not apply to those regulated wetlands defined as grazed wet meadows, regardless of their classification only where grazing has occurred within the last

five (5) years. Wetlands shall be avoided by one of the following methods:

1. Implementation of a farm conservation plan agreed upon by the Conservation District and the applicant to protect and enhance the water quality of the wetland; and/or,

2. Fencing located not closer than the outer buffer edge.

D. Road/Street Repair and Construction. Any private or public road or street repair, maintenance, expansion or construction which is allowed shall comply with the following minimum development standards:

1. No other reasonable or practicable alternative exists and the road or street serves multiple properties whenever possible;

2. Publicly owned or maintained road or street crossings should provide for other purposes, such as utility crossings, pedestrian or bicycle easements, viewing points, etc.;

3. The road or street repair and construction are the minimum necessary to provide safe roads and streets; and

4. Mitigation shall be performed in accordance with specific project mitigation plan requirements.

E. Land Divisions and Land Use Permits. All proposed divisions of land and land uses (including but not limited to the following: short plats, large lot subdivisions, master planned fully contained communities, master planned resorts, performance based developments, conditional use permits, site plan reviews, binding site plans) which include regulated wetlands, shall comply with the following procedures and development standards:

1. Regulated wetlands, except the area with permanent open water, and wetland buffers may be included in the calculation of minimum lot area for proposed lots.

2. Land division approvals shall be conditioned to require that regulated wetlands and regulated wetland buffers be dedicated as open space tracts, or an easement or covenant encumbering the wetland and wetland buffer. Such dedication, easement or covenant shall be recorded together with the land division and represented on the final plat, short plat or binding site plan, and title.

3. In order to implement the goals and policies of this title, to accommodate innovation, creativity, and design flexibility, and to achieve a level of environmental protection that would not be possible by typical lot-by-lot development, the use of the clustered development or similar innovative site planning is strongly encouraged for projects with

regulated wetlands on the site.

4. After preliminary approval and prior to final land division approval, the department may require the common boundary between a regulated wetland or associated buffer and the adjacent land be identified using permanent signs and/or fencing. In lieu of signs and/or fencing, alternative methods of wetland and buffer identification may be approved when such methods are determined by the department to provide adequate protection to the wetland and buffer.

F. Surface Water Management. Surface water discharges from stormwater facilities or structures may be allowed when they are in accordance with Title 12 Kitsap County Code (Stormwater Management) subject to the provisions of 19.200.230, Special Use Review. The discharge shall neither significantly increase or decrease the rate of flow and/or hydro-period, nor decrease the water quality of the wetland. Pre-treatment of surface water discharge through biofiltration or other best management practices (BMPs) shall be required.

G. Trails and Trail-Related Facilities. Construction of public and private trails and trail-related facilities, such as benches and viewing platforms may be allowed in wetlands or wetland buffers pursuant to the following guidelines:

1. Trails and related facilities shall, to the extent feasible, be placed on existing road grades, utility corridors, or any other previously disturbed areas.

2. Trails and related facilities shall be planned to minimize removal of trees, soil disturbance and existing hydrological characteristics, shrubs, snags and important wildlife habitat.

3. Viewing platforms and benches, and access to them, shall be designed and located to minimize disturbance of wildlife habitat and/or critical characteristics of the affected wetland.

4. Trails and related facilities shall generally be located outside required buffers. Where trails are permitted within buffers they shall be located in the outer portion of the buffer and a minimum of 30 feet from the wetland edge, except where wetland crossings or viewing areas have been approved.

5. Trails shall generally be limited to pedestrian use unless other more intensive uses, such as bike or horse trails have been specifically allowed and mitigation has been provided. Trail width shall not exceed five feet unless there is a demonstrated need, subject to review and approval by the department. Trails shall be constructed with pervious materials unless otherwise approved by the department.

H. Utilities in Wetlands or Wetland Buffers.

1. The utility development authorized in 19.100.125 E shall be allowed, subject to best management practices in wetlands and wetland buffers.

2. Construction of new utilities outside the road right-of-way or existing utility corridors may be permitted in wetlands or wetland buffers, only when no reasonable alternative location is available and the utility corridor meets the requirements for installation, replacement of vegetation and maintenance outlined below, and as required in the filing and approval of applicable permits and special reports (Chapter 19.700) required by this title.

3. Construction of sewer lines or on-site sewage systems may be permitted in regulated wetland buffers only when: (a) The applicant demonstrates it is necessary to meet state and/or local health code minimum design standards (not requiring a variance for either horizontal setback or vertical separation), and/or (b) There are no other practicable or reasonable alternatives available and construction meets the requirements of this section. Joint use of the sewer utility corridor by other utilities may be allowed.

4. New utility corridors shall not be allowed when the regulated wetland or buffer has known locations of federal or state listed endangered, threatened or sensitive species, heron rookeries or nesting sites of raptors which are listed as state candidate or state monitor, except in those circumstances where an approved Habitat Management Plan indicates that the utility corridor will not significantly impact the wetland or wetland buffer.

5. New utility corridor construction and maintenance shall protect the regulated wetland and buffer environment by utilizing the following methods:

   a. New utility corridors shall be aligned when possible to avoid cutting trees greater than 12 inches in diameter at breast height (four and one-half feet), measured on the uphill side.

   b. New utility corridors shall be revegetated with appropriate native vegetation at preconstruction densities or greater, immediately upon completion of construction, or as soon thereafter as possible, if due to seasonal growing constraints. The utility shall ensure that such vegetation survives;

   c. Any additional utility corridor access for maintenance shall be provided as much as possible at specific points, rather than by parallel roads. If parallel roads are necessary, they shall be of a minimum width but no greater than 15 feet; and shall be

APPENDIX F

Wetland Functions and Values Information

It is important that those involved in wetland regulation and management understand their functions and values. Knowledge of these roles can be a key factor in the design and implementation of wetland inventories. Not all wetlands provide each function or value nor do they provide them to the same degree. Variations occur because of wetland type and characteristics, as well as regional and local influences. Some local governments try to distinguish how functions and values relate to their community and region. The following is a brief summary.

Water Supply

With the growth of urban centers and dwindling water supplies, wetlands are increasingly important as a source of surface and ground water. They can function as recharge areas where water soaks into the soils, replenishing ground water supplies. Wetlands are also areas where ground water moves to the surface through springs and seepage, often collecting in pools and ponds, and supplying critical reserves during periods of drought.

Flood Control

Wetlands are valuable in reducing the impact of flooding. They have the ability to store and slow the flow of water from upland run-off. If a wetland is associated with a river in a flat valley, the wetland and its vegetation reduces the height and velocity of flood peaks. Some wetland soils can store large amounts of floodwater and gradually release them downstream. Construction in flood plain wetlands causes increase flood heights and rates, and an associated increase in flood damage.

Erosion Control

Vegetated wetlands serve as natural buffers from the effects of tides, waves, wind and river currents. They dissipate the energy of these erosive forces. The fibrous root systems of wetland plants bind and stabilize banks, protecting the shoreline from erosion. On the coast, they can limit wave generation, slow and absorb the impacts of wave energy, and thereby protect inland areas from storm damage. Construction of bulkheads, rip-rap, and other banked hardening stabilization techniques simply transfer the erosive energy to neighboring areas.

Pollution and Sediment Control

Wetlands protect and improve the quality of surface and ground waters by removing sediments, nutrients, heavy metals, and hazardous chemicals. Wetlands vegetation filters particulate matter from the water. When moving water comes into contact with vegetation, its flow is slowed and sediment falls out of suspension. The root systems trap the sediment, reducing siltation in downstream water bodies. Substances such as nutrients, pathogens, and many chemicals are often

bound to the surface of sediment particles. Thus, sedimentation reduces both organic and inorganic pollutants. These pollutants may be released when wetland soils are disturbed. Wetland vascular plants and algae also absorb nutrients and chemicals. The micro-organisms utilize dissolved nutrients and break down organic matter. Research is underway to determine the impacts of utilizing wetlands as tertiary waste treatment facilities.

Wildlife Habitat

Wetlands, the interface between land and water, are among the richest wildlife habitats in the world. They provide the conditions essential for the breeding, nesting, feeding, and protection for many species of waterfowl, mammals, reptiles, and amphibians. These conditions include abundant water, diverse and rich vegetation, and adequate cover. Many of these species are "obligates" or dependent upon the wetland for their survival. Some such as the beaver spend their entire lifetimes in the wetland environment. Others like the salmon inhabit it for shorter, but critical, parts of their life cycle. Numerous species (such as deer and raccoon) depend on wetlands as a source of drinking water, food, and winter cover. Wetlands are as critical to the needs of these species as they are to those that depend solely on wetland habitat. Though many waterfowl nest primarily in northern freshwater wetlands, they use wetlands through out the county while migrating and for over-wintering. Birds such as herons, egrets, rails and harriers depend upon wetlands for their survival. Both salt and freshwater wetlands are important spawning, nursery, feeding, and wintering areas for sport and commercial fish and shellfish.

Wetlands also support many endangered plant and animal species. Although wetlands constitute only 5 per cent of the nation's lands, close the 35 per cent of all rare and endangered animal species are dependent upon them. (McMillan, A. 1986)

Food Web Productivity

Wetlands play an important part in the food web. Coastal wetlands are among the most productive areas in the world. Solar energy is utilized by wetland plants to produce hundreds of pounds of nutrients per acre of salt marsh annually. The vegetation dies, decays, and is broken down to form a nutrient-rich "soup" called detritus. This rich food source is converted by micro-organisms into basic nutrients and elements for use by vascular plants and phytoplankton (minute floating plant life). The phytoplankton are consumed by zooplankton (minute floating animal life). the detritus and plankton's are carried into tidal creeks, and bays and are consumed by invertebrates such as oysters, shrimp and crabs. they in turn are preyed upon by other animals including humans. It has been estimated that 90 per cent of the important commercial marine species either spend their entire lives in estuarine wetlands or require estuaries as nursery grounds (Kusler, J. 1983). Freshwater wetlands also provide food, habitat, and spawning grounds for many other species of fish.

Education and Research

Coastal and inland wetlands provide unique opportunities for education and scientific research. Due to the land-water interface, diversity of vegetation, topography, and the resulting varied habitats, wetlands are ideal for studying plant and animal life. Because ecological relationships are easily observed, they are excellent locations for teaching environmental science. The complex ecological relationships of wetland systems make them valuable areas for scientific research as well.

Recreation and Aesthetic Values

Wetlands are areas not only of great diversity but also of great beauty. They provide open space and contrast for both visual and recreational enjoyment, especially valuable in urban areas. Visitors include photographers, bird watchers, hikers, boaters, hunters, fishers and natural history enthusiasts. Appreciation and use of wetlands as a recreational resource is steadily increasing on both a national and state-wide basis. National, wetland-dependent waterfowl are hunted by over 2 million hunters. Nisqually National wildlife Refuge, near Olympia, Washington has had a 300 percent increase on visitor use since 1977. (McMillan, A. 1986)

References

Washington State Department of Ecology, A Guide to Conducting Wetlands Inventories, 1989

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator: J. Bartlett Date: 10-28-10
Project/Site: Banner Forest - Wetland A County: Kitsap State: WA
Applicant/Owner: Kitsap Parks/GPC Surveyor:
Describe current conditions of wetland and surrounding areas: Spiraea dominated depressional wetland - Wetland A.

