

Appendix K

*Draft Supplement to the
Wetland Biology Discipline Report*

DRAFT

SUPPLEMENT TO THE WETLAND BIOLOGY DISCIPLINE REPORT

CROSS-BASE HIGHWAY

Prepared for
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INTRODUCTION

The following report is a supplement to the *Cross-Base Corridor EIS/MIS, Wetland Biology Discipline Report, Wildlife, Fisheries and Vegetation Discipline Report, Volume 2* (hereafter referred to as the 1998 Discipline Report) (Parametrix 1998). This report only describes the portion of the project area for the western terminus of the Cross-Base Highway. The remainder of the Cross-Base Highway project remains the same as described in the 1998 Discipline Report (Parametrix 1998).

PROJECT LOCATION

The western terminus of the Cross-Base Highway project is the proposed relocated Thorne Lane/I-5 interchange and Gravelly-Thorne Connector. The study area is located in the city of Lakewood and the Fort Lewis Military Reservation (Figure 1). The study area is located near Murray Road SW, continuing to the northwest across I-5 to Thorne Lane SW, up to Gravelly Lake Drive SW along the BNSF railroad. Figure 2 shows the portion of the study area where the western terminus wetlands are located. The entire project location, with the exception of the new changes to the western terminus, is described in the 1998 Discipline Report (Parametrix 1998).

PURPOSE

The purpose of the Cross-Base Highway is to reduce congestion on existing roadways and to provide a more efficient movement between I-5 and mid-Pierce County. The 1998 Draft EIS (Parametrix 1998b) describes the purpose of the Cross-Base Highway in more detail.

ALTERNATIVES

No Build Alternative

The No Build Alternative assumes that the Cross-Base Highway would not be constructed.

Build Alternatives

The build alternatives discussed herein are in regard to the western terminus of the project only. These alternatives supplement the Cross-Base Highway extending east as described in the 1998 Discipline Report (Parametrix 1998). The three alignment alternative options for the western terminus (South, South A, and South B) are shown in Figure 3 for the area west of I-5, and Figures 4, 5, and 6 for the area east of I-5.

STUDIES AND COORDINATION

Parametrix, Inc. (PMX) staff conducted field investigations within the proposed relocated Thorne Lane/I-5 interchange and Gravelly-Thorne Connector project area. Three wetlands were identified and delineated west of I-5 in October-November 2001. The fourth wetland, located east of I-5, was previously identified and delineated in February-April 1996. The information reviewed and methods used for the wetland delineations are described in the following sections.

INFORMATION REVIEWED

Prior to conducting field work, existing reports, maps, and other material were reviewed to identify whether or not wetlands were present in the project vicinity. PMX staff reviewed the following items:

- *Cross-Base Corridor EIS/MIS, Wetland Biology Discipline Report, Wildlife, Fisheries and Vegetation Discipline Report. Volume 2* (Parametrix 1998)
- National Wetlands Inventory, Steilacoom Quadrangle, WA (USFW 1987)
- Soil Survey of Pierce County (Zulauf et al. 1979)
- U.S. Geological Survey, Steilacoom, WA, 7.5 minute topographic map (1981)
- American Lake Watershed Management Plan (Woodward-Clyde 1998)

WETLAND DELINEATION METHODS

To identify and delineate wetlands within the project vicinity, PMX staff conducted field investigations from October-November 2001.

Wetlands in the study area were determined and delineated using the routine determination method outlined in the *Washington State Wetland Identification and Delineation Manual* (Washington State Department of Ecology (Ecology) 1997) and the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987). The delineation methods also applied regulatory guidance letters and memoranda that clarify delineation methods. These guidance letters and memoranda originate from the US Army Corps of Engineers (ACOE) (1982, 1986, 1990, 1992, and 1994) and Ecology (1995).

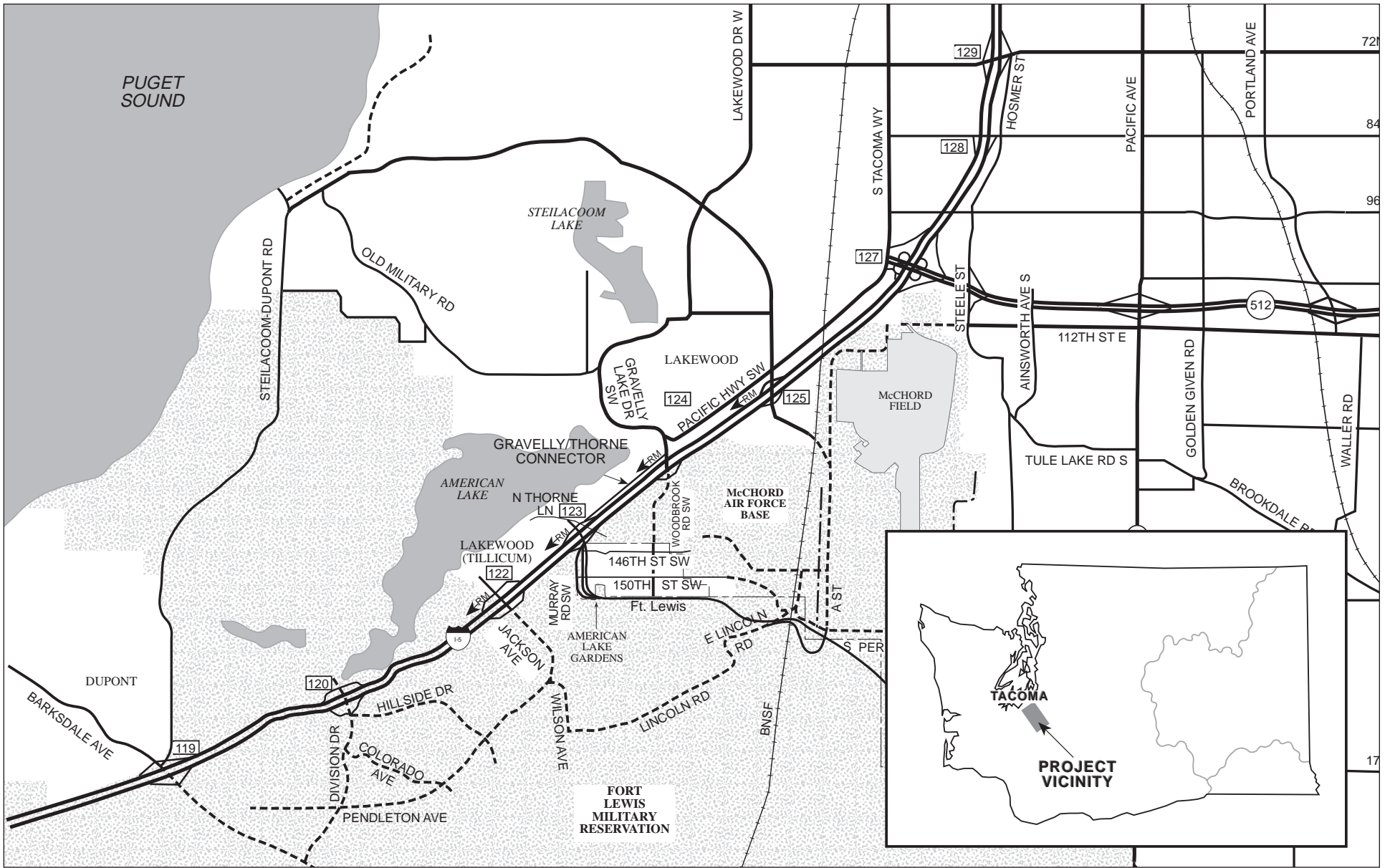
To be considered a wetland, under normal circumstances, an area must have: (1) hydrophytic (wetland) vegetation, (2) hydric soils, and (3) wetland hydrology (Ecology 1997; Environmental Laboratory 1987). Areas that do not support indicators for one or more of these three parameters are generally not regulated as wetlands.

To make the wetland determinations, PMX staff collected data from the wetland at locations that represent the typical wetland characteristics or dominant plant communities. At these sampling locations (data plots) PMX collected and recorded vegetation, soil, and hydrologic information on data sheets (Appendix A). For

comparison purposes, additional data plots were established in adjacent upland areas to document differences in vegetation, soil, and hydrology. The specific methods and criteria used to determine the presence of wetland vegetation, hydric soil, and wetland hydrology data are described in the delineation manuals.




PMX staff established the boundary between wetland and upland by determining where wetland parameters were present or absent. These areas were marked with survey flagging that were then surveyed by a professional land surveyor. Wetlands were rated according to Ecology's Washington State Wetlands Rating System for Western Washington (Ecology 1993) (Appendix B) and the municipal code of the City of Lakewood.




An area located within the triangular segment between Union Avenue SW, Thorne Lane SW, and Spruce Street SW, adjacent to the drainage channel was investigated in November 2001 and reinvestigated in December 2001. The reason for reinvestigation was that the area lies in a depression and contains a hydrophytic vegetation community but had disturbed soils and no wetland hydrology. PMX staff and the biologist for Pierce County Public Works (Mary Lynch) reinvestigated the site on December 10, 2001. All attendees confirmed that the area did not meet all three wetland criteria; therefore, this area was not considered to be a wetland.