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes ____ No X
If yes, what are modifiers:

SOILS

Mapped Series: 37 - Norma fine sandy loam
Hydric soils list?: Yes X No ____ Hydric Inclusion? ____

Depth	Horizon	Color Matrix	Color Mottle	Texture
0-10"		10YR2/1	-	peat
10-16"		5YR 3/1	-	silt loam

Hydric Soil Indicators	Yes	No	Depth
Histosol			
Histic Epipedon	X		
Gleyed			
Sulfidic odor			
Concretions			

Is the hydric soil criterion met? Yes X No ____
Rationale: Low Chroma for matrix color @ 10".

HYDROLOGY

General wetland type or characteristic: Emergent ____ Scrub/Shrub X Forested ____
Permanently flooded ____ Seasonally flooded X Temporarily flooded ____ Saturated ____
Types of water bodies associated with the wetland: River ____ Stream ____ Seep/Spring ____
Pond/Lake ____ Tidal ____ Drainage ditch/channel ____ Other: ____
Is the ground surface inundated? Yes ____ No X Surface water depth: ____
Is the soil saturated? Yes ____ No X Depth to water in test hole: ____
Field evidence of surface inundation or soil saturation: oxidized root channels, debris lines at edge & lines on vegetation.
Is the wetland hydrology criterion met? Yes X No ____
Rationale: Hydrology not present but indicators are present for wetland hydrology indicators.

SUMMARY

Hydric soil present? Yes X No ____ Hydrology present? Yes X No ____
Hydrophytic vegetation present? Yes X No ____
Percent of FAC, FACW, and OBL species: 100%
Is the site a wetland? Yes X No ____
Rationale: Positive indicators present for all three wetland parameters.

TEST HOLE # 1A **OF** ____

LOCATION OF TEST HOLE Wetland A downslope of WBA-8

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover				% cover		
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+	___	Sitka spruce	*Picea sitchensis*	FAC
___	Oregon ash	*Fraxinus latifolia*	FACW	___	Western red cedar	*Thuja plicata*	FAC
___	Quaking aspen	*Populus tremuloides*	FAC+	___	Cascara buckthorn	*Frangula purshiana*	FAC-
___	Red alder	*Alnus rubra*	FAC	___	Bigleaf maple	*Acer macrophyllum*	FACU
___	Black cottonwood	*Populus balsamifera*	FAC	___	Western hemlock	*Tsuga heterophylla*	FACU
___	Scouler's willow	*Salix scouleriana*	FAC	___	Douglas fir	*Pseudotsuga menziesii*	FACU

___ Other tree species present:_____

Dominant Shrub Species

65	Hardhack	*Spiraea douglasii*	FACW	___	Snowberry	*Symphoricarpos albus*	FACU
___	Redosier Dogwood	*Cornus sericea*	FACW	___	Scot's broom	*Cytisus scoparius*	FACU
___	Western crabapple	*Malus fusca*	FACW	___	California huckleberry	*Vaccinium ovatum*	FACU
___	Black twinberry	*Lonicera involucrata*	FAC+	___	Himalayan blackberry	*Rubus armeniacus*	FACU
___	Devil's club	*Oplopanax horridus*	FAC+	___	Salal	*Gaultheria shallon*	FACU
___	Salmonberry	*Rubus spectabilis*	FAC	___	Indian plum	*Oemleria cerasiformis*	FACU
15	Nootka rose	*Rosa nutkana*	FAC	___	Hazelnut	*Corylus cornuta*	FACU
___	Vine maple	*Acer circinatum*	FAC-	___	Oregon grape	*Mahonia nervosa*	FACU
___	English ivy	*Hedera helix*	FACU	___	Red huckleberry	*Vaccinium parvifolium*	UPL
___	Red elderberry	*Sambucus racemosa*	FACU	___	Oceanspray	*Holodiscus discolor*	UPL

___ Other shrub species present:_____

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL	___	Stinging nettle	*Urtica diocia*	FAC+
___	Cattail	*Typha latifolia*	OBL	___	Velvet grass	*Holcus lanatus*	FAC
___	Water parsley	*Oenanthe sarmentosa*	OBL	___	Lady fern	*Athyrium filix-femina*	FAC
15	Slough sedge	*Carex obnupta*	OBL	___	Horsetail	*Equisetum arvense*	FAC
___	Small fruited bulrush	*Scirpus microcarpus*	OBL	___	Youth-on-age	*Tolmiea menziesii*	FAC
___	owlfruit sedge	*Carex stipata*	OBL	___	Foam flower	*Tiarella trifoliata*	FAC-
___	Tall manna grass	*Glyceria elata*	FACW+	___	Cat's ear	*Hypochaeris radicata*	FACU
___	Soft rush	*Juncus effusus*	FACW+	___	Trailing blackberry	*Rubus ursinus*	FACU
___	Rushes	*Juncus spp.*	FACW	___	Bracken fern	*Pteridium aquilinum*	FACU
___	Creeping buttercup	*Ranunculus repens*	FACW	___	Sword fern	*Polystichum munitum*	FACU
___	Reed canarygrass	*Phalaris arundinacea*	FACW	___	Bleeding heart	*Dicentra formosa*	FACU

___ Other forb species present:_____

Percent of dominant species FAC, FACW, OBL: 100%
Is the hydrophytic vegetation criterion met? Yes X No___
Rationale: Greater than 50% cover by FACW & OBL species.

UPLAND?_____ **WETLAND?** X

WETLAND TYPE: Palustrine X Riverine _____
Lacustrine_____ Estuarine_____
Forested_____ Scrub/Shrub X
Emergent_____ Open Water_____
Wet Meadow/Pasture_____

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator: See Data Date:
Project/Site: Form #1 County: State:
Applicant/Owner: Surveyor:
Describe current conditions of wetland and surrounding areas: Upland slope on west side of Wetland A.

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes No X
If yes, what are modifiers:

SOILS

Mapped Series: 23-Kapowsin gravelly loam, 6-15% slopes
Hydric soils list?: Yes No Hydric Inclusion?

Depth	Horizon	Color Matrix	Mottle	Texture
0-9"		10YR 3/2	-	fine sandy lo
9-16"		5YR 3/2	-	" " "

Hydric Soil Indicators	Yes	No	Depth
Histosol			
Histic Epipedon			
Gleyed			
Sulfidic odor			
Concretions			

Is the hydric soil criterion met? Yes No X
Rationale: Soil Chroma @ 10" too high for matrix color w/o mottles.

HYDROLOGY

General wetland type or characteristic: Emergent Scrub/Shrub Forested
Permanently flooded Seasonally flooded Temporarily flooded Saturated
Types of water bodies associated with the wetland: River Stream Seep/Spring
Pond/Lake Tidal Drainage ditch/channel Other:
Is the ground surface inundated? Yes No X Surface water depth:
Is the soil saturated? Yes No X Depth to water in test hole:
Field evidence of surface inundation or soil saturation: NONE

Is the wetland hydrology criterion met? Yes No X
Rationale: No hydrology or evidence of wetland hydrology.

SUMMARY

Hydric soil present? Yes No X Hydrology present? Yes No X
Hydrophytic vegetation present? Yes X No
Percent of FAC, FACW, and OBL species: ~90%
Is the site a wetland? Yes No X
Rationale: Positive indicators present for only one of the three wetland parameters.

TEST HOLE # 2A **OF**

LOCATION OF TEST HOLE Upland upslope of WBA-8

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover				% cover		
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+	___	Sitka spruce	*Picea sitchensis*	FAC
___	Oregon ash	*Fraxinus latifolia*	FACW	___	Western red cedar	*Thuja plicata*	FAC
___	Quaking aspen	*Populus tremuloides*	FAC+	___	Cascara buckthorn	*Frangula purshiana*	FAC-
___	Red alder	*Alnus rubra*	FAC	___	Bigleaf maple	*Acer macrophyllum*	FACU
___	Black cottonwood	*Populus balsamifera*	FAC	___	Western hemlock	*Tsuga heterophylla*	FACU
15	Scouler's willow	*Salix scouleriana*	FAC	___	Douglas fir	*Pseudotsuga menziesii*	FACU

___ Other tree species present:_____

Dominant Shrub Species

10	Hardhack	*Spiraea douglasii*	FACW	___	Snowberry	*Symphoricarpos albus*	FACU
___	Redosier Dogwood	*Cornus sericea*	FACW	___	Scot's broom	*Cytisus scoparius*	FACU
___	Western crabapple	*Malus fusca*	FACW	___	California huckleberry	*Vaccinium ovatum*	FACU
___	Black twinberry	*Lonicera involucrata*	FAC+	___	Himalayan blackberry	*Rubus armeniacus*	FACU
___	Devil's club	*Oplopanax horridus*	FAC+	___	Salal	*Gaultheria shallon*	FACU
___	Salmonberry	*Rubus spectabilis*	FAC	___	Indian plum	*Oemleria cerasiformis*	FACU
25	Nootka rose	*Rosa nutkana*	FAC	___	Hazelnut	*Corylus cornuta*	FACU
___	Vine maple	*Acer circinatum*	FAC-	___	Oregon grape	*Mahonia nervosa*	FACU
___	English ivy	*Hedera helix*	FACU	___	Red huckleberry	*Vaccinium parvifolium*	UPL
___	Red elderberry	*Sambucus racemosa*	FACU	___	Oceanspray	*Holodiscus discolor*	UPL

___ Other shrub species present:_____

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL	___	Stinging nettle	*Urtica diocia*	FAC+
___	Cattail	*Typha latifolia*	OBL	___	Velvet grass	*Holcus lanatus*	FAC
___	Water parsley	*Oenanthe sarmentosa*	OBL	___	Lady fern	*Athyrium filix-femina*	FAC
30	Slough sedge	*Carex obnupta*	OBL	___	Horsetail	*Equisetum arvense*	FAC
___	Small fruited bulrush	*Scirpus microcarpus*	OBL	___	Youth-on-age	*Tolmiea menziesii*	FAC
___	owlfruit sedge	*Carex stipata*	OBL	___	Foam flower	*Tiarella trifoliata*	FAC-
___	Tall manna grass	*Glyceria elata*	FACW+	___	Cat's ear	*Hypochaeris radicata*	FACU
___	Soft rush	*Juncus effusus*	FACW+	15	Trailing blackberry	*Rubus ursinus*	FACU
___	Rushes	*Juncus spp.*	FACW	___	Bracken fern	*Pteridium aquilinum*	FACU
___	Creeping buttercup	*Ranunculus repens*	FACW	___	Sword fern	*Polystichum munitum*	FACU
___	Reed canarygrass	*Phalaris arundinacea*	FACW	___	Bleeding heart	*Dicentra formosa*	FACU

___ Other forb species present:_____

Percent of dominant species FAC, FACW, OBL: ~90%
Is the hydrophytic vegetation criterion met? Yes X No___
Rationale: Greater than 50% cover by FAC, FACW & OBL species

UPLAND? X **WETLAND?**_____

WETLAND TYPE: Palustrine_____ Riverine_____
Lacustrine_____ Estuarine_____
Forested_____ Scrub/Shrub_____
Emergent_____ Open Water_____
Wet Meadow/Pasture_____

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator: See Data Date:
Project/Site: Form #1 County: State:
Applicant/Owner: Surveyor:
Describe current conditions of wetland and surrounding areas: Upland area containing willows + hardhack. West of WBA-13

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes ___ No X
If yes, what are modifiers:

SOILS

Mapped Series: 22 Kapowsin gravelly loam 0-6% slopes
Hydric soils list?: Yes ___ No X Hydric Inclusion?

Depth	Horizon	Color Matrix	Color Mottle	Texture
0-3"		10YR3/2	-	gravelly loam
3-16"		10YR4/3	"	"

Hydric Soil Indicators	Yes	No	Depth
Histosol			
Histic Epipedon			
Gleyed			
Sulfidic odor			
Concretions			

Is the hydric soil criterion met? Yes ___ No X
Rationale: Soil chroma @ 10" too high for matrix color.

HYDROLOGY

General wetland type or characteristic: Emergent ___ Scrub/Shrub ___ Forested ___
Permanently flooded ___ Seasonally flooded ___ Temporarily flooded ___ Saturated ___
Types of water bodies associated with the wetland: River ___ Stream ___ Seep/Spring ___
Pond/Lake ___ Tidal ___ Drainage ditch/channel ___ Other:
Is the ground surface inundated? Yes ___ No X Surface water depth:
Is the soil saturated? Yes ___ No X Depth to water in test hole:
Field evidence of surface inundation or soil saturation: NONE

Is the wetland hydrology criterion met? Yes ___ No X
Rationale: No hydrology or evidence of hydrology.

SUMMARY

Hydric soil present? Yes ___ No X Hydrology present? Yes ___ No X
Hydrophytic vegetation present? Yes ___ No X
Percent of FAC, FACW, and OBL species: ~45%
Is the site a wetland? Yes ___ No X
Rationale: No positive indicators present for any of the three wetland parameters.

TEST HOLE # 3A **OF** ___

LOCATION OF TEST HOLE Upland West of Southend - Wetland A

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover				% cover		
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+	___	Sitka spruce	*Picea sitchensis*	FAC
___	Oregon ash	*Fraxinus latifolia*	FACW	___	Western red cedar	*Thuja plicata*	FAC
___	Quaking aspen	*Populus tremuloides*	FAC+	5	Cascara buckthorn	*Frangula purshiana*	FAC-
___	Red alder	*Alnus rubra*	FAC	___	Bigleaf maple	*Acer macrophyllum*	FACU
___	Black cottonwood	*Populus balsamifera*	FAC	___	Western hemlock	*Tsuga heterophylla*	FACU
20	Scouler's willow	*Salix scouleriana*	FAC	___	Douglas fir	*Pseudotsuga menziesii*	FACU

___ Other tree species present:_____

Dominant Shrub Species

25	Hardhack	*Spiraea douglasii*	FACW	___	Snowberry	*Symphoricarpos albus*	FACU
___	Redosier Dogwood	*Cornus sericea*	FACW	___	Scot's broom	*Cytisus scoparius*	FACU
___	Western crabapple	*Malus fusca*	FACW	___	California huckleberry	*Vaccinium ovatum*	FACU
___	Black twinberry	*Lonicera involucrata*	FAC+	___	Himalayan blackberry	*Rubus armeniacus*	FACU
___	Devil's club	*Oplopanax horridus*	FAC+	20	Salal	*Gaultheria shallon*	FACU
___	Salmonberry	*Rubus spectabilis*	FAC	___	Indian plum	*Oemleria cerasiformis*	FACU
___	Nootka rose	*Rosa nutkana*	FAC	___	Hazelnut	*Corylus cornuta*	FACU
___	Vine maple	*Acer circinatum*	FAC-	___	Oregon grape	*Mahonia nervosa*	FACU
___	English ivy	*Hedera helix*	FACU	___	Red huckleberry	*Vaccinium parvifolium*	UPL
___	Red elderberry	*Sambucus racemosa*	FACU	___	Oceanspray	*Holodiscus discolor*	UPL

___ Other shrub species present:_____

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL	___	Stinging nettle	*Urtica diocia*	FAC+
___	Cattail	*Typha latifolia*	OBL	___	Velvet grass	*Holcus lanatus*	FAC
___	Water parsley	*Oenanthe sarmentosa*	OBL	___	Lady fern	*Athyrium filix-femina*	FAC
___	Slough sedge	*Carex obnupta*	OBL	___	Horsetail	*Equisetum arvense*	FAC
___	Small fruited bulrush	*Scirpus microcarpus*	OBL	___	Youth-on-age	*Tolmiea menziesii*	FAC
___	owlfruit sedge	*Carex stipata*	OBL	___	Foam flower	*Tiarella trifoliata*	FAC-
___	Tall manna grass	*Glyceria elata*	FACW+	___	Cat's ear	*Hypochaeris radicata*	FACU
___	Soft rush	*Juncus effusus*	FACW+	35	Trailing blackberry	*Rubus ursinus*	FACU
___	Rushes	*Juncus spp.*	FACW	___	Bracken fern	*Pteridium aquilinum*	FACU
___	Creeping buttercup	*Ranunculus repens*	FACW	___	Sword fern	*Polystichum munitum*	FACU
___	Reed canarygrass	*Phalaris arundinacea*	FACW	___	Bleeding heart	*Dicentra formosa*	FACU

___ Other forb species present:
5 fireweed, Chamerion angustifolium, FACU+

Percent of dominant species FAC, FACW, OBL: ~45%
Is the hydrophytic vegetation criterion met? Yes___ No X
Rationale: Less than 50% cover by FAC, FACW or OBL species.

UPLAND? X **WETLAND?** _____

WETLAND TYPE: Palustrine_____ Riverine _____
Lacustrine_____ Estuarine_____
Forested_____ Scrub/Shrub_____
Emergent_____ Open Water_____
Wet Meadow/Pasture_____

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator: See Data Date:
Project/Site: Form #1 County: State:
Applicant/Owner: Surveyor:
Describe current conditions of wetland and surrounding areas: Southwest corner of Wetland A.

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes ___ No X
If yes, what are modifiers:

SOILS

Mapped Series: 37-Norma fine sandy loam
Hydric soils list?: Yes X No ___ Hydric Inclusion? ___

Depth	Horizon	Color Matrix	Color Mottle	Texture
0-6"		10YR2/1	-	sandy silt loam
6-16"		7.5YR3/2	"	" "

Hydric Soil Indicators	Yes	No	Depth
Histosol		X	
Histic Epipedon		X	
Gleyed		X	
Sulfidic odor		X	
Concretions	X		10"

Is the hydric soil criterion met? Yes X No
Rationale: Low Chroma for matrix color @ 10" with concretions present.

HYDROLOGY

General wetland type or characteristic: Emergent ___ Scrub/Shrub X Forested ___
Permanently flooded ___ Seasonally flooded X Temporarily flooded ___ Saturated ___
Types of water bodies associated with the wetland: River ___ Stream ___ Seep/Spring ___
Pond/Lake ___ Tidal ___ Drainage ditch/channel ___ Other: ___
Is the ground surface inundated? Yes ___ No X Surface water depth: ___
Is the soil saturated? Yes ___ No X Depth to water in test hole: ___
Field evidence of surface inundation or soil saturation: oxidized root channels, debris lines, lines on vegetation
Is the wetland hydrology criterion met? Yes X No ___
Rationale: Water not present but indicators present for wetland hydrology.

SUMMARY

Hydric soil present? Yes X No ___ Hydrology present? Yes X No ___
Hydrophytic vegetation present? Yes X No ___
Percent of FAC, FACW, and OBL species: ~88%
Is the site a wetland? Yes X No ___
Rationale: Positive indicators present for all three wetland parameters.

TEST HOLE # 4A **OF** ___

LOCATION OF TEST HOLE Wetland A near WB A-26

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover				% cover		
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+	___	Sitka spruce	*Picea sitchensis*	FAC
___	Oregon ash	*Fraxinus latifolia*	FACW	___	Western red cedar	*Thuja plicata*	FAC
___	Quaking aspen	*Populus tremuloides*	FAC+	___	Cascara buckthorn	*Frangula purshiana*	FAC-
___	Red alder	*Alnus rubra*	FAC	___	Bigleaf maple	*Acer macrophyllum*	FACU
___	Black cottonwood	*Populus balsamifera*	FAC	___	Western hemlock	*Tsuga heterophylla*	FACU
15	Scouler's willow	*Salix scouleriana*	FAC	___	Douglas fir	*Pseudotsuga menziesii*	FACU

___ Other tree species present:_____

Dominant Shrub Species

35	Hardhack	*Spiraea douglasii*	FACW	___	Snowberry	*Symphoricarpos albus*	FACU
___	Redosier Dogwood	*Cornus sericea*	FACW	___	Scot's broom	*Cytisus scoparius*	FACU
___	Western crabapple	*Malus fusca*	FACW	___	California huckleberry	*Vaccinium ovatum*	FACU
___	Black twinberry	*Lonicera involucrata*	FAC+	___	Himalayan blackberry	*Rubus armeniacus*	FACU
___	Devil's club	*Oplopanax horridus*	FAC+	___	Salal	*Gaultheria shallon*	FACU
25	Salmonberry	*Rubus spectabilis*	FAC	___	Indian plum	*Oemleria cerasiformis*	FACU
___	Nootka rose	*Rosa nutkana*	FAC	___	Hazelnut	*Corylus cornuta*	FACU
___	Vine maple	*Acer circinatum*	FAC-	___	Oregon grape	*Mahonia nervosa*	FACU
___	English ivy	*Hedera helix*	FACU	___	Red huckleberry	*Vaccinium parvifolium*	UPL
___	Red elderberry	*Sambucus racemosa*	FACU	___	Oceanspray	*Holodiscus discolor*	UPL

___ Other shrub species present:_____

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL	___	Stinging nettle	*Urtica diocia*	FAC+
___	Cattail	*Typha latifolia*	OBL	___	Velvet grass	*Holcus lanatus*	FAC
___	Water parsley	*Oenanthe sarmentosa*	OBL	___	Lady fern	*Athyrium filix-femina*	FAC
___	Slough sedge	*Carex obnupta*	OBL	___	Horsetail	*Equisetum arvense*	FAC
___	Small fruited bulrush	*Scirpus microcarpus*	OBL	___	Youth-on-age	*Tolmiea menziesii*	FAC
___	owlfruit sedge	*Carex stipata*	OBL	___	Foam flower	*Tiarella trifoliata*	FAC-
___	Tall manna grass	*Glyceria elata*	FACW+	___	Cat's ear	*Hypochaeris radicata*	FACU
___	Soft rush	*Juncus effusus*	FACW+	15	Trailing blackberry	*Rubus ursinus*	FACU
___	Rushes	*Juncus spp.*	FACW	___	Bracken fern	*Pteridium aquilinum*	FACU
___	Creeping buttercup	*Ranunculus repens*	FACW	___	Sword fern	*Polystichum munitum*	FACU
___	Reed canarygrass	*Phalaris arundinacea*	FACW	___	Bleeding heart	*Dicentra formosa*	FACU

___ Other forb species present:_____

Percent of dominant species FAC, FACW, OBL: ~88%
Is the hydrophytic vegetation criterion met? Yes X No___
Rationale: Greater than 50% cover by FAC + FACW species.

UPLAND?_____ **WETLAND?** X

WETLAND TYPE: Palustrine X Riverine _____
Lacustrine_____ Estuarine_____
Forested_____ Scrub/Shrub X
Emergent_____ Open Water_____
Wet Meadow/Pasture_____

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator: See Data Date:
Project/Site: Form #1 County: State:
Applicant/Owner: Surveyor:
Describe current conditions of wetland and surrounding areas: Upland area just outside wetland A-

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes No x
If yes, what are modifiers:

SOILS

Mapped Series: 22- Kapowsin gravelly loam, 0-6% slopes
Hydric soils list?: Yes No x
Hydric Inclusion?