Parametrix, Inc Cross-Base EIS/554-1588-030/02(300) 11/01



-  Ramp Meter
-  Military Property
-  Military Property Boundary

-  Roads on Military Reservation Public Use Subject to Military Permission
-  I-5 Exit Number
-  Existing N Thorne Lane SW

NOT TO SCALE

**Figure 1
Project Location**

Figure 2 Pierce County Soils Map

Figure 5 Thorne Lane Wetland South A Alignment Wetland and Buffer Impact

Figure 6 Thorne Lane Wetland South B Alignment Wetland and Buffer Impact

AFFECTED ENVIRONMENT

The National Wetland Inventory did not map any wetlands within the study area; however, four wetland areas (see Table 1) were identified and delineated within the study area and are shown on Figure 7.

Three wetlands were identified west of I-5: Wetlands A, B, and C. These wetlands are 0.27, 0.02, and 0.04 acre, respectively, and support scrub-shrub and emergent communities with forested components. All three are depressional wetlands bordered by fill slopes from surrounding roadways. A well-maintained, man-made drainage channel flows through the northwest portion of the study area. This channel begins at a culvert under Union Avenue SW. The fourth wetland, Thorne Lane Wetland, was identified east of I-5. This 2.0-acre depressional wetland's boundary is defined by fill to the northeast and residential structures to the south. Murray Road SW was constructed through the western portion of this wetland. The following sections provide descriptions of the wetlands identified within the study area.

Table 1. Summary of wetlands within the Cross-Base Highway western terminus study area.

Wetland Name	Size in Hectares (Acres)	Classification (Cowardin et al. 1979) ¹	Dominant Plant Species	Soil Mapping Unit
Wetland A	0.11 (0.27)	PSS PEM	Pacific willow, Himalayan blackberry, purple loosestrife, softstem bulrush, common cattail, reed canarygrass	Spanaway gravelly sandy loam
Wetland B	<0.01 (0.02)	PSS	Oregon ash, redstem dogwood, willow species, Douglas spirea	Spanaway gravelly sandy loam
Wetland C	0.02 (0.04)	PEM	colonial bentgrass	Spanaway gravelly sandy loam
Thorne Lane Wetland	0.80 (2.0)	PEM PSS	Reed canarygrass, willow species	Spanaway gravelly sandy loam

¹ Key to the wetland classifications (Cowardin et al. 1979): PSS Palustrine Scrub-shrub
PEM Palustrine Emergent

WETLAND A

This 0.27-acre wetland is located in a depression with slopes on all sides from surrounding roadways and development. Wetland A is bounded by the BNSF railroad and Union Avenue SW south of Thorne Lane SW (Figure 7). Most of the area is comprised of shrub and emergent communities. Data plots W1 and W2 characterize this wetland, and data plots U1 and U2 characterize the upland (Appendix A).

Figure 7 Western Terminus Wetlands and Buffers

Hydrology

A source of hydrology is located at the western corner of the wetland and possibly originates from drainage in a residential area adjacent to the southwestern boundary. Two blocked drainage pipes are present but water appeared to seep out of the western slope rather than exit the pipes. A second source of hydrology is located in the eastern corner in a culvert from under I-5 that pipes water from Thorne Lane Wetland. The culvert appeared to be partially filled with debris and vegetation. No flow originated from this culvert during the 2001 field visit. Water flows slowly through the wetland and drains northwest out of the north corner through a culvert under Union Avenue SW. The culvert under Union Ave SW opens up to a fenced off manmade drainage channel. At the end of the channel water is eventually piped to American Lake starting at the northwest end of the study area under Thorne Lane SW. During the 2001 field investigation, soils were saturated at the surface and areas of ponding were evident throughout approximately 50% of the wetland.

Soils

The Pierce County soil survey mapped Spanaway gravelly sandy loam with Dupont muck near Wetland A (Figure 2). Dupont muck is classified as a hydric soil, but was not found within the wetland area. The soil identified within the wetland consists of a gravelly loam to gravelly silty loam matching the soil texture for Spanaway gravelly sandy loam. Two data plots (W1 and W2) in the wetland contain a reduced soil matrix with a matrix color of greenish gray (10Y 5/1) and very dark gray (10YR 3/1) from 0 to 18 inches in the A horizon.

Two upland data plots (U1 and U2) have matrix colors of very dark brown (10YR 2/3), very dark brown (10YR 2/2), and very dark brown (10YR 3/3) with sandy loam and gravelly loam textures.

Vegetation

This depressional wetland contains palustrine scrub-shrub and palustrine emergent habitat. Wetland vegetation is dominated by Pacific willow (*Salix lasiandra*) and Himalayan blackberry (*Rubus discolor*) in the scrub-shrub layer and purple loosestrife (*Lythrum salicaria*), softstem bulrush (*Scirpus tabernaemontanii*), common cattail (*Typha latifolia*), and reed canarygrass (*Phalaris arundinacea*) in the emergent layer. Duckweed (*Lemna minor*) is present in the ponding water.

Dominant vegetation on the adjacent upland slopes are black cottonwoods (*Populus balsamifera*) with patches of Oregon ash (*Fraxinus latifolia*), Oregon white oak (*Quercus garryana*), and red alder (*Alnus rubra*). Himalayan blackberry and reed canarygrass dominate the scrub-shrub and emergent layers.

Wetland Rating

Wetland A scored less than 22 points on the *Washington State Wetland Rating System* (Ecology 1993) field data forms, therefore meeting the criteria for a Category III wetland (Appendix B). Wetland A is a Category III wetland under the municipal code of the City of Lakewood and requires a 50-ft buffer.

WETLAND B

Wetland B is located at the base of a slope in a depression area in the triangular area bounded by Union Avenue SW, Thorne Lane SW, and Spruce Street SW (Figure 7). This 0.02-acre wetland is within a forested area and contains a shrub community. Data plot BW-1 characterizes this wetland and data plot AU-1 characterizes the upland (Appendix A).

Hydrology

During the 2001 field observation, Wetland B had saturated soils at 11 inches below the surface (data plot BW-1). Groundwater, precipitation, and seeps on adjacent southwestern slope are the primary sources of wetland hydrology. Additionally, a nearby manmade koi pond may be another source of wetland hydrology through leaks in the containment walls and drainage/overflow of the pond.

Soils

The Pierce County soil survey mapped this wetland area as Spanaway gravelly sandy loam (Figure 2). Soils investigated during the visit did not match this soil map unit. Wetland B's A horizon has a black (10YR 2/1) soil matrix color and a gravelly silty loam texture from 0-7 inches. Organic material is present in the A horizon. The B horizon is gray (2.5Y 4/1) from 7-12 inches then dark gray (2.5Y 5/1) from 12-18 inches and below. This lower horizon is a compacted layer of diatomaceous earth.

The nearby upland data plot (AU-1) is a gravelly sandy loam from 0-18 inches. The soil matrix color is very dark gray (10YR 3/1) with no mottles. There is high organic content in this horizon.

Vegetation

Wetland B contains palustrine scrub-shrub habitat, and is surrounded by a deciduous forested habitat. Dominant vegetation in this wetland is Oregon ash with a few patches of redstem dogwood (*Cornus stolonifera*), willow species (*Salix* spp.), and Douglas spirea (*Spiraea douglasii*).

Upland areas near Wetland B are shaded by mature black cottonwoods and Oregon ash. Domestic grasses are dominant in the upland herbaceous layer.

Wetland Rating

Wetland B scored less than 22 points on the Ecology wetland rating field data forms, therefore meeting the criteria for a Category III wetland (Appendix B). Wetland B is a Category III wetland under the municipal code of the City of Lakewood and requires a 50-ft buffer.

WETLAND C

Wetland C is in a backwater of a manmade drainage channel located in the depressional area bounded by Union Avenue SW, Thorne Lane SW, and Spruce Street SW (Figure 7). The 0.04-acre wetland contains an emergent vegetation community. Data plot CW-1 characterizes this wetland and data plot CU-1 characterizes the upland (Appendix A).

Hydrology

A drainage channel flowing from Wetland A under Union Avenue SW is the primary source of hydrology that supports this wetland. During the 2001 field investigation, areas of ponding were evident in scattered micro-depressions throughout the wetland and soil was saturated to the surface. Secondary indicators of wetland hydrology, water stained leaves, were also present.

Soils

The soil survey mapped this wetland area Spanaway gravelly sandy loam with Dupont Muck nearby (Figure 2). The soil profile observed at data plot CU-1 matches Spanaway gravelly sandy loam. No muck was found within the wetland or surrounding area. The soil within Wetland C is a very dark gray (10YR 3/1) sandy loam in the A horizon (0 to 6 inches), and a light olive brown (2.5Y 5/3) gravelly sand in the B horizon (6 to 15+ inches). Soil is compacted with gravel and cobbles making it difficult to dig a soil pit below 15 inches. Few mottles were observed in the B horizon. They are fine in contrast and have a yellowish brown (10YR 5/6) color. Sulfidic odor is present near the drainage channel.