Depth	Horizon	Color Matrix	Color Mottle	Texture
0-6"		10YR3/2	-	fine sandy lo
6-16"		5YR3/2	-	" " "

Hydric Soil Indicators	Yes	No	Depth
Histosol			
Histic Epipedon			
Gleyed			
Sulfidic odor			
Concretions			

Is the hydric soil criterion met? Yes No x
Rationale: Soil Chroma too high for matrix color w/o mottles.

HYDROLOGY

General wetland type or characteristic: Emergent Scrub/Shrub Forested
Permanently flooded Seasonally flooded Temporarily flooded Saturated
Types of water bodies associated with the wetland: River Stream Seep/Spring
Pond/Lake Tidal Drainage ditch/channel Other:
Is the ground surface inundated? Yes No x Surface water depth:
Is the soil saturated? Yes No x Depth to water in test hole:
Field evidence of surface inundation or soil saturation: NONE

Is the wetland hydrology criterion met? Yes No x
Rationale: No hydrology or evidence of wetland hydrology.

SUMMARY

Hydric soil present? Yes No x Hydrology present? Yes No x
Hydrophytic vegetation present? Yes x No
Percent of FAC, FACW, and OBL species: 55%
Is the site a wetland? Yes No x
Rationale: Positive indicators present for only one of the three wetland parameters.

TEST HOLE # 5A **OF**

LOCATION OF TEST HOLE Upland north of WB A-25

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover				% cover		
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+	___	Sitka spruce	*Picea sitchensis*	FAC
___	Oregon ash	*Fraxinus latifolia*	FACW	___	Western red cedar	*Thuja plicata*	FAC
___	Quaking aspen	*Populus tremuloides*	FAC+	___	Cascara buckthorn	*Frangula purshiana*	FAC-
___	Red alder	*Alnus rubra*	FAC	___	Bigleaf maple	*Acer macrophyllum*	FACU
___	Black cottonwood	*Populus balsamifera*	FAC	___	Western hemlock	*Tsuga heterophylla*	FACU
10	Scouler's willow	*Salix scouleriana*	FAC	___	Douglas fir	*Pseudotsuga menziesii*	FACU

___ Other tree species present:_____

Dominant Shrub Species

25	Hardhack	*Spiraea douglasii*	FACW	___	Snowberry	*Symphoricarpos albus*	FACU
___	Redosier Dogwood	*Cornus sericea*	FACW	___	Scot's broom	*Cytisus scoparius*	FACU
___	Western crabapple	*Malus fusca*	FACW	___	California huckleberry	*Vaccinium ovatum*	FACU
___	Black twinberry	*Lonicera involucrata*	FAC+	___	Himalayan blackberry	*Rubus armeniacus*	FACU
___	Devil's club	*Oplopanax horridus*	FAC+	10	Salal	*Gaultheria shallon*	FACU
25	Salmonberry	*Rubus spectabilis*	FAC	___	Indian plum	*Oemleria cerasiformis*	FACU
___	Nootka rose	*Rosa nutkana*	FAC	___	Hazelnut	*Corylus cornuta*	FACU
___	Vine maple	*Acer circinatum*	FAC-	___	Oregon grape	*Mahonia nervosa*	FACU
___	English ivy	*Hedera helix*	FACU	___	Red huckleberry	*Vaccinium parvifolium*	UPL
___	Red elderberry	*Sambucus racemosa*	FACU	___	Oceanspray	*Holodiscus discolor*	UPL

___ Other shrub species present:_____

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL	___	Stinging nettle	*Urtica diocia*	FAC+
___	Cattail	*Typha latifolia*	OBL	___	Velvet grass	*Holcus lanatus*	FAC
___	Water parsley	*Oenanthe sarmentosa*	OBL	___	Lady fern	*Athyrium filix-femina*	FAC
___	Slough sedge	*Carex obnupta*	OBL	___	Horsetail	*Equisetum arvense*	FAC
___	Small fruited bulrush	*Scirpus microcarpus*	OBL	___	Youth-on-age	*Tolmiea menziesii*	FAC
___	owlfruit sedge	*Carex stipata*	OBL	___	Foam flower	*Tiarella trifoliata*	FAC-
___	Tall manna grass	*Glyceria elata*	FACW+	___	Cat's ear	*Hypochaeris radicata*	FACU
___	Soft rush	*Juncus effusus*	FACW+	50	Trailing blackberry	*Rubus ursinus*	FACU
___	Rushes	*Juncus spp.*	FACW	___	Bracken fern	*Pteridium aquilinum*	FACU
___	Creeping buttercup	*Ranunculus repens*	FACW	15	Sword fern	*Polystichum munitum*	FACU
___	Reed canarygrass	*Phalaris arundinacea*	FACW	___	Bleeding heart	*Dicentra formosa*	FACU

___ Other forb species present:_____

Percent of dominant species FAC, FACW, OBL: ~55%

Is the hydrophytic vegetation criterion met? Yes X No___

Rationale: Greater than 50% cover by FACW + FAC species.

UPLAND? X **WETLAND?**_____

WETLAND TYPE: Palustrine_____ Riverine _____
Lacustrine_____ Estuarine_____
Forested_____ Scrub/Shrub_____
Emergent_____ Open Water_____
Wet Meadow/Pasture_____

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator: See Data Date:
Project/Site: County: State:
Applicant/Owner: Form #1 Surveyor:
Describe current conditions of wetland and surrounding areas: Slope above Wetland A and west of narrow connection between Tiers 3+4. Dominated by hardhack.
Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes ____ No X
If yes, what are modifiers:

SOILS

Mapped Series: 22-Kapowsin gravelly loam, 0-6% slopes
Hydric soils list?: Yes ____ No X Hydric Inclusion?

Depth	Horizon	Color Matrix	Color Mottle	Texture
0-6"		10YR3/2	-	gravelly
6-14"		5YR3/2	-	loam
14-24		10YR4/3	-	

Hydric Soil Indicators	Yes	No	Depth
Histosol			
Histic Epipedon			
Gleyed			
Sulfidic odor			
Concretions			

Is the hydric soil criterion met? Yes ____ No X
Rationale: Soil chroma too high for matrix color w/o mottles @ 10".

HYDROLOGY

General wetland type or characteristic: Emergent ____ Scrub/Shrub ____ Forested ____
Permanently flooded ____ Seasonally flooded ____ Temporarily flooded ____ Saturated ____
Types of water bodies associated with the wetland: River ____ Stream ____ Seep/Spring ____
Pond/Lake ____ Tidal ____ Drainage ditch/channel ____ Other:
Is the ground surface inundated? Yes ____ No X Surface water depth:
Is the soil saturated? Yes ____ No X Depth to water in test hole:
Field evidence of surface inundation or soil saturation: NONE

Is the wetland hydrology criterion met? Yes ____ No X
Rationale: No hydrology or evidence of hydrology.

SUMMARY

Hydric soil present? Yes ____ No X Hydrology present? Yes ____ No X
Hydrophytic vegetation present? Yes X No ____
Percent of FAC, FACW, and OBL species: 100%
Is the site a wetland? Yes ____ No X
Rationale: Positive indicators present for only one of the three wetland parameters.

TEST HOLE # 6A **OF** ____

LOCATION OF TEST HOLE Upland South of WBA-34

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover				% cover		
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+	___	Sitka spruce	*Picea sitchensis*	FAC
___	Oregon ash	*Fraxinus latifolia*	FACW	___	Western red cedar	*Thuja plicata*	FAC
___	Quaking aspen	*Populus tremuloides*	FAC+	___	Cascara buckthorn	*Frangula purshiana*	FAC-
___	Red alder	*Alnus rubra*	FAC	___	Bigleaf maple	*Acer macrophyllum*	FACU
___	Black cottonwood	*Populus balsamifera*	FAC	___	Western hemlock	*Tsuga heterophylla*	FACU
15	Scouler's willow	*Salix scouleriana*	FAC	___	Douglas fir	*Pseudotsuga menziesii*	FACU

___ Other tree species present:_____

Dominant Shrub Species

100	Hardhack	*Spiraea douglasii*	FACW	___	Snowberry	*Symphoricarpos albus*	FACU
___	Redosier Dogwood	*Cornus sericea*	FACW	___	Scot's broom	*Cytisus scoparius*	FACU
___	Western crabapple	*Malus fusca*	FACW	___	California huckleberry	*Vaccinium ovatum*	FACU
___	Black twinberry	*Lonicera involucrata*	FAC+	___	Himalayan blackberry	*Rubus armeniacus*	FACU
___	Devil's club	*Oplopanax horridus*	FAC+	___	Salal	*Gaultheria shallon*	FACU
___	Salmonberry	*Rubus spectabilis*	FAC	___	Indian plum	*Oemleria cerasiformis*	FACU
___	Nootka rose	*Rosa nutkana*	FAC	___	Hazelnut	*Corylus cornuta*	FACU
___	Vine maple	*Acer circinatum*	FAC-	___	Oregon grape	*Mahonia nervosa*	FACU
___	English ivy	*Hedera helix*	FACU	___	Red huckleberry	*Vaccinium parvifolium*	UPL
___	Red elderberry	*Sambucus racemosa*	FACU	___	Oceanspray	*Holodiscus discolor*	UPL

___ Other shrub species present:_____

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL	___	Stinging nettle	*Urtica diocia*	FAC+
___	Cattail	*Typha latifolia*	OBL	___	Velvet grass	*Holcus lanatus*	FAC
___	Water parsley	*Oenanthe sarmentosa*	OBL	___	Lady fern	*Athyrium filix-femina*	FAC
___	Slough sedge	*Carex obnupta*	OBL	___	Horsetail	*Equisetum arvense*	FAC
___	Small fruited bulrush	*Scirpus microcarpus*	OBL	___	Youth-on-age	*Tolmiea menziesii*	FAC
___	owlfruit sedge	*Carex stipata*	OBL	___	Foam flower	*Tiarella trifoliata*	FAC-
___	Tall manna grass	*Glyceria elata*	FACW+	___	Cat's ear	*Hypochaeris radicata*	FACU
___	Soft rush	*Juncus effusus*	FACW+	5	Trailing blackberry	*Rubus ursinus*	FACU
___	Rushes	*Juncus spp.*	FACW	___	Bracken fern	*Pteridium aquilinum*	FACU
___	Creeping buttercup	*Ranunculus repens*	FACW	___	Sword fern	*Polystichum munitum*	FACU
___	Reed canarygrass	*Phalaris arundinacea*	FACW	___	Bleeding heart	*Dicentra formosa*	FACU

___ Other forb species present:_____

Percent of dominant species FAC, FACW, OBL: 100%
Is the hydrophytic vegetation criterion met? Yes X No___
Rationale: Greater than 50% cover by FACW species.

UPLAND? X **WETLAND?**_____
WETLAND TYPE: Palustrine_____ Riverine _____
Lacustrine_____ Estuarine_____
Forested_____ Scrub/Shrub_____
Emergent_____ Open Water_____
Wet Meadow/Pasture_____

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator: See Data Date: 11-12-10
Project/Site: Form #1 County: State:
Applicant/Owner: Surveyor:
Describe current conditions of wetland and surrounding areas: Wetland B- scrub/shrub wetland system w/ forest fingers to north + south. ground bare under cedars no shrubs either.
Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes No X
If yes, what are modifiers:

SOILS

Mapped Series: 32-McKenna gravelly loam
Hydric soils list?: Yes X No
Hydric Inclusion?

Depth	Horizon	Color Matrix	Color Mottle	Texture
0-16"		10YR2/1	-	sandy muck
16-		10YR2/2		gravelly lo

Hydric Soil Indicators	Yes	No	Depth
Histosol			
Histic Epipedon	X		
Gleyed			
Sulfidic odor			
Concretions			

Is the hydric soil criterion met? Yes X No
Rationale: Low Chroma for matrix color.