The upland data plot adjacent to Wetland C had a gravelly sandy loam A horizon from 0 to 13 inches with a very dark gray (10YR 3/1) matrix color. The gravelly sandy B horizon extended from 13 to 19 inches with few yellowish brown (10YR 5/6) mottles in the light olive brown (2.5Y 5/3) matrix.

Vegetation

Wetland C contains palustrine emergent habitat. Colonial bentgrass (*Agrostis capillaris*) is the dominant species in this wetland with small patches of reed canarygrass and red clover (*Trifolium pratense*). Moss was growing through out the wetland area.

Nearby upland areas are mixes of deciduous and coniferous forested areas. Dominant species are Douglas fir (*Pseudotsuga menziesii*), Oregon ash, common hawthorn (*Crataegus monogyna*), and Himalayan blackberry.

Wetland Rating

Wetland C scored less than 22 points on the Ecology wetland rating field data forms, therefore meeting the criteria for a Category III wetland (Appendix B). Wetland C is a Category III wetland under the municipal code of the City of Lakewood and requires a 50-ft buffer.

THORNE LANE WETLAND

The description of Thorne Lane Wetland is found in the 1998 Discipline Report (Parametrix 1998).

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USGS (U.S. Geological Survey). 1981. Steilacoom, Washington, 7.5 minute topographic map. Reston, Virginia.

Woodward-Clyde. 1998. American Lake Watershed Management Plan, Prepared for Pierce County Department of Public Works and Utilities-Environmental Services.

Zulauf, A.S. 1979. Soil Survey of Pierce County Area, Washington. U.S.D.A., Soil Conservation Service, Washington, Agricultural Experimental Station.

ATTACHMENT A

Wetland Delineation Data Forms



Data Plot #: U1
 Wetland: A

WETLAND DETERMINATION

(Modified from: 1987 COE Wetlands Delineation Manual)

Project/Site: Cross Base - Thorne Lane Date: 10/4/01
 Applicant/Owner: Pierce County County: Pierce
 Investigator: Patrick Togher, Colin Worsley State: WA

1987 Method 1989 Method Community ID: Upland

Do Normal Circumstances exist on the site? Yes X No Field Plot ID: U1

Is the site significantly disturbed (Atypical Situation)? Yes No X

Is the area a potential Problem Area? Yes No X

Remarks (Explain sample location, disturbances, problem areas):

VEGETATION (✓ Dominant species are checked)

Plant Species	% Cover	Stratum	Indicator
✓ 1. <u>Phalaris arundinacea</u>	<u>50</u>	<u>Herb</u>	<u>FACW</u>
✓ 2. <u>Populus trichocarpa (s)</u>	<u>40</u>	<u>Shrub</u>	<u>FAC</u>
✓ 3. <u>Rosa nutkana</u>	<u>20</u>	<u>Shrub</u>	<u>FAC-</u>
✓ 4. <u>Rubus discolor</u>	<u>80</u>	<u>Shrub</u>	<u>FACU</u>

Percent of **Dominant Species** that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. "T" indicates trace. 75

Remarks (Describe disturbances, relevant local variations, seasonal effects, etc.):

HYDROLOGY

Recorded Data (Describe in Remarks):

- Stream, Lake, or Tide Gage
- Aerial Photograph
- Other
- X No Recorded Data Available

Wetland Hydrology Indicators (Describe in Remarks):

Primary Indicators:

- Inundated
- Saturated in Upper 12 inches
- Saturated in Upper 18 inches
- Water Marks
- Drift Lines
- Sediment Deposits
- Drainage Patterns in Wetlands

Field Observations:

- Depth of Surface Water: none (in.)
- Depth to Free Water in Pit: >14 (in.)
- Depth to Saturated Soil: >14 (in.)

Secondary Indicators (2 or more required):

- Oxidized Root Channels in Upper 12 inches
- Water-Stained Leaves
- Local Soil Survey Data
- Other (Explain in Remarks)

Remarks (As relevant, describe recent precipitation, hydrologic modifications, local variations, etc.):

Soils are dry to 12 inches. There are no primary or secondary hydrology indicators present.

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Data Plot #: U1
 Wetland: A

Project/Site: Cross Base - Thorne Lane Date: 10/4/01

SOILS

Soil Survey Data:

Map Unit Name: _____ Drainage Class: _____

Field Observations Confirm Mapped Type?

Taxonomy (Subgroup): _____ Yes ___ No X NA ___

Profile Description:

Depth (Inches)	Horizon Designation	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-14+	A	10 YR 3/3	none	none	Gravelly loam

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> Listed on State Hydric Soils List |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Probable Aquic Moisture Regime | <input type="checkbox"/> Aquic Moisture Regime |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Mottles |
| <input type="checkbox"/> High Organic Content in Surface Layer | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks (Describe soil disturbances, local variations, etc.):

Dense gravelly layer at 14 + inch depth. There are no hydric soil indicators present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <u>X</u> No ___	Is this Sampling Point Within a Wetland? Yes ___ No <u>X</u>
Hydric Soils Present?	Yes ___ No <u>X</u>	
Wetland Hydrology Present?	Yes ___ No <u>X</u>	

Remarks (If applicable, explain any differences between 1987 and 1989 delineation results):

This sample location did not meet the hydric soils or wetland hydrology criteria, therefore it is determined not to be in a wetland.

DRAFT



Data Plot #: U2
 Wetland: A

WETLAND DETERMINATION

(Modified from: 1987 COE Wetlands Delineation Manual)

Project/Site: Cross Base - Thorne Lane Date: 10/4/01
 Applicant/Owner: Pierce County County: Pierce
 Investigator: Patrick Togher, Colin Worsley State: WA

1987 Method 1989 Method Community ID: Upland

Do Normal Circumstances exist on the site? Yes X No _____ Field Plot ID: U2

Is the site significantly disturbed (Atypical Situation)? Yes _____ No X

Is the area a potential Problem Area? Yes _____ No X

Remarks (Explain sample location, disturbances, problem areas):

VEGETATION (✓ Dominant species are checked)

	Plant Species	% Cover	Stratum	Indicator
1.	<u>Crataegus monogyna</u>	<u>10</u>	<u>Shrub</u>	<u>FAC-</u>
2.	<u>Rosa nutkana</u>	<u>2</u>	<u>Shrub</u>	<u>FAC-</u>
✓ 3.	<u>Alnus rubra</u>	<u>20</u>	<u>Tree</u>	<u>FAC</u>
✓ 4.	<u>Fraxinus latifolia</u>	<u>20</u>	<u>Tree</u>	<u>FACW</u>
✓ 5.	<u>Quercus garryana</u>	<u>20</u>	<u>Tree</u>	<u>NI</u>

Percent of **Dominant Species** that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. "T" indicates trace. 66

Remarks (Describe disturbances, relevant local variations, seasonal effects, etc.):

Quercus garryana is not listed with an indicator status but grows in drier areas. Soils are extremely dry - powder dry. Not a sufficient representation of a hydrophytic community.

HYDROLOGY

Recorded Data (Describe in Remarks):

- _____ Stream, Lake, or Tide Gage
- _____ Aerial Photograph
- _____ Other
- X _____ No Recorded Data Available

Wetland Hydrology Indicators (Describe in Remarks):

- Primary Indicators:
- _____ Inundated
 - _____ Saturated in Upper 12 inches
 - _____ Saturated in Upper 18 inches
 - _____ Water Marks
 - _____ Drift Lines
 - _____ Sediment Deposits
 - _____ Drainage Patterns in Wetlands

Field Observations:

- Depth of Surface Water: none (in.)
- Depth to Free Water in Pit: >18 (in.)
- Depth to Saturated Soil: >18 (in.)

Secondary Indicators (2 or more required):

- _____ Oxidized Root Channels in Upper 12 inches
- _____ Water-Stained Leaves
- _____ Local Soil Survey Data
- _____ Other (Explain in Remarks)

Remarks (As relevant, describe recent precipitation, hydrologic modifications, local variations, etc.):

There are no primary or secondary indicators of wetland hydrology present. Soil profile is powder dry to 18" deep.

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Data Plot #: U2
 Wetland: A

Project/Site: Cross Base - Thorne Lane Date: 10/4/01

SOILS

Soil Survey Data:

Map Unit Name: _____ Drainage Class: _____

Field Observations Confirm Mapped Type?

Taxonomy (Subgroup): _____ Yes No NA

Profile Description:

Depth (Inches)	Horizon Designation	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-7	A	10 YR 2/2	none	none	Sandy Loam
7-18+	B	10 YR 3/2	none	none	Sandy Loam

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> Listed on State Hydric Soils List |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Probable Aquic Moisture Regime | <input type="checkbox"/> Aquic Moisture Regime |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Mottles |
| <input type="checkbox"/> High Organic Content in Surface Layer | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks (Describe soil disturbances, local variations, etc.):
There are no hydric soil indicators present. Soil is extremely dry throughout profile.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is this Sampling Point Within a Wetland?
Hydric Soils Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

Remarks (If applicable, explain any differences between 1987 and 1989 delineation results):
This sample location did not meet the hydric soils or wetland hydrology criteria, therefore it is determined no in a wetland.

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Data Plot #: W1
 Wetland: A

WETLAND DETERMINATION (Modified from: 1987 COE Wetlands Delineation Manual)

Project/Site: Cross Base - Thorne Lane Date: 10/4/01
 Applicant/Owner: Pierce County County: Pierce
 Investigator: Patrick Togher, Colin Worsley State: WA

1987 Method 1989 Method Community ID: Wetland
 Do Normal Circumstances exist on the site? Yes X No _____ Field Plot ID: W1
 Is the site significantly disturbed (Atypical Situation)? Yes _____ No X
 Is the area a potential Problem Area? Yes _____ No X

Remarks (Explain sample location, disturbances, problem areas):

VEGETATION (✓ Dominant species are checked)

Plant Species	% Cover	Stratum	Indicator
✓ 1. <u>Lythrum salicaria</u>	<u>25</u>	<u>Herb</u>	<u>FACW+</u>
2. <u>Phalaris arundinacea</u>	<u>15</u>	<u>Herb</u>	<u>FACW</u>
✓ 3. <u>Scirpus tabernaemontanii</u>	<u>20</u>	<u>Herb</u>	<u>OBL</u>
4. <u>Solanum dulcamara</u>	<u>T</u>	<u>Herb</u>	<u>FAC+</u>
✓ 5. <u>Typha latifolia</u>	<u>80</u>	<u>Herb</u>	<u>OBL</u>
6. <u>Cornus sericea</u>	<u>5</u>	<u>Shrub</u>	<u>FACW</u>
7. <u>Populus trichocarpa (s)</u>	<u>15</u>	<u>Shrub</u>	<u>FAC</u>
✓ 8. <u>Rubus discolor</u>	<u>20</u>	<u>Shrub</u>	<u>FACU</u>
9. <u>Spiraea douglasii</u>	<u>2</u>	<u>Shrub</u>	<u>FACW</u>

Percent of **Dominant Species** that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. "T" indicates trace. 75

Remarks (Describe disturbances, relevant local variations, seasonal effects, etc.):
Hydrophytic vegetation is dominant in sample location.

HYDROLOGY

Recorded Data (Describe in Remarks):

- Stream, Lake, or Tide Gage
- Aerial Photograph
- Other
- No Recorded Data Available

Wetland Hydrology Indicators (Describe in Remarks):

- Primary Indicators:
- Inundated
 - Saturated in Upper 12 inches
 - Saturated in Upper 18 inches
 - Water Marks
 - Drift Lines
 - Sediment Deposits
 - Drainage Patterns in Wetlands

Field Observations:

Depth of Surface Water: 0 (in.)
 Depth to Free Water in Pit: 0 (in.)
 Depth to Saturated Soil: 0 (in.)

Secondary Indicators (2 or more required):

- Oxidized Root Channels in Upper 12 inches
- Water-Stained Leaves
- Local Soil Survey Data
- Other (Explain in Remarks)

Remarks (As relevant, describe recent precipitation, hydrologic modifications, local variations, etc.):
There are areas of ponding within sample location and in surrounding area. Lemna is present in standing water.

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Data Plot #: W1
Wetland: A

Project/Site: Cross Base - Thorne Lane Date: 10/4/01

SOILS

Soil Survey Data:

Map Unit Name: _____ Drainage Class: _____

Field Observations Confirm Mapped Type?

Taxonomy (Subgroup): _____ Yes No NA

Profile Description:

Depth (Inches)	Horizon Designation	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-18	A	10 Y 5/1	none	none	Gravelly silt loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> Listed on State Hydric Soils List |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Probable Aquic Moisture Regime | <input type="checkbox"/> Aquic Moisture Regime |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Mottles |
| <input type="checkbox"/> High Organic Content in Surface Layer | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks (Describe soil disturbances, local variations, etc.):

Gleyed soil is present. Evidence of prolonged saturation meets hydric soil criterion.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No Is this Sampling Point Within a Wetland?
Hydric Soils Present? Yes No Yes No
Wetland Hydrology Present? Yes No

Remarks (If applicable, explain any differences between 1987 and 1989 delineation results):

This sample location met all three wetland criteria. It is determined to be within the wetland.

DRAFT



Data Plot #: W2
 Wetland: A

WETLAND DETERMINATION

(Modified from: 1987 COE Wetlands Delineation Manual)

Project/Site: Cross Base - Thome Lane Date: 10/4/01
 Applicant/Owner: Pierce County County: Pierce
 Investigator: Patrick Togher, Colin Worsley State: WA

1987 Method 1989 Method Community ID: Wetland
 Do Normal Circumstances exist on the site? Yes X No Field Plot ID: W2
 Is the site significantly disturbed (Atypical Situation)? Yes No X
 Is the area a potential Problem Area? Yes No X

Remarks (Explain sample location, disturbances, problem areas):

VEGETATION (✓ Dominant species are checked)

Plant Species	% Cover	Stratum	Indicator
✓ 1. <u>Phalaris arundinacea</u>	<u>40</u>	<u>Herb</u>	<u>FACW</u>
2. <u>Rubus discolor</u>	<u>T</u>	<u>Shrub</u>	<u>FACU</u>
✓ 3. <u>Salix lucida ssp. lasiandra</u>	<u>80</u>	<u>Shrub</u>	<u>FACW+</u>
4. <u>Salix sitchensis</u>	<u>10</u>	<u>Tree</u>	<u>FACW</u>

Percent of **Dominant Species** that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. "T" indicates trace. 100

Remarks (Describe disturbances, relevant local variations, seasonal effects, etc.):
Dominant species are Salix lucida ssp. lasiandra and Phalaris arundinacea; both hydrophytic vegetation.

HYDROLOGY

Recorded Data (Describe in Remarks):
 Stream, Lake, or Tide Gage
 Aerial Photograph
 Other
X No Recorded Data Available

Wetland Hydrology Indicators (Describe in Remarks):
 Primary Indicators:

 Inundated
X Saturated in Upper 12 inches
 Saturated in Upper 18 inches
 Water Marks
 Drift Lines
 Sediment Deposits
X Drainage Patterns in Wetlands

Field Observations:
 Depth of Surface Water: 0 (in.)
 Depth to Free Water in Pit: 0 (in.)
 Depth to Saturated Soil: 0 (in.)

Secondary Indicators (2 or more required):
 Oxidized Root Channels in Upper 12 inches
 Water-Stained Leaves
 Local Soil Survey Data
 Other (Explain in Remarks)

Remarks (As relevant, describe recent precipitation, hydrologic modifications, local variations, etc.):
There are areas of ponding within sample locations and surrounding area.



Data Plot #: W2
 Wetland: A

Project/Site: Cross Base - Thorne Lane Date: 10/4/01

SOILS

Soil Survey Data:

Map Unit Name: _____ Drainage Class: _____

Field Observations Confirm Mapped Type?

Taxonomy (Subgroup): _____ Yes No NA

Profile Description:

Depth (Inches)	Horizon Designation	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-18	A	10 YR 3/1	none	none	Gravelly Silt Loam

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> Listed on State Hydric Soils List |
| <input checked="" type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Probable Aquic Moisture Regime | <input type="checkbox"/> Aquic Moisture Regime |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Mottles |
| <input type="checkbox"/> High Organic Content in Surface Layer | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks (Describe soil disturbances, local variations, etc.):
Evidence of prolonged saturation meets hydric soil conditions.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is this Sampling Point Within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soils Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks (If applicable, explain any differences between 1987 and 1989 delineation results):
This sample location met all three wetland criteria. It is determined to be within the wetland.



Data Plot #: AU-1
 Wetland: B

WETLAND DETERMINATION

(Modified from: 1987 COE Wetlands Delineation Manual)

Project/Site: Cross Base - Thorne Lane / NW of Union Date: 11/26/01
 Applicant/Owner: Pierce County County: Pierce
 Investigator: Patrick Togher, Colin Worsley State: WA
 1987 Method 1989 Method Community ID: Upland
 Do Normal Circumstances exist on the site? Yes X No _____ Field Plot ID: AU-1
 Is the site significantly disturbed (Atypical Situation)? Yes _____ No X
 Is the area a potential Problem Area? Yes _____ No X

Remarks (Explain sample location, disturbances, problem areas):
This sample location is located in a depression near a manmade drainage channel.