HYDROLOGY

General wetland type or characteristic: Emergent Scrub/Shrub X Forested X
Permanently flooded Seasonally flooded X Temporarily flooded Saturated
Types of water bodies associated with the wetland: River Stream Seep/Spring
Pond/Lake Tidal Drainage ditch/channel Other:
Is the ground surface inundated? Yes X No Surface water depth: nearby ~6"
Is the soil saturated? Yes X No Depth to water in test hole: @ 2"
Field evidence of surface inundation or soil saturation:

Is the wetland hydrology criterion met? Yes X No
Rationale: Hydrology present as soil saturation and inundation.

SUMMARY

Hydric soil present? Yes X No Hydrology present? Yes X No
Hydrophytic vegetation present? Yes X No
Percent of FAC, FACW, and OBL species:
Is the site a wetland? Yes X No
Rationale: Positive indicators present for all three wetland parameters

TEST HOLE # 1B **OF**

LOCATION OF TEST HOLE Wetland B near WB B-B

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover			% cover		
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+	___ Sitka spruce	*Picea sitchensis*	FAC
___	Oregon ash	*Fraxinus latifolia*	FACW	15 Western red cedar	*Thuja plicata*	FAC
___	Quaking aspen	*Populus tremuloides*	FAC+	___ Cascara buckthorn	*Frangula purshiana*	FAC-
___	Red alder	*Alnus rubra*	FAC	___ Bigleaf maple	*Acer macrophyllum*	FACU
___	Black cottonwood	*Populus balsamifera*	FAC	___ Western hemlock	*Tsuga heterophylla*	FACU
___	Scouler's willow	*Salix scouleriana*	FAC	___ Douglas fir	*Pseudotsuga menziesii*	FACU

___ Other tree species present:_____

Dominant Shrub Species

___	Hardhack	*Spiraea douglasii*	FACW	___ Snowberry	*Symphoricarpos albus*	FACU
___	Redosier Dogwood	*Cornus sericea*	FACW	___ Scot's broom	*Cytisus scoparius*	FACU
___	Western crabapple	*Malus fusca*	FACW	5 California huckleberry	*Vaccinium ovatum*	FACU
___	Black twinberry	*Lonicera involucrata*	FAC+	___ Himalayan blackberry	*Rubus armeniacus*	FACU
___	Devil's club	*Oplopanax horridus*	FAC+	___ Salal	*Gaultheria shallon*	FACU
___	Salmonberry	*Rubus spectabilis*	FAC	___ Indian plum	*Oemleria cerasiformis*	FACU
___	Nootka rose	*Rosa nutkana*	FAC	___ Hazelnut	*Corylus cornuta*	FACU
___	Vine maple	*Acer circinatum*	FAC-	___ Oregon grape	*Mahonia nervosa*	FACU
___	English ivy	*Hedera helix*	FACU	___ Red huckleberry	*Vaccinium parvifolium*	UPL
___	Red elderberry	*Sambucus racemosa*	FACU	___ Oceanspray	*Holodiscus discolor*	UPL

___ Other shrub species present:_____

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL	___ Stinging nettle	*Urtica diocia*	FAC+
___	Cattail	*Typha latifolia*	OBL	___ Velvet grass	*Holcus lanatus*	FAC
___	Water parsley	*Oenanthe sarmentosa*	OBL	___ Lady fern	*Athyrium filix-femina*	FAC
___	Slough sedge	*Carex obnupta*	OBL	___ Horsetail	*Equisetum arvense*	FAC
___	Small fruited bulrush	*Scirpus microcarpus*	OBL	___ Youth-on-age	*Tolmiea menziesii*	FAC
___	owlfruit sedge	*Carex stipata*	OBL	___ Foam flower	*Tiarella trifoliata*	FAC-
___	Tall manna grass	*Glyceria elata*	FACW+	___ Cat's ear	*Hypochaeris radicata*	FACU
___	Soft rush	*Juncus effusus*	FACW+	___ Trailing blackberry	*Rubus ursinus*	FACU
___	Rushes	*Juncus spp.*	FACW	___ Bracken fern	*Pteridium aquilinum*	FACU
___	Creeping buttercup	*Ranunculus repens*	FACW	___ Sword fern	*Polystichum munitum*	FACU
___	Reed canarygrass	*Phalaris arundinacea*	FACW	___ Bleeding heart	*Dicentra formosa*	FACU

___ Other forb species present:_____

Percent of dominant species FAC, FACW, OBL: ____?____

Is the hydrophytic vegetation criterion met? Yes X No____

Rationale: 1 FAC species dominant but not greater than 50% cover due to absence of ground+shrub cover.

UPLAND?_____ **WETLAND?** X

WETLAND TYPE: Palustrine X Riverine _____

Lacustrine_____ Estuarine_____

Forested X Scrub/Shrub X

Emergent_____ Open Water_____

Wet Meadow/Pasture_____

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator: See Data Date:
Project/Site: County: State:
Applicant/Owner: Form #1 Surveyor:
Describe current conditions of wetland and surrounding areas: Upland area to north of wetland B.

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes ____ No X
If yes, what are modifiers:

SOILS

Mapped Series: 15 - Harstine gravelly sandy loam, 6-15% slopes
Hydric soils list?: Yes ____ No X
Hydric Inclusion? ____

Depth	Horizon	Color Matrix	Color Mottle	Texture
0-4"	duff			
4-9		10YR2/2		silty clay
9-16"		10YR3/2		silt lo

Hydric Soil Indicators	Yes	No	Depth
Histosol			
Histic Epipedon			
Gleyed			
Sulfidic odor			
Concretions			

Is the hydric soil criterion met? Yes ____ No X
Rationale: Soil Chroma too high for matrix color w/o mottles.

HYDROLOGY

General wetland type or characteristic: Emergent ____ Scrub/Shrub ____ Forested ____
Permanently flooded ____ Seasonally flooded ____ Temporarily flooded ____ Saturated ____
Types of water bodies associated with the wetland: River ____ Stream ____ Seep/Spring ____
Pond/Lake ____ Tidal ____ Drainage ditch/channel ____ Other:
Is the ground surface inundated? Yes ____ No X Surface water depth:
Is the soil saturated? Yes ____ No X Depth to water in test hole:
Field evidence of surface inundation or soil saturation: NONE

Is the wetland hydrology criterion met? Yes ____ No X
Rationale: No hydrology or evidence of hydrology.

SUMMARY

Hydric soil present? Yes ____ No X Hydrology present? Yes ____ No X
Hydrophytic vegetation present? Yes ____ No X
Percent of FAC, FACW, and OBL species: 50%
Is the site a wetland? Yes ____ No X
Rationale: No positive indicators present for any of the three wetland parameters

TEST HOLE # 2B **OF** ____

LOCATION OF TEST HOLE Upland NE of WB B-B

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover				% cover		
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+	___	Sitka spruce	*Picea sitchensis*	FAC
___	Oregon ash	*Fraxinus latifolia*	FACW	15	Western red cedar	*Thuja plicata*	FAC
___	Quaking aspen	*Populus tremuloides*	FAC+	___	Cascara buckthorn	*Frangula purshiana*	FAC-
15	Red alder	*Alnus rubra*	FAC	___	Bigleaf maple	*Acer macrophyllum*	FACU
___	Black cottonwood	*Populus balsamifera*	FAC	___	Western hemlock	*Tsuga heterophylla*	FACU
___	Scouler's willow	*Salix scouleriana*	FAC	___	Douglas fir	*Pseudotsuga menziesii*	FACU
___	Other tree species present:_____			_____			
	_____			_____			
	_____			_____			

Dominant Shrub Species

___	Hardhack	*Spiraea douglasii*	FACW	___	Snowberry	*Symphoricarpos albus*	FACU
___	Redosier Dogwood	*Cornus sericea*	FACW	___	Scot's broom	*Cytisus scoparius*	FACU
___	Western crabapple	*Malus fusca*	FACW	15	California huckleberry	*Vaccinium ovatum*	FACU
___	Black twinberry	*Lonicera involucrata*	FAC+	___	Himalayan blackberry	*Rubus armeniacus*	FACU
___	Devil's club	*Oplopanax horridus*	FAC+	15	Salal	*Gaultheria shallon*	FACU
___	Salmonberry	*Rubus spectabilis*	FAC	___	Indian plum	*Oemleria cerasiformis*	FACU
___	Nootka rose	*Rosa nutkana*	FAC	___	Hazelnut	*Corylus cornuta*	FACU
___	Vine maple	*Acer circinatum*	FAC-	___	Oregon grape	*Mahonia nervosa*	FACU
___	English ivy	*Hedera helix*	FACU	___	Red huckleberry	*Vaccinium parvifolium*	UPL
___	Red elderberry	*Sambucus racemosa*	FACU	___	Oceanspray	*Holodiscus discolor*	UPL
___	Other shrub species present:_____			_____			
	_____			_____			
	_____			_____			

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL	___	Stinging nettle	*Urtica diocia*	FAC+
___	Cattail	*Typha latifolia*	OBL	___	Velvet grass	*Holcus lanatus*	FAC
___	Water parsley	*Oenanthe sarmentosa*	OBL	___	Lady fern	*Athyrium filix-femina*	FAC
___	Slough sedge	*Carex obnupta*	OBL	___	Horsetail	*Equisetum arvense*	FAC
___	Small fruited bulrush	*Scirpus microcarpus*	OBL	___	Youth-on-age	*Tolmiea menziesii*	FAC
___	owlfruit sedge	*Carex stipata*	OBL	___	Foam flower	*Tiarella trifoliata*	FAC-
___	Tall manna grass	*Glyceria elata*	FACW+	___	Cat's ear	*Hypochaeris radicata*	FACU
___	Soft rush	*Juncus effusus*	FACW+	___	Trailing blackberry	*Rubus ursinus*	FACU
___	Rushes	*Juncus spp.*	FACW	___	Bracken fern	*Pteridium aquilinum*	FACU
___	Creeping buttercup	*Ranunculus repens*	FACW	___	Sword fern	*Polystichum munitum*	FACU
___	Reed canarygrass	*Phalaris arundinacea*	FACW	___	Bleeding heart	*Dicentra formosa*	FACU
___	Other forb species present:_____			_____			
	_____			_____			
	_____			_____			

Percent of dominant species FAC, FACW, OBL: 50%
Is the hydrophytic vegetation criterion met? Yes___ No X
Rationale: Equal %'s of FAC + FACU species.

UPLAND? X **WETLAND?**_____
WETLAND TYPE: Palustrine_____ Riverine _____
Lacustrine_____ Estuarine_____
Forested_____ Scrub/Shrub_____
Emergent_____ Open Water_____
Wet Meadow/Pasture_____

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator: See Data Date:
Project/Site: Form #1 County: State:
Applicant/Owner: Surveyor:
Describe current conditions of wetland and surrounding areas: Upland area alongside/west of forested finger delineated between WB B20 + B-25.
Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes No x
If yes, what are modifiers:

SOILS

Mapped Series: 15 - Harstine gravelly sandy loam, 6-15% slopes
Hydric soils list?: Yes No x
Hydric Inclusion?

Depth	Horizon	Matrix Color	Mottle	Texture
0-4"	duff	-	-	-
4-10"		10YR4/3	-	sandy lo
10-16"		10YR2/2	-	sandy lo

Hydric Soil Indicators	Yes	No	Depth
Histosol			
Histic Epipedon			
Gleyed			
Sulfidic odor			
Concretions			

Is the hydric soil criterion met? Yes No x
Rationale: Soil Chroma too high for matrix color @ 10" w/o mottles.