VEGETATION (✓ Dominant species are checked)

Plant Species	% Cover	Stratum	Indicator
✓ 1. Domestic Grass	80	Herb	NI
2. Geum macrophyllum	T	Herb	FAC+
✓ 3. Melissa officianalis	30	Herb	NL
✓ 4. Ranunculus repens	30	Herb	FACW
5. Domestic Fruit Trees	5	Shrub	NI
✓ 6. Rubus discolor	30	Shrub	FACU
✓ 7. Populus balsamifera	30	Tree	FAC

Percent of Dominant Species that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. "T" indicates trace. 67

Remarks (Describe disturbances, relevant local variations, seasonal effects, etc.):
Seedheads were not visible on grass, making identification difficult. Dominant vegetation is hydrophytic because greater than 50% of dominant vegetation is FAC or wetter.

HYDROLOGY

Recorded Data (Describe in Remarks):
 _____ Stream, Lake, or Tide Gage
 _____ Aerial Photograph
 _____ Other
X No Recorded Data Available

Wetland Hydrology Indicators (Describe in Remarks):

Primary Indicators:
 _____ Inundated
 _____ Saturated in Upper 12 inches
 _____ Saturated in Upper 18 inches
 _____ Water Marks
 _____ Drift Lines
 _____ Sediment Deposits
 _____ Drainage Patterns in Wetlands

Field Observations:
 Depth of Surface Water: none (in.)
 Depth to Free Water in Pit: none (in.)
 Depth to Saturated Soil: none (in.)

Secondary Indicators (2 or more required):
 _____ Oxidized Root Channels in Upper 12 inches
 _____ Water-Stained Leaves
 _____ Local Soil Survey Data
 _____ Other (Explain in Remarks)

Remarks (As relevant, describe recent precipitation, hydrologic modifications, local variations, etc.):
No primary or secondary indicators of wetland hydrology are present.

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Data Plot #: AU-1
Wetland: B

Project/Site: Cross Base - Thorne Lane / NW of Union Date: 11/26/01

SOILS

Soil Survey Data:

Map Unit Name: Spanaway gravelly sandy loam Drainage Class: _____

Field Observations Confirm Mapped Type?

Taxonomy (Subgroup): Andic Xeromdrepts Yes X No _____ NA _____

Profile Description:

Depth (Inches)	Horizon Designation	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-18+	A	10 YR 3/1	none	none	gravelly sandy loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> Listed on State Hydric Soils List
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Probable Aquic Moisture Regime	<input type="checkbox"/> Aquic Moisture Regime
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Mottles
<input type="checkbox"/> High Organic Content in Surface Layer	<input type="checkbox"/> Other (Explain in Remarks)

Remarks (Describe soil disturbances, local variations, etc.):

There is a high organic content in the A horizon.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes X No _____ Is this Sampling Point Within a Wetland?
Hydric Soils Present? Yes X No _____ Yes _____ No X
Wetland Hydrology Present? Yes _____ No X

Remarks (If applicable, explain any differences between 1987 and 1989 delineation results):

Data plot is 1-2 feet higher in elevation than the rest of the area. Wetland hydrology criteria was not met; therefore this sample plot is determined not to be in a wetland.

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Data Plot #: BW1
 Wetland: B

WETLAND DETERMINATION

(Modified from: 1987 COE Wetlands Delineation Manual)

Project/Site: Cross Base - Thorne Lane / NW of Union Date: 11/26/01
 Applicant/Owner: Pierce County County: Pierce
 Investigator: Patrick Togher, Colin Worsley State: WA

1987 Method 1989 Method

Community ID: PFO

Do Normal Circumstances exist on the site? Yes X No _____
 Is the site significantly disturbed (Atypical Situation)? Yes _____ No X
 Is the area a potential Problem Area? Yes _____ No X

Field Plot ID: BW1

Remarks (Explain sample location, disturbances, problem areas):

This sample location is on the edge of a depression, adjacent to the toe of a slope.

VEGETATION (✓ Dominant species are checked)

Plant Species	% Cover	Stratum	Indicator
1. <u>Hedera helix</u>	<u>T</u>	<u>Herb</u>	<u>NL</u>
2. <u>Moss spp.</u>	<u>T</u>	<u>Herb</u>	<u>NI</u>
3. <u>Cornus sericea</u>	<u>15</u>	<u>Shrub</u>	<u>FACW</u>
4. <u>Crataegus monogyna</u>	<u>T</u>	<u>Shrub</u>	<u>FACU+</u>
5. <u>Rubus discolor</u>	<u>t</u>	<u>Shrub</u>	<u>FACU</u>
6. <u>Salix spp.</u>	<u>15</u>	<u>Shrub</u>	<u>FAC-FACW</u>
7. <u>Spiraea douglasii</u>	<u>10</u>	<u>Shrub</u>	<u>FACW</u>
✓ 8. <u>Fraxinus latifolia</u>	<u>20</u>	<u>Tree</u>	<u>FACW</u>
9. <u>Pseudotsuga menziesii</u>	<u>T</u>	<u>Tree</u>	<u>FACU</u>

Percent of **Dominant Species** that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. "T" indicates trace.

75

Remarks (Describe disturbances, relevant local variations, seasonal effects, etc.):

75% of plants are FAC or wetter. This meets the hydrophytic vegetation criteria.

HYDROLOGY

Recorded Data (Describe in Remarks):

_____ Stream, Lake, or Tide Gage
 _____ Aerial Photograph
 _____ Other
X No Recorded Data Available

Wetland Hydrology Indicators (Describe in Remarks):

Primary Indicators:

_____ Inundated
X Saturated in Upper 12 inches
 _____ Saturated in Upper 18 inches
 _____ Water Marks
 _____ Drift Lines
 _____ Sediment Deposits
 _____ Drainage Patterns in Wetlands

Field Observations:

Depth of Surface Water: None (in.)
 Depth to Free Water in Pit: >18 (in.)
 Depth to Saturated Soil: 11 (in.)

Secondary Indicators (2 or more required):

_____ Oxidized Root Channels in Upper 12 inches
 _____ Water-Stained Leaves
 _____ Local Soil Survey Data
 _____ Other (Explain in Remarks)

Remarks (As relevant, describe recent precipitation, hydrologic modifications, local variations, etc.):

There is evidence of seeping from slope above the wetland.

DRAFT

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Data Plot #: BW1
 Wetland: B

Project/Site: Cross Base - Thorne Lane / NW of Union Date: 11/26/01

SOILS

Soil Survey Data:

Map Unit Name: Spanaway gravelly sandy loam Drainage Class: _____

Field Observations Confirm Mapped Type? _____

Taxonomy (Subgroup): Andic Xerumbrepts Yes ___ No X NA ___

Profile Description:

Depth (Inches)	Horizon Designation	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-7	A	10 YR 2/1	none	none	gravelly silt loam
7-12	B1	2.5 Y 4/1	none	none	ash, compacted
12-18+	B	2.5 Y 5/1	none	none	ash, compacted

Hydric Soil Indicators:

- | | |
|---|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> Listed on State Hydric Soils List |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Probable Aquic Moisture Regime | <input type="checkbox"/> Aquic Moisture Regime |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Mottles |
| <input type="checkbox"/> High Organic Content in Surface Layer | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks (Describe soil disturbances, local variations, etc.):

Low chroma and organic material in A horizon.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <u>X</u> No ___	Is this Sampling Point Within a Wetland?	
Hydric Soils Present?	Yes <u>X</u> No ___		Yes <u>X</u> No ___
Wetland Hydrology Present?	Yes <u>X</u> No ___		

Remarks (If applicable, explain any differences between 1987 and 1989 delineation results):

All three wetland criteria are present. Adjacent pond is a possible source of water. Pond is filled by hose and is earth banked.

DRAFT



Data Plot #: CU-1
 Wetland: C

WETLAND DETERMINATION

(Modified from: 1987 COE Wetlands Delineation Manual)

Project/Site: Cross Base - Thorne Lane / NW of Union Date: 11/27/01
 Applicant/Owner: Pierce County County: Pierce
 Investigator: Colin Worsley State: WA
 1987 Method 1989 Method Community ID: Upland
 Do Normal Circumstances exist on the site? Yes X No Field Plot ID: CU-1
 Is the site significantly disturbed (Atypical Situation)? Yes No X
 Is the area a potential Problem Area? Yes No X

Remarks (Explain sample location, disturbances, problem areas):
This sample location is at the bottom of a slope.

VEGETATION (✓ Dominant species are checked)

Plant Species	% Cover	Stratum	Indicator
1. <u>Agrostis capillaris</u>	<u>2</u>	<u>Herb</u>	<u>FAC</u>
✓ 2. <u>Crataegus monogyna.</u>	<u>35</u>	<u>Shrub</u>	<u>FACU+</u>
3. <u>Rosa eglanteria</u>	<u>2</u>	<u>Shrub</u>	<u>FACW</u>
✓ 4. <u>Rubus discolor</u>	<u>25</u>	<u>Shrub</u>	<u>FACU</u>
5. <u>Symphoricarpos albus</u>	<u>10</u>	<u>Shrub</u>	<u>FACU</u>
✓ 6. <u>Fraxinus latifolia</u>	<u>20</u>	<u>Tree</u>	<u>FACW</u>
7. <u>Populus balsamifera</u>	<u>5</u>	<u>Tree</u>	<u>FAC</u>
✓ 8. <u>Pseudotsuga menziesii</u>	<u>20</u>	<u>Tree</u>	<u>FACU</u>

Percent of **Dominant Species** that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. "T" indicates trace. 25

Remarks (Describe disturbances, relevant local variations, seasonal effects, etc.):
Less than 50% of the vegetation is hydrophytic, therefore the hydrophytic vegetation criteria has not been met.