HYDROLOGY

General wetland type or characteristic: Emergent Scrub/Shrub Forested
Permanently flooded Seasonally flooded Temporarily flooded Saturated
Types of water bodies associated with the wetland: River Stream Seep/Spring
Pond/Lake Tidal Drainage ditch/channel Other:
Is the ground surface inundated? Yes No x Surface water depth:
Is the soil saturated? Yes No x Depth to water in test hole:
Field evidence of surface inundation or soil saturation: Water present at bottom of hole but no evidence w/in profile above 16".
Is the wetland hydrology criterion met? Yes No x
Rationale: Hydrology not present w/in 12" of surface and there is no evidence of standing water or saturation.

SUMMARY

Hydric soil present? Yes No x Hydrology present? Yes No x
Hydrophytic vegetation present? Yes x No
Percent of FAC, FACW, and OBL species: ~67%
Is the site a wetland? Yes No x
Rationale: Positive indicators present for only one of the three wetland parameters.

TEST HOLE # 3B **OF**

LOCATION OF TEST HOLE Upland West of WBB22

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover				% cover		
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+	___	Sitka spruce	*Picea sitchensis*	FAC
___	Oregon ash	*Fraxinus latifolia*	FACW	___	Western red cedar	*Thuja plicata*	FAC
___	Quaking aspen	*Populus tremuloides*	FAC+	5	Cascara buckthorn	*Frangula purshiana*	FAC-
15	Red alder	*Alnus rubra*	FAC	___	Bigleaf maple	*Acer macrophyllum*	FACU
___	Black cottonwood	*Populus balsamifera*	FAC	___	Western hemlock	*Tsuga heterophylla*	FACU
___	Scouler's willow	*Salix scouleriana*	FAC	___	Douglas fir	*Pseudotsuga menziesii*	FACU

___ Other tree species present:_____

Dominant Shrub Species

___	Hardhack	*Spiraea douglasii*	FACW	___	Snowberry	*Symphoricarpos albus*	FACU
___	Redosier Dogwood	*Cornus sericea*	FACW	___	Scot's broom	*Cytisus scoparius*	FACU
___	Western crabapple	*Malus fusca*	FACW	___	California huckleberry	*Vaccinium ovatum*	FACU
___	Black twinberry	*Lonicera involucrata*	FAC+	___	Himalayan blackberry	*Rubus armeniacus*	FACU
___	Devil's club	*Oplopanax horridus*	FAC+	___	Salal	*Gaultheria shallon*	FACU
50	Salmonberry	*Rubus spectabilis*	FAC	___	Indian plum	*Oemleria cerasiformis*	FACU
___	Nootka rose	*Rosa nutkana*	FAC	___	Hazelnut	*Corylus cornuta*	FACU
___	Vine maple	*Acer circinatum*	FAC-	___	Oregon grape	*Mahonia nervosa*	FACU
___	English ivy	*Hedera helix*	FACU	5	Red huckleberry	*Vaccinium parvifolium*	UPL
10	Red elderberry	*Sambucus racemosa*	FACU	___	Oceanspray	*Holodiscus discolor*	UPL

___ Other shrub species present:_____

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL	___	Stinging nettle	*Urtica diocia*	FAC+
___	Cattail	*Typha latifolia*	OBL	___	Velvet grass	*Holcus lanatus*	FAC
___	Water parsley	*Oenanthe sarmentosa*	OBL	5	Lady fern	*Athyrium filix-femina*	FAC
___	Slough sedge	*Carex obnupta*	OBL	___	Horsetail	*Equisetum arvense*	FAC
___	Small fruited bulrush	*Scirpus microcarpus*	OBL	___	Youth-on-age	*Tolmiea menziesii*	FAC
___	owlfruit sedge	*Carex stipata*	OBL	___	Foam flower	*Tiarella trifoliata*	FAC-
___	Tall manna grass	*Glyceria elata*	FACW+	___	Cat's ear	*Hypochaeris radicata*	FACU
___	Soft rush	*Juncus effusus*	FACW+	___	Trailing blackberry	*Rubus ursinus*	FACU
___	Rushes	*Juncus spp.*	FACW	10	Bracken fern	*Pteridium aquilinum*	FACU
___	Creeping buttercup	*Ranunculus repens*	FACW	5	Sword fern	*Polystichum munitum*	FACU
___	Reed canarygrass	*Phalaris arundinacea*	FACW	___	Bleeding heart	*Dicentra formosa*	FACU

___ Other forb species present:_____

Percent of dominant species FAC, FACW, OBL: ~87%
Is the hydrophytic vegetation criterion met? Yes X No___
Rationale: Greater than 50% cover by FAC species.

UPLAND? X **WETLAND?**_____
WETLAND TYPE: Palustrine_____ Riverine_____
Lacustrine_____ Estuarine_____
Forested_____ Scrub/Shrub_____
Emergent_____ Open Water_____
Wet Meadow/Pasture_____

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator: See Data Date:
Project/Site: County: State:
Applicant/Owner: Form #1 Surveyor:
Describe current conditions of wetland and surrounding areas: Wetland B - Forested finger delineated between B-20 + B-25. Hole conducted right at wetland boundary.
Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes ____ No X
If yes, what are modifiers:

SOILS

Mapped Series: 32 - McKenna gravelly loam
Hydric soils list?: Yes X No ____ Hydric Inclusion? ____

Depth	Horizon	Color Matrix	Color Mottle	Texture
0-6"		10YR2/1	-	Silt Lo
6-16"		7.5YR2.5/2	-	"

Hydric Soil Indicators	Yes	No	Depth
Histosol			
Histic Epipedon			
Gleyed			
Sulfidic odor			
Concretions			

Is the hydric soil criterion met? Yes X No ____
Rationale: Low Chroma for matrix color.

HYDROLOGY

General wetland type or characteristic: Emergent ____ Scrub/Shrub X Forested X
Permanently flooded ____ Seasonally flooded X Temporarily flooded ____ Saturated ____
Types of water bodies associated with the wetland: River ____ Stream ____ Seep/Spring ____
Pond/Lake ____ Tidal ____ Drainage ditch/channel ____ Other: ____
Is the ground surface inundated? Yes ____ No X Surface water depth: ____
Is the soil saturated? Yes X No ____ Depth to water in test hole: @ 1".
Field evidence of surface inundation or soil saturation: Surface scouring.

Is the wetland hydrology criterion met? Yes X No ____
Rationale: Hydrology present as soil saturation near surface of soil hole.

SUMMARY

Hydric soil present? Yes X No ____ Hydrology present? Yes X No ____
Hydrophytic vegetation present? Yes X No ____
Percent of FAC, FACW, and OBL species: ____
Is the site a wetland? Yes X No ____
Rationale: Positive indicators present for all three wetland parameters.

TEST HOLE # 4B **OF** ____

LOCATION OF TEST HOLE Wetland B at WBB22

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover				% cover		
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+	___	Sitka spruce	*Picea sitchensis*	FAC
___	Oregon ash	*Fraxinus latifolia*	FACW	___	Western red cedar	*Thuja plicata*	FAC
___	Quaking aspen	*Populus tremuloides*	FAC+	___	Cascara buckthorn	*Frangula purshiana*	FAC-
___	Red alder	*Alnus rubra*	FAC	___	Bigleaf maple	*Acer macrophyllum*	FACU
___	Black cottonwood	*Populus balsamifera*	FAC	___	Western hemlock	*Tsuga heterophylla*	FACU
15	Scouler's willow	*Salix scouleriana*	FAC	___	Douglas fir	*Pseudotsuga menziesii*	FACU

___ Other tree species present:_____

Dominant Shrub Species

___	Hardhack	*Spiraea douglasii*	FACW	___	Snowberry	*Symphoricarpos albus*	FACU
___	Redosier Dogwood	*Cornus sericea*	FACW	___	Scot's broom	*Cytisus scoparius*	FACU
___	Western crabapple	*Malus fusca*	FACW	___	California huckleberry	*Vaccinium ovatum*	FACU
___	Black twinberry	*Lonicera involucrata*	FAC+	___	Himalayan blackberry	*Rubus armeniacus*	FACU
___	Devil's club	*Oplopanax horridus*	FAC+	5	Salal	*Gaultheria shallon*	FACU
50	Salmonberry	*Rubus spectabilis*	FAC	___	Indian plum	*Oemleria cerasiformis*	FACU
___	Nootka rose	*Rosa nutkana*	FAC	___	Hazelnut	*Corylus cornuta*	FACU
___	Vine maple	*Acer circinatum*	FAC-	___	Oregon grape	*Mahonia nervosa*	FACU
___	English ivy	*Hedera helix*	FACU	___	Red huckleberry	*Vaccinium parvifolium*	UPL
___	Red elderberry	*Sambucus racemosa*	FACU	___	Oceanspray	*Holodiscus discolor*	UPL

___ Other shrub species present:_____

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL	___	Stinging nettle	*Urtica diocia*	FAC+
___	Cattail	*Typha latifolia*	OBL	___	Velvet grass	*Holcus lanatus*	FAC
___	Water parsley	*Oenanthe sarmentosa*	OBL	20	Lady fern	*Athyrium filix-femina*	FAC
10	Slough sedge	*Carex obnupta*	OBL	___	Horsetail	*Equisetum arvense*	FAC
___	Small fruited bulrush	*Scirpus microcarpus*	OBL	___	Youth-on-age	*Tolmiea menziesii*	FAC
___	owlfruit sedge	*Carex stipata*	OBL	___	Foam flower	*Tiarella trifoliata*	FAC-
___	Tall manna grass	*Glyceria elata*	FACW+	___	Cat's ear	*Hypochaeris radicata*	FACU
___	Soft rush	*Juncus effusus*	FACW+	___	Trailing blackberry	*Rubus ursinus*	FACU
___	Rushes	*Juncus spp.*	FACW	___	Bracken fern	*Pteridium aquilinum*	FACU
___	Creeping buttercup	*Ranunculus repens*	FACW	___	Sword fern	*Polystichum munitum*	FACU
___	Reed canarygrass	*Phalaris arundinacea*	FACW	___	Bleeding heart	*Dicentra formosa*	FACU

___ Other forb species present:_____

Percent of dominant species FAC, FACW, OBL: 95%
Is the hydrophytic vegetation criterion met? Yes X No___
Rationale: greater than 50% cover by FAC species.

UPLAND?_____ **WETLAND?** X

WETLAND TYPE: Palustrine X Riverine _____
Lacustrine_____ Estuarine_____
Forested X Scrub/Shrub X
Emergent_____ Open Water_____
Wet Meadow/Pasture_____

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator: J. Bartlett Date: 11-19-10
Project/Site: Banner Forest County: Kitsap State: WA
Applicant/Owner: GPC | Kitsap Co. Parks Surveyor:
Describe current conditions of wetland and surrounding areas: Wetland C - Scrub/Shrub System at West end north of Echoes.

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes ____ No X
If yes, what are modifiers:

SOILS

Mapped Series: 32 McKenna gravelly loam
Hydric soils list?: Yes X No ____ Hydric Inclusion? ____

Depth	Horizon	Color Matrix	Color Mottle	Texture
0-2"	duff			
2-6"		10YR3/1	-	sandy silt
6-16"		10YR4/2	10YR4/6	loam

Hydric Soil Indicators	Yes	No	Depth
Histosol		X	
Histic Epipedon		X	
Gleyed		X	
Sulfidic odor		X	
Concretions		X	

Is the hydric soil criterion met? Yes X No ____
Rationale: Low Chroma for matrix color w/ mottles.