HYDROLOGY

Recorded Data (Describe in Remarks):
 Stream, Lake, or Tide Gage
 Aerial Photograph
 Other
 No Recorded Data Available

Wetland Hydrology Indicators (Describe in Remarks):
 Primary Indicators:
 Inundated
 Saturated in Upper 12 inches
 Saturated in Upper 18 inches
 Water Marks
 Drift Lines
 Sediment Deposits
 Drainage Patterns in Wetlands

Field Observations:
 Depth of Surface Water: none (in.)
 Depth to Free Water in Pit: none (in.)
 Depth to Saturated Soil: none (in.)

Secondary Indicators (2 or more required):
 Oxidized Root Channels in Upper 12 inches
 Water-Stained Leaves
 Local Soil Survey Data
 Other (Explain in Remarks)

Remarks (As relevant, describe recent precipitation, hydrologic modifications, local variations, etc.):
No primary indicators of wetland hydrology are present.

Parametrix, Inc.



Data Plot #: CU-1
 Wetland: C

Project/Site: Cross Base - Thorne Lane / NW of Union Date: 11/27/01

SOILS

Soil Survey Data:

Map Unit Name: Spanaway gravelly sandy loam Drainage Class: _____

Field Observations Confirm Mapped Type?

Taxonomy (Subgroup): Andic Xerumbrepts Yes X No _____ NA _____

Profile Description:

Depth (Inches)	Horizon Designation	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-13	A	10 YR 3/1	none	none	gravelly sandy loam
13-19	B	2.5 Y 4/3	10 YR 5/6	few, fine	gravelly sand

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> Listed on State Hydric Soils List |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Probable Aquic Moisture Regime | <input type="checkbox"/> Aquic Moisture Regime |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input checked="" type="checkbox"/> Mottles |
| <input type="checkbox"/> High Organic Content in Surface Layer | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks (Describe soil disturbances, local variations, etc.):

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is this Sampling Point Within a Wetland? Yes _____ No <u>X</u>
Hydric Soils Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	

Remarks (If applicable, explain any differences between 1987 and 1989 delineation results):

No wetland criteria are present; therefore this area is determined in an upland.

DRAFT



Data Plot #: CW-1
 Wetland: C

WETLAND DETERMINATION

(Modified from: 1987 COE Wetlands Delineation Manual)

Project/Site: Cross Base - Thorne Lane / NW of Union Date: 11/27/01
 Applicant/Owner: Pierce County County: Pierce
 Investigator: Colin Worsley, Elaine Maher State: WA

1987 Method 1989 Method

Community ID: PEM

Do Normal Circumstances exist on the site? Yes X No

Field Plot ID: CW-1

Is the site significantly disturbed (Atypical Situation)? Yes No X

Is the area a potential Problem Area? Yes No X

Remarks (Explain sample location, disturbances, problem areas):

This sample location is located adjacent to a manmade drainage channel in a small depression.

VEGETATION (✓ Dominant species are checked)

Plant Species	% Cover	Stratum	Indicator
✓ 1. <u>Agrostis capillaris</u>	<u>30</u>	<u>Herb</u>	<u>FAC</u>
2. <u>Epilobium angustifolium</u>	<u>T</u>	<u>Herb</u>	<u>FACU+</u>
3. <u>Juncus spp.</u>	<u>T</u>	<u>Herb</u>	<u> </u>
✓ 4. <u>Moss spp.</u>	<u>60</u>	<u>Herb</u>	<u>NI</u>
5. <u>Phalaris arundinacea</u>	<u>10</u>	<u>Herb</u>	<u>FACW</u>
6. <u>Trifolium pratense</u>	<u>10</u>	<u>Herb</u>	<u>FACU</u>
7. <u>Vicia americana</u>	<u>2</u>	<u>Herb</u>	<u>FAC</u>

Percent of **Dominant Species** that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. "T" indicates trace. 100

Remarks (Describe disturbances, relevant local variations, seasonal effects, etc.):

The dominant vegetation is hydrophytic, meeting the hydrophytic vegetation criteria.

HYDROLOGY

Recorded Data (Describe in Remarks):

 Stream, Lake, or Tide Gage
 Aerial Photograph
 Other
X No Recorded Data Available

Wetland Hydrology Indicators (Describe in Remarks):

Primary Indicators:

 Inundated
X Saturated in Upper 12 inches
 Saturated in Upper 18 inches
 Water Marks
 Drift Lines
 Sediment Deposits
 Drainage Patterns in Wetlands

Field Observations:

Depth of Surface Water: 0 (in.)
 Depth to Free Water in Pit: 0 (in.)
 Depth to Saturated Soil: 0 (in.)

Secondary Indicators (2 or more required):

 Oxidized Root Channels in Upper 12 inches
X Water-Stained Leaves
 Local Soil Survey Data
X Other (Explain in Remarks)

Remarks (As relevant, describe recent precipitation, hydrologic modifications, local variations, etc.):

This sample point passed the FAC-Neutral Test. Soil is saturated to the surface. This meets the wetland hydrology criteria.

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Data Plot #: CW-1
Wetland: C

Project/Site: Cross Base - Thorne Lane / NW of Union Date: 11/27/01

SOILS

Soil Survey Data:

Map Unit Name: Spanaway gravelly sandy loam Drainage Class: _____

Field Observations Confirm Mapped Type? _____

Taxonomy (Subgroup): Andic Xerumbrepts Yes X No _____ NA _____

Profile Description:

Depth (Inches)	Horizon Designation	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-6	A	10 YR 3/1	none	none	Sandy, loam
6-15	B	2.5 Y 5/3	10 YR 5/6	few, fine	gravelly sand

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> Listed on State Hydric Soils List |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Probable Aquic Moisture Regime | <input type="checkbox"/> Aquic Moisture Regime |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Mottles |
| <input type="checkbox"/> High Organic Content in Surface Layer | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks (Describe soil disturbances, local variations, etc.):
Sulfidic odor near channel. Soil is compacted with gravel at and below 15 inches.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is this Sampling Point Within a Wetland?
Hydric Soils Present?	Yes <u>X</u> No _____	Yes <u>X</u> No _____
Wetland Hydrology Present?	Yes <u>X</u> No _____	

Remarks (If applicable, explain any differences between 1987 and 1989 delineation results):
Approximately 20% of wetland area has ponding water located in micro-depressions (ruts). All three wetland criteria have been met; therefore area is determined to be within a wetland.

DRAFT



Data Plot #: U-1
Wetland: _____

WETLAND DETERMINATION

(Modified from: 1987 COE Wetlands Delineation Manual)

Project/Site: Cross Base - Thorne Lane / NW of Union Date: 11/28/01
Applicant/Owner: Pierce County County: Pierce
Investigator: Colin Worsley State: WA

1987 Method 1989 Method

Community ID: Upland

Do Normal Circumstances exist on the site? Yes X No _____
Is the site significantly disturbed (Atypical Situation)? Yes _____ No X
Is the area a potential Problem Area? Yes _____ No X

Field Plot ID: U-1

Remarks (Explain sample location, disturbances, problem areas):

This sample location is at the top of a slope.

VEGETATION (✓ Dominant species are checked)

Plant Species	% Cover	Stratum	Indicator
1. <u>Pseudotsuga menziesii (s)</u>	<u>2</u>	<u>Shrub</u>	<u>FACU</u>
2. <u>Rubus discolor</u>	<u>10</u>	<u>Shrub</u>	<u>FACU</u>
3. <u>Thuja plicata (s)</u>	<u>5</u>	<u>Shrub</u>	<u>FAC</u>
✓ 4. <u>Populus balsamifera</u>	<u>80</u>	<u>Tree</u>	<u>FAC</u>

Percent of **Dominant Species** that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. "T" indicates trace. 100

Remarks (Describe disturbances, relevant local variations, seasonal effects, etc.):

The vegetation does meet the hydrophytic vegetation criteria because 100% of the dominant plants are FAC or wetter.

HYDROLOGY

Recorded Data (Describe in Remarks):

_____ Stream, Lake, or Tide Gage
_____ Aerial Photograph
_____ Other
X _____ No Recorded Data Available

Wetland Hydrology Indicators (Describe in Remarks):

Primary Indicators:

_____ Inundated
_____ Saturated in Upper 12 inches
_____ Saturated in Upper 18 inches
_____ Water Marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands

Field Observations:

Depth of Surface Water: none (in.)
Depth to Free Water in Pit: none (in.)
Depth to Saturated Soil: none (in.)