HYDROLOGY

General wetland type or characteristic: Emergent ____ Scrub/Shrub X Forested ____
Permanently flooded ____ Seasonally flooded X Temporarily flooded ____ Saturated ____
Types of water bodies associated with the wetland: River ____ Stream ____ Seep/Spring ____
Pond/Lake ____ Tidal ____ Drainage ditch/channel ____ Other: ____
Is the ground surface inundated? Yes X No ____ Surface water depth: to 6" at edge
Is the soil saturated? Yes X No ____ Depth to water in test hole: @ 4"
Field evidence of surface inundation or soil saturation: Saturated to surface due to capillary action, some surface scouring.
Is the wetland hydrology criterion met? Yes X No ____
Rationale: Hydrology present as soil saturation.

SUMMARY

Hydric soil present? Yes X No ____ Hydrology present? Yes X No ____
Hydrophytic vegetation present? Yes X No ____
Percent of FAC, FACW, and OBL species: 100%
Is the site a wetland? Yes X No ____
Rationale: Positive indicators present for all three wetland parameters

TEST HOLE # 1-C **OF** ____

LOCATION OF TEST HOLE Wetland C near WBC-1

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover				% cover		
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+	___ Sitka spruce	*Picea sitchensis*	FAC
___	Oregon ash	*Fraxinus latifolia*	FACW	___ Western red cedar	*Thuja plicata*	FAC
___	Quaking aspen	*Populus tremuloides*	FAC+	___ Cascara buckthorn	*Frangula purshiana*	FAC-
___	Red alder	*Alnus rubra*	FAC	___ Bigleaf maple	*Acer macrophyllum*	FACU
___	Black cottonwood	*Populus balsamifera*	FAC	___ Western hemlock	*Tsuga heterophylla*	FACU
___	Scouler's willow	*Salix scouleriana*	FAC	___ Douglas fir	*Pseudotsuga menziesii*	FACU

___ Other tree species present:_____

Dominant Shrub Species

25	Hardhack	*Spiraea douglasii*	FACW	___ Snowberry	*Symphoricarpos albus*	FACU
___	Redosier Dogwood	*Cornus sericea*	FACW	___ Scot's broom	*Cytisus scoparius*	FACU
___	Western crabapple	*Malus fusca*	FACW	___ California huckleberry	*Vaccinium ovatum*	FACU
___	Black twinberry	*Lonicera involucrata*	FAC+	___ Himalayan blackberry	*Rubus armeniacus*	FACU
___	Devil's club	*Oplopanax horridus*	FAC+	___ Salal	*Gaultheria shallon*	FACU
___	Salmonberry	*Rubus spectabilis*	FAC	___ Indian plum	*Oemleria cerasiformis*	FACU
___	Nootka rose	*Rosa nutkana*	FAC	___ Hazelnut	*Corylus cornuta*	FACU
___	Vine maple	*Acer circinatum*	FAC-	___ Oregon grape	*Mahonia nervosa*	FACU
___	English ivy	*Hedera helix*	FACU	___ Red huckleberry	*Vaccinium parvifolium*	UPL
___	Red elderberry	*Sambucus racemosa*	FACU	___ Oceanspray	*Holodiscus discolor*	UPL

___ Other shrub species present:_____

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL	___ Stinging nettle	*Urtica diocia*	FAC+
___	Cattail	*Typha latifolia*	OBL	___ Velvet grass	*Holcus lanatus*	FAC
___	Water parsley	*Oenanthe sarmentosa*	OBL	___ Lady fern	*Athyrium filix-femina*	FAC
20	Slough sedge	*Carex obnupta*	OBL	___ Horsetail	*Equisetum arvense*	FAC
___	Small fruited bulrush	*Scirpus microcarpus*	OBL	___ Youth-on-age	*Tolmiea menziesii*	FAC
___	owlfruit sedge	*Carex stipata*	OBL	___ Foam flower	*Tiarella trifoliata*	FAC-
___	Tall manna grass	*Glyceria elata*	FACW+	___ Cat's ear	*Hypochaeris radicata*	FACU
___	Soft rush	*Juncus effusus*	FACW+	___ Trailing blackberry	*Rubus ursinus*	FACU
___	Rushes	*Juncus spp.*	FACW	___ Bracken fern	*Pteridium aquilinum*	FACU
___	Creeping buttercup	*Ranunculus repens*	FACW	___ Sword fern	*Polystichum munitum*	FACU
___	Reed canarygrass	*Phalaris arundinacea*	FACW	___ Bleeding heart	*Dicentra formosa*	FACU

___ Other forb species present:_____

Percent of dominant species FAC, FACW, OBL: 100%
Is the hydrophytic vegetation criterion met? Yes X No___
Rationale: greater than 50% cover by FACW & OBL species.

UPLAND?_____ **WETLAND?** X

WETLAND TYPE: Palustrine X Riverine _____
Lacustrine_____ Estuarine_____
Forested_____ Scrub/Shrub X
Emergent_____ Open Water_____
Wet Meadow/Pasture_____

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator:_____ Date:_____
Project/Site:_____ County:_____ State:_____
Applicant/Owner:_____ Surveyor:_____
Describe current conditions of wetland and surrounding areas: Upland area NE of wetland C. Conifer forest w/ bare understory.

Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes_____ No X
If yes, what are modifiers:_____

SOILS

Mapped Series: 23 Kapowsin gravelly loam, 6-15% slopes
Hydric soils list?: Yes_____ No X Hydric Inclusion?_____

Depth	Horizon	Color Matrix	Color Mottle	Texture
0-6"		10YR2/2		duff/grsalo
6-16"		10YR5/1	10YR4/3	gr sa lo

Hydric Soil Indicators	Yes	No	Depth
Histosol			
Histic Epipedon			
Gleyed			
Sulfidic odor			
Concretions			

Is the hydric soil criterion met? Yes X No_____
Rationale: low Chroma for matrix color @ 10".

HYDROLOGY

General wetland type or characteristic: Emergent_____ Scrub/Shrub_____ Forested_____
Permanently flooded_____ Seasonally flooded_____ Temporarily flooded_____ Saturated_____
Types of water bodies associated with the wetland: River_____ Stream_____ Seep/Spring_____
Pond/Lake_____ Tidal_____ Drainage ditch/channel_____ Other:_____
Is the ground surface inundated? Yes_____ No X Surface water depth:_____
Is the soil saturated? Yes_____ No X Depth to water in test hole:_____
Field evidence of surface inundation or soil saturation: NONE

Is the wetland hydrology criterion met? Yes_____ No X
Rationale: No hydology or endence of wetland hydrology.

SUMMARY

Hydric soil present? Yes X No_____ Hydrology present? Yes_____ No X
Hydrophytic vegetation present? Yes_____ No X
Percent of FAC, FACW, and OBL species: ~33%
Is the site a wetland? Yes_____ No X
Rationale: Positive indicators present for only one of the three wetland parameters

TEST HOLE # 2-C OF_____

LOCATION OF TEST HOLE Upland NE of WBC-1

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover				% cover		
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+	___	Sitka spruce	*Picea sitchensis*	FAC
___	Oregon ash	*Fraxinus latifolia*	FACW	___	Western red cedar	*Thuja plicata*	FAC
___	Quaking aspen	*Populus tremuloides*	FAC+	___	Cascara buckthorn	*Frangula purshiana*	FAC-
___	Red alder	*Alnus rubra*	FAC	___	Bigleaf maple	*Acer macrophyllum*	FACU
___	Black cottonwood	*Populus balsamifera*	FAC	___	Western hemlock	*Tsuga heterophylla*	FACU
15	Scouler's willow	*Salix scouleriana*	FAC	___	Douglas fir	*Pseudotsuga menziesii*	FACU

___ Other tree species present:

15 Western White pine, Pinus monticola, FACU

Dominant Shrub Species

5	Hardhack	*Spiraea douglasii*	FACW	___	Snowberry	*Symphoricarpos albus*	FACU
___	Redosier Dogwood	*Cornus sericea*	FACW	___	Scot's broom	*Cytisus scoparius*	FACU
___	Western crabapple	*Malus fusca*	FACW	15	California huckleberry	*Vaccinium ovatum*	FACU
___	Black twinberry	*Lonicera involucrata*	FAC+	___	Himalayan blackberry	*Rubus armeniacus*	FACU
___	Devil's club	*Oplopanax horridus*	FAC+	10	Salal	*Gaultheria shallon*	FACU
___	Salmonberry	*Rubus spectabilis*	FAC	___	Indian plum	*Oemleria cerasiformis*	FACU
___	Nootka rose	*Rosa nutkana*	FAC	___	Hazelnut	*Corylus cornuta*	FACU
___	Vine maple	*Acer circinatum*	FAC-	___	Oregon grape	*Mahonia nervosa*	FACU
___	English ivy	*Hedera helix*	FACU	___	Red huckleberry	*Vaccinium parvifolium*	UPL
___	Red elderberry	*Sambucus racemosa*	FACU	___	Oceanspray	*Holodiscus discolor*	UPL

___ Other shrub species present:

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL	___	Stinging nettle	*Urtica diocia*	FAC+
___	Cattail	*Typha latifolia*	OBL	___	Velvet grass	*Holcus lanatus*	FAC
___	Water parsley	*Oenanthe sarmentosa*	OBL	___	Lady fern	*Athyrium filix-femina*	FAC
___	Slough sedge	*Carex obnupta*	OBL	___	Horsetail	*Equisetum arvense*	FAC
___	Small fruited bulrush	*Scirpus microcarpus*	OBL	___	Youth-on-age	*Tolmiea menziesii*	FAC
___	owlfruit sedge	*Carex stipata*	OBL	___	Foam flower	*Tiarella trifoliata*	FAC-
___	Tall manna grass	*Glyceria elata*	FACW+	___	Cat's ear	*Hypochaeris radicata*	FACU
___	Soft rush	*Juncus effusus*	FACW+	___	Trailing blackberry	*Rubus ursinus*	FACU
___	Rushes	*Juncus spp.*	FACW	___	Bracken fern	*Pteridium aquilinum*	FACU
___	Creeping buttercup	*Ranunculus repens*	FACW	T	Sword fern	*Polystichum munitum*	FACU
___	Reed canarygrass	*Phalaris arundinacea*	FACW	___	Bleeding heart	*Dicentra formosa*	FACU

___ Other forb species present:

Percent of dominant species FAC, FACW, OBL: 33%

Is the hydrophytic vegetation criterion met? Yes___ No X

Rationale: Less than 50% cover by FAC, FACW or OBL species

UPLAND? X **WETLAND?** ___

WETLAND TYPE: Palustrine___ Riverine ___
Lacustrine___ Estuarine___
Forested___ Scrub/Shrub___
Emergent___ Open Water___
Wet Meadow/Pasture___

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator: See Data Date:
Project/Site: County: State:
Applicant/Owner: Form 1-C Surveyor:
Describe current conditions of wetland and surrounding areas: Area in + around Wetland D. Upland area SE of WB D-10 in deciduous dominated area w/open canopy.
Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes ____ No X
If yes, what are modifiers:

SOILS

Mapped Series: 23-Kapowsin gravelly loam, 6-15% slopes
Hydric soils list?: Yes ____ No ____ Hydric Inclusion? ____

Depth	Horizon	Color Matrix	Color Mottle	Texture
0-4"	duff		-	
4-10"		10YR2/2	-	sandy lo
10-16"		10YR 4/2	-	sandy lo

Hydric Soil Indicators	Yes	No	Depth
Histosol			
Histic Epipedon			
Gleyed			
Sulfidic odor			
Concretions			

Is the hydric soil criterion met? Yes ____ No X
Rationale: Soil Chroma too high for matrix color w/o mottles

HYDROLOGY

General wetland type or characteristic: Emergent ____ Scrub/Shrub ____ Forested ____
Permanently flooded ____ Seasonally flooded ____ Temporarily flooded ____ Saturated ____
Types of water bodies associated with the wetland: River ____ Stream ____ Seep/Spring ____
Pond/Lake ____ Tidal ____ Drainage ditch/channel ____ Other:
Is the ground surface inundated? Yes ____ No X Surface water depth:
Is the soil saturated? Yes X No ____ Depth to water in test hole: @ 10"
Field evidence of surface inundation or soil saturation: No evidence of long term hydrology (no oxidized root channels)
Is the wetland hydrology criterion met? Yes ____ No X
Rationale: Water present in hole due to rains before site visit. No evidence of long term hydrology.