Secondary Indicators (2 or more required):

_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
_____ Other (Explain in Remarks)

Remarks (As relevant, describe recent precipitation, hydrologic modifications, local variations, etc.):

No primary or secondary indicators of hydrology are present.

Parametrix, Inc.



Data Plot #: U-1
Wetland: _____

Project/Site: Cross Base - Thorne Lane / NW of Union Date: 11/28/01

SOILS

Soil Survey Data:

Map Unit Name: Dupont Muck Drainage Class: _____

Field Observations Confirm Mapped Type?

Taxonomy (Subgroup): Limnic Medisaprists Yes _____ No X NA _____

Profile Description:

Depth (Inches)	Horizon Designation	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-8	A	10 YR 2/1	none	none	gravelly loam
8-20+	B	2.5 Y 3/3	none	none	gravelly loam

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> Listed on State Hydric Soils List
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Listed on National Hydric Soils List
<input type="checkbox"/> Probable Aquic Moisture Regime	<input type="checkbox"/> Aquic Moisture Regime
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Mottles
<input type="checkbox"/> High Organic Content in Surface Layer	<input type="checkbox"/> Other (Explain in Remarks)

Remarks (Describe soil disturbances, local variations, etc.):

There are inclusions of cobble.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is this Sampling Point Within a Wetland?
Hydric Soils Present?	Yes _____ No <u>X</u>	Yes _____ No <u>X</u>
Wetland Hydrology Present?	Yes _____ No <u>X</u>	

Remarks (If applicable, explain any differences between 1987 and 1989 delineation results):

Wetland hydrology and hydric soil criteria were not met; therefore this area is determined to be in an upland.

DRAFT



Data Plot #: U-2
 Wetland: _____

WETLAND DETERMINATION

(Modified from: 1987 COE Wetlands Delineation Manual)

Project/Site: Cross Base - Thorne Lane / NW of Union Date: 11/28/01
 Applicant/Owner: Pierce County County: Pierce
 Investigator: Patrick Togher, Colin Worsley State: WA

1987 Method 1989 Method
 Do Normal Circumstances exist on the site? Yes X No _____ Community ID: Upland
 Is the site significantly disturbed (Atypical Situation)? Yes _____ No X Field Plot ID: U-2
 Is the area a potential Problem Area? Yes _____ No X

Remarks (Explain sample location, disturbances, problem areas):
This sample location is in a depression in a residential backyard adjacent to a manmade drainage channel.

VEGETATION (✓ Dominant species are checked)

Plant Species	% Cover	Stratum	Indicator
✓ 1. Domestic grass	100	Herb	NI
2. Domestic fruit trees	5	Shrub	NI
3. Domestic apple trees	T	Tree	NI
✓ 4. Fraxinus latifolia	20	Tree	FACW
5. Quercus garryana	10	Tree	NL

Percent of Dominant Species that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. "T" indicates trace. 100

Remarks (Describe disturbances, relevant local variations, seasonal effects, etc.):
Grass is mowed and no seed heads are available for identification. Based on dominant species, this data point does meet the hydrophytic vegetation criteria.

HYDROLOGY

Recorded Data (Describe in Remarks):
 _____ Stream, Lake, or Tide Gage
 _____ Aerial Photograph
 _____ Other
X No Recorded Data Available

Wetland Hydrology Indicators (Describe in Remarks):
 Primary Indicators:
 _____ Inundated
 _____ Saturated in Upper 12 inches
 _____ Saturated in Upper 18 inches
 _____ Water Marks
 _____ Drift Lines
 _____ Sediment Deposits
 _____ Drainage Patterns in Wetlands

Field Observations:
 Depth of Surface Water: none (in.)
 Depth to Free Water in Pit: none (in.)
 Depth to Saturated Soil: none (in.)

Secondary Indicators (2 or more required):
 _____ Oxidized Root Channels in Upper 12 inches
 _____ Water-Stained Leaves
 _____ Local Soil Survey Data
 _____ Other (Explain in Remarks)

Remarks (As relevant, describe recent precipitation, hydrologic modifications, local variations, etc.):
No primary or secondary wetland hydrology indicators are present.

Parametrix, Inc.



Data Plot #: U-2
Wetland: _____

Project/Site: Cross Base - Thorne Lane / NW of Union Date: 11/28/01

SOILS

Soil Survey Data:

Map Unit Name: Spanaway gravelly sandy loam Drainage Class: _____

Field Observations Confirm Mapped Type?

Taxonomy (Subgroup): Andic Xerumbrepts Yes X No _____ NA _____

Profile Description:

Depth (Inches)	Horizon Designation	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-14	A	10 YR 2/1	none	none	gravelly loam
14-18+	B	10 YR 2/2	none	none	gravelly silty loam

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histosol | <input type="checkbox"/> Listed on Local Hydric Soils List |
| <input type="checkbox"/> Histic Epipedon | <input type="checkbox"/> Listed on State Hydric Soils List |
| <input type="checkbox"/> Sulfidic Odor | <input type="checkbox"/> Listed on National Hydric Soils List |
| <input type="checkbox"/> Probable Aquic Moisture Regime | <input type="checkbox"/> Aquic Moisture Regime |
| <input type="checkbox"/> Reducing Conditions | <input type="checkbox"/> Organic Streaking in Sandy Soils |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Mottles |
| <input type="checkbox"/> High Organic Content in Surface Layer | <input type="checkbox"/> Other (Explain in Remarks) |

Remarks (Describe soil disturbances, local variations, etc.):
There are no hydric soil indicators present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes X No _____ Is this Sampling Point Within a Wetland?
Hydric Soils Present? Yes _____ No X Yes _____ No X
Wetland Hydrology Present? Yes _____ No X

Remarks (If applicable, explain any differences between 1987 and 1989 delineation results):
Wetland hydrology and hydric soil criteria were not met; therefore this area is determined to be in an upland.

DRAFT

ATTACHMENT B

Wetland Rating Forms

Wetlands Rating Field Data Form

Background Information:

Name of Rater: Cain Worsley Affiliation: PMX Date: 10/04/01

Name of wetland (if known): Between BNSF railroad & Union Ave SW - Wetland A

Government Jurisdiction of wetland: City of Lakewood

Location: 1/4 Section: SE of 1/4 S: SE Section: 15 Township: 19N Range: 2E

Sources of Information: (Check all sources that apply)

Site visit: USGS Topo Map: NWI map: Aerial Photo: Soils survey:

Other: _____ Describe: _____

When The Field Data form is complete enter Category here: CATEGORY III

Q.1. High Quality Natural Wetland

Answer this question if you have adequate information or experience to do so. If not find someone with the expertise to answer the questions. Then, if the answer to questions 1a, 1b and 1c are all NO, contact the Natural Heritage program of DNR.

1a. Human caused disturbances.

Is there significant evidence of human-caused changes to topography or hydrology of the wetland as indicated by any of the following conditions? Consider only changes that may have taken place in the last 5 decades. The impacts of changes done earlier have probably been stabilized and the wetland ecosystem will be close to reaching some new equilibrium that may represent a high quality wetland.

- 1a.1 Upstream watershed > 12% impervious.
 - 1a.2 Wetland is ditched and water flow is not obstructed.
 - 1a.3 Wetland has been graded, filled, logged.
 - 1a.4 Water in wetland is controlled by dikes, weirs, etc.
 - 1a.5 Wetland is grazed.
 - 1a.6 Other indicators of disturbance (list below)
- _____

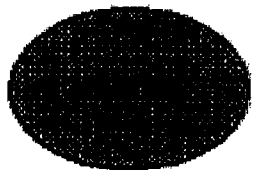
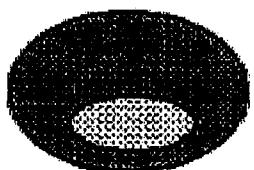
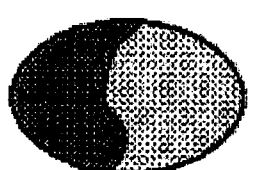
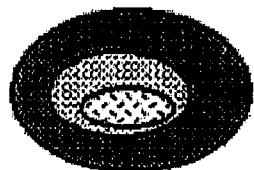
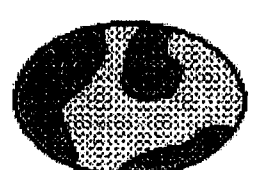

Circle Answers

- Yes: go to Q.2
- Yes: go to Q.2
- Yes: go to Q.2
- Yes: go to Q.2
- Yes: go to Q.2
- Yes: go to Q.2
- No: go to 1b.