SUMMARY

Hydric soil present? Yes ____ No X Hydrology present? Yes ____ No X
Hydrophytic vegetation present? Yes ____ No X
Percent of FAC, FACW, and OBL species: ~50%
Is the site a wetland? Yes ____ No X
Rationale: No positive indicators present for any of the three wetland parameters.

TEST HOLE # 1-D **OF** ____

LOCATION OF TEST HOLE Upland near WB D-10

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover			
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+
___	Oregon ash	*Fraxinus latifolia*	FACW
___	Quaking aspen	*Populus tremuloides*	FAC+
___	Red alder	*Alnus rubra*	FAC
___	Black cottonwood	*Populus balsamifera*	FAC
25	Scouler's willow	*Salix scouleriana*	FAC

% cover			
___	Sitka spruce	*Picea sitchensis*	FAC
___	Western red cedar	*Thuja plicata*	FAC
5	Cascara buckthorn	*Frangula purshiana*	FAC-
___	Bigleaf maple	*Acer macrophyllum*	FACU
___	Western hemlock	*Tsuga heterophylla*	FACU
___	Douglas fir	*Pseudotsuga menziesii*	FACU

___ Other tree species present:_____

Dominant Shrub Species

___	Hardhack	*Spiraea douglasii*	FACW
___	Redosier Dogwood	*Cornus sericea*	FACW
___	Western crabapple	*Malus fusca*	FACW
10	Black twinberry	*Lonicera involucrata*	FAC+
___	Devil's club	*Oplopanax horridus*	FAC+
___	Salmonberry	*Rubus spectabilis*	FAC
___	Nootka rose	*Rosa nutkana*	FAC
___	Vine maple	*Acer circinatum*	FAC-
___	English ivy	*Hedera helix*	FACU
10	Red elderberry	*Sambucus racemosa*	FACU

___	Snowberry	*Symphoricarpos albus*	FACU
___	Scot's broom	*Cytisus scoparius*	FACU
___	California huckleberry	*Vaccinium ovatum*	FACU
___	Himalayan blackberry	*Rubus armeniacus*	FACU
15	Salal	*Gaultheria shallon*	FACU
___	Indian plum	*Oemleria cerasiformis*	FACU
___	Hazelnut	*Corylus cornuta*	FACU
___	Oregon grape	*Mahonia nervosa*	FACU
___	Red huckleberry	*Vaccinium parvifolium*	UPL
___	Oceanspray	*Holodiscus discolor*	UPL

___ Other shrub species present:_____

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL
___	Cattail	*Typha latifolia*	OBL
___	Water parsley	*Oenanthe sarmentosa*	OBL
___	Slough sedge	*Carex obnupta*	OBL
___	Small fruited bulrush	*Scirpus microcarpus*	OBL
___	owlfruit sedge	*Carex stipata*	OBL
___	Tall manna grass	*Glyceria elata*	FACW+
___	Soft rush	*Juncus effusus*	FACW+
___	Rushes	*Juncus spp.*	FACW
___	Creeping buttercup	*Ranunculus repens*	FACW
___	Reed canarygrass	*Phalaris arundinacea*	FACW

___	Stinging nettle	*Urtica diocia*	FAC+
___	Velvet grass	*Holcus lanatus*	FAC
___	Lady fern	*Athyrium filix-femina*	FAC
___	Horsetail	*Equisetum arvense*	FAC
___	Youth-on-age	*Tolmiea menziesii*	FAC
___	Foam flower	*Tiarella trifoliata*	FAC-
___	Cat's ear	*Hypochaeris radicata*	FACU
___	Trailing blackberry	*Rubus ursinus*	FACU
5	Bracken fern	*Pteridium aquilinum*	FACU
5	Sword fern	*Polystichum munitum*	FACU
___	Bleeding heart	*Dicentra formosa*	FACU

___ Other forb species present:_____

Percent of dominant species FAC, FACW, OBL: ~50%
Is the hydrophytic vegetation criterion met? Yes___ No X
Rationale: Not greater than 50% cover by FAC species.

UPLAND? X **WETLAND?**_____
WETLAND TYPE: Palustrine_____ Riverine _____
Lacustrine_____ Estuarine_____
Forested_____ Scrub/Shrub_____
Emergent_____ Open Water_____
Wet Meadow/Pasture_____

DATA FORM

MODIFIED
ROUTINE ON SITE DETERMINATION METHOD

Field Investigator: See Data Date:
Project/Site: County: State:
Applicant/Owner: Form I-C Surveyor:
Describe current conditions of wetland and surrounding areas: Wetland D- East end, appears to have been created in old logging area as it is a shallow depression w/ standing water & soil color is non-hydric
Has the vegetation, soils, and/or hydrology been significantly disturbed? Yes____ No X
If yes, what are modifiers:

SOILS

Mapped Series: 23-Kapowsin gravelly loam, 6-15% slopes
Hydric soils list?: Yes____ No X

Depth	Horizon	Color Matrix	Color Mottle	Texture
0-6"		10YR4/3	-	grav. lo comp
6->				compacted

Hydric Inclusion?

Hydric Soil Indicators	Yes	No	Depth
Histosol			
Histic Epipedon			
Gleyed			
Sulfidic odor			
Concretions			

Is the hydric soil criterion met? Yes X No
Rationale: soil Chroma high for matrix color but determined to be hydric due to presence of standing water

HYDROLOGY

General wetland type or characteristic: Emergent____ Scrub/Shrub X Forested____
Permanently flooded____ Seasonally flooded X Temporarily flooded____ Saturated____
Types of water bodies associated with the wetland: River____ Stream____ Seep/Spring____
Pond/Lake____ Tidal____ Drainage ditch/channel____ Other:
Is the ground surface inundated? Yes X No Surface water depth: 2"
Is the soil saturated? Yes X No Depth to water in test hole: Surface
Field evidence of surface inundation or soil saturation:

Is the wetland hydrology criterion met? Yes X No
Rationale: Hydrology present as soil saturation & inundation

SUMMARY

Hydric soil present? Yes X No____ Hydrology present? Yes X No____
Hydrophytic vegetation present? Yes X No
Percent of FAC, FACW, and OBL species: ~80%
Is the site a wetland? Yes X No
Rationale: Positive indicators present for all three wetland parameters

TEST HOLE # 2-D **OF**____

LOCATION OF TEST HOLE Wetland D near WB D-2

SEE REVERSE FOR VEGETATION

APPENDIX G

Wiltermood Associates, Inc.
1015 SW Harper Road
Port Orchard, WA 98367
(360) 876-2403

COMMON WETLAND AND NON-WETLAND VEGETATION

Dominant Tree Species

% cover				% cover			
___	Pacific willow	*Salix lucida ssp. lasiandra*	FACW+	___	Sitka spruce	*Picea sitchensis*	FAC
___	Oregon ash	*Fraxinus latifolia*	FACW	___	Western red cedar	*Thuja plicata*	FAC
___	Quaking aspen	*Populus tremuloides*	FAC+	___	Cascara buckthorn	*Frangula purshiana*	FAC-
___	Red alder	*Alnus rubra*	FAC	___	Bigleaf maple	*Acer macrophyllum*	FACU
___	Black cottonwood	*Populus balsamifera*	FAC	___	Western hemlock	*Tsuga heterophylla*	FACU
15	Scouler's willow	*Salix scouleriana*	FAC	___	Douglas fir	*Pseudotsuga menziesii*	FACU

___ Other tree species present:_____

Dominant Shrub Species

25	Hardhack	*Spiraea douglasii*	FACW	___	Snowberry	*Symphoricarpos albus*	FACU
___	Redosier Dogwood	*Cornus sericea*	FACW	___	Scot's broom	*Cytisus scoparius*	FACU
___	Western crabapple	*Malus fusca*	FACW	___	California huckleberry	*Vaccinium ovatum*	FACU
___	Black twinberry	*Lonicera involucrata*	FAC+	___	Himalayan blackberry	*Rubus armeniacus*	FACU
___	Devil's club	*Oplopanax horridus*	FAC+	___	Salal	*Gaultheria shallon*	FACU
___	Salmonberry	*Rubus spectabilis*	FAC	___	Indian plum	*Oemleria cerasiformis*	FACU
___	Nootka rose	*Rosa nutkana*	FAC	___	Hazelnut	*Corylus cornuta*	FACU
___	Vine maple	*Acer circinatum*	FAC-	___	Oregon grape	*Mahonia nervosa*	FACU
___	English ivy	*Hedera helix*	FACU	___	Red huckleberry	*Vaccinium parvifolium*	UPL
___	Red elderberry	*Sambucus racemosa*	FACU	___	Oceanspray	*Holodiscus discolor*	UPL

___ Other shrub species present:_____

Dominant Forb Species

___	Skunkcabbage	*Lysichiton americanum*	OBL	___	Stinging nettle	*Urtica diocia*	FAC+
___	Cattail	*Typha latifolia*	OBL	___	Velvet grass	*Holcus lanatus*	FAC
___	Water parsley	*Oenanthe sarmentosa*	OBL	___	Lady fern	*Athyrium filix-femina*	FAC
___	Slough sedge	*Carex obnupta*	OBL	___	Horsetail	*Equisetum arvense*	FAC
___	Small fruited bulrush	*Scirpus microcarpus*	OBL	___	Youth-on-age	*Tolmiea menziesii*	FAC
___	owlfruit sedge	*Carex stipata*	OBL	___	Foam flower	*Tiarella trifoliata*	FAC-
___	Tall manna grass	*Glyceria elata*	FACW+	___	Cat's ear	*Hypochaeris radicata*	FACU
___	Soft rush	*Juncus effusus*	FACW+	5	Trailing blackberry	*Rubus ursinus*	FACU
___	Rushes	*Juncus spp.*	FACW	___	Bracken fern	*Pteridium aquilinum*	FACU
___	Creeping buttercup	*Ranunculus repens*	FACW	___	Sword fern	*Polystichum munitum*	FACU
___	Reed canarygrass	*Phalaris arundinacea*	FACW	___	Bleeding heart	*Dicentra formosa*	FACU

___ Other forb species present:_____

Percent of dominant species FAC, FACW, OBL: ~89%
Is the hydrophytic vegetation criterion met? Yes X No___
Rationale: greater than 50% cover by FAC & FACW species

UPLAND?_____ WETLAND? X
WETLAND TYPE: Palustrine X Riverine _____
Lacustrine_____ Estuarine_____
Forested_____ Scrub/Shrub X
Emergent_____ Open Water_____
Wet Meadow/Pasture_____