<p>2a.3. Is the vegetation a mixture of only herbaceous plants and Sphagnum mosses with no scrub/shrub or forested classes? Is the area of herbaceous plants, Sphagnum, and deep organic soils > 1/2 acre? Is the area of herbaceous plants, Sphagnum, and deep organic soils ¼-1/2 acre?</p>	<p>YES: Category I YES: Category II (NO) Go to Q.3.</p>
<p>Q.2b. Mature forested wetland.</p> <p>2b.1. Does 50% of the cover of upper forest canopy consist of evergreen trees older than 80 years or deciduous trees older than 50 years? <i>Note:</i> The size of trees is often not a measure of age, and size cannot be used as a surrogate for age (see guidance).</p> <p>2b.2. Does 50% of the cover of forest canopy consist of evergreen trees older than 50 years, AND is the structural diversity of the forest high as characterized by an additional layer of trees 20'-49' tall, shrubs 6'- 20', tall, and a herbaceous groundcover?</p> <p>2b.3. Does < 25% of the areal cover in the herbaceous/groundcover or the shrub layer consist of invasive/exotic plant species from the list on p. 19?</p>	<p>YES: Category I NO: Go to 2b.2</p> <p>YES: Go to 2b.3 NO: Go to Q.3</p> <p>YES: Category I NO: Go to Q.3</p>
<p>Q.2c. Estuarine wetlands.</p> <p>2c.1. Is the wetland listed as National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park, or Educational, Environmental or Scientific Reserves designated under WAC 332-30-151?</p> <p>2c.2. Is the wetland > 5 acres; <i>Note:</i> If an area contains patches of salt tolerant vegetation that are 1) less than 600 feet apart and that are separated by mudflats that go dry on a Mean Low Tide, or 2) separated by tidal channels that are less than 100 feet wide; all the vegetated areas are to be considered together in calculating the wetland area.</p> <p>or is the wetland 1-5 acres;</p> <p>or is the wetland < 1 acre?</p>	<p>YES: Category I NO: Go to 2c.2</p> <p>YES: Category I</p> <p>YES: Go to 2c.3</p> <p>YES: Go to 2c.4</p>

<p>2c.3. Does the wetland meet at least 3 of the following 4 criteria:</p> <ul style="list-style-type: none"> - minimum existing evidence of human related disturbance such as diking, ditching, filling, cultivation, grazing or the presence of non-native plant species (see guidance for definition); - surface water connection with tidal saltwater or tidal freshwater; - at least 75% of the wetland has a 100 buffer of ungrazed pasture, open water, shrub or forest; - has at least 3 of the following features: low marsh; high marsh; tidal channels; lagoon(s);woody debris; or contiguous freshwater wetland. <p>2c.4. Does the wetland meet all of the four criteria under 2c3? (above)?</p>	<p>YES: Category I NO Category II</p> <p>YES: Category II NO: Category III</p>
<p>Q.2d. Eel Grass and Kelp Beds.</p> <p>2d.1. Are eelgrass beds present?</p> <p>2d.2. Are their floating or non-floating kelp bed(s) present with greater than 50% macro algal cover in the month of August or September?.....</p>	<p>YES: Category I NO: go to 2d.2</p> <p>YES: Category I NO: Category II</p>
<p>Q.3. Category IV wetlands.</p> <p>3a. Is the wetland: less than 1 acre <u>and</u>, hydrologically isolated <u>and</u>, comprised of one vegetated class that is dominated (> 80% areal cover) by one species from Table 3 (page 19) or Table 4 (page 20)</p> <p>3b. Is the wetland: less than two acres and, hydrologically isolated, with one vegetated class, and > 90% of areal cover in any combination of species from Table 3 (page 19)</p> <p>3c. Is the wetland excavated from upland <u>and</u> a pond smaller than 1 acre without a surface water connection to streams, lakes, rivers, or other wetland, and has < 0.1 acre of vegetation.</p>	<p>YES: Category IV NO: go to 3b</p> <p>YES: Category IV NO: go to 3c</p> <p>YES: Category IV NO: go to Q.4</p>

Q.4. Significant habitat value.		Circle scores that qualify																																								
<p>Answer all questions and enter data requested.</p> <p>4a. Total wetland area Estimate area, select from choices in the near-right column, and score in the far column:</p> <p>Enter acreage of wetland here: <u><1</u> acres, and source: <u>site visit</u></p>		<p><u>acres</u> <u>points</u></p> <p>>200 6</p> <p>40-200 5</p> <p>10-40 4</p> <p>5-103 2</p> <p>1-5 2</p> <p><u>0.1-1</u> <u>1</u></p> <p><0.10</p>																																								
<p>4b. Wetland classes: Circle the wetland classes below that qualify:</p> <p>Open Water: if the area of open water is > 1/4 acre Aquatic Beds: if the area of aquatic beds > 1/4 acre,</p> <p>Emergent: if the area of emergent class is > 1/4 acre,</p> <p><u>Scrub-Shrub</u> if the area of scrub-shrub class is > 1/4 acre,</p> <p>Forested: if area of forested class is > 1/4 acre,</p> <p>Add the number of wetland classes, above, that qualify, and then Score according to the columns at right. e.g. If there are 4 classes (aquatic beds, open water, emergent & Scrub-shrub), you would circle 8 points in the far right column.</p>		<p><u>#of classes</u> <u>Points</u></p> <p><u>1</u>..... <u>0</u></p> <p>2..... 3</p> <p>3..... 6</p> <p>4..... 8</p> <p>5..... 10</p>																																								
<p>4c. Plant species diversity. For each wetland class (at right) that qualifies in 4b above, count the number of different plant species you can find that cover more than 5% of the ground. You do not have to name them.</p> <p>Score in column at far right: e.g. If a wetland has an aquatic bed class with 3 species, an emergent class with 4 species and a scrub-shrub class with 2 species you would circle 2, 2, and 1 in the far column.</p> <p><i>Note: Any plant species with a cover of > 5% qualifies for points within a class, even those that are not of that class.</i></p>		<table border="1"> <thead> <tr> <th>Class</th> <th># species in class</th> <th>Points</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Aquatic</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>1</td> </tr> <tr> <td>3</td> <td>2</td> </tr> <tr> <td>>3</td> <td>3</td> </tr> <tr> <td rowspan="4">Emergent</td> <td>1</td> <td>0</td> </tr> <tr> <td>2-3</td> <td>1</td> </tr> <tr> <td>4-5</td> <td>2</td> </tr> <tr> <td>>5</td> <td>3</td> </tr> <tr> <td rowspan="4">Scrub-Scrub</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>1</td> </tr> <tr> <td>3-4</td> <td>2</td> </tr> <tr> <td><u>>4</u></td> <td><u>3</u></td> </tr> <tr> <td rowspan="4">Forested</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>1</td> </tr> <tr> <td>3-4</td> <td>2</td> </tr> <tr> <td>>4</td> <td>3</td> </tr> </tbody> </table>	Class	# species in class	Points	Aquatic	1	0	2	1	3	2	>3	3	Emergent	1	0	2-3	1	4-5	2	>5	3	Scrub-Scrub	1	0	2	1	3-4	2	<u>>4</u>	<u>3</u>	Forested	1	0	2	1	3-4	2	>4	3	
Class	# species in class	Points																																								
Aquatic	1	0																																								
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	2-3	1																																								
	4-5	2																																								
	>5	3																																								
Scrub-Scrub	1	0																																								
	2	1																																								
	3-4	2																																								
	<u>>4</u>	<u>3</u>																																								
Forested	1	0																																								
	2	1																																								
	3-4	2																																								
	>4	3																																								

<p>4d. Structural diversity. If the wetland has a forested class, add 1 point if each of the following Classes is present within the forested class and is <u>larger than 1/4 acre</u>:</p> <ul style="list-style-type: none"> -trees > 50' tall..... -trees 20'- 49' tall..... -shrubs..... -herbaceous ground cover..... <p>Also add 1 point if there is any "open water" or "aquatic bed" class Immediately next to the forested area (i.e. there is no scrub/shrub or emergent vegetation between them).</p>	<p>YES - 1 YES - 1 YES - 1 YES - 1 YES - 1</p>
<p>4e. Decide from the diagrams below whether interspersions between wetland classes is high, moderate, low or none? If you think the amount of interspersions falls in between the diagrams score accordingly (i.e. a moderately high amount of interspersions would score a 4, while a moderately low amount would score a 2)</p> <div style="display: flex; flex-wrap: wrap; justify-content: space-around; text-align: center;"> <div style="width: 30%;">  <p>none</p> </div> <div style="width: 30%;">  <p>low</p> </div> <div style="width: 30%;">  <p>low</p> </div> <div style="width: 30%;">  <p>moderate</p> </div> <div style="width: 30%;">  <p>moderate</p> </div> <div style="width: 30%;">  <p>high</p> </div> </div>	<p>High - 5 Moderate - 3 Low - 1 <u>None - 0</u></p>
<p>4f Habitat features. Answer questions below, circle features that apply, and score to right:</p> <ul style="list-style-type: none"> Is there evidence that the open or standing water was caused by beavers Is a heron rookery located within 300'? Are raptor nest/s located within 300'? Are there at least 3 standing dead trees (snags) per acre greater than 10" in diameter at "breast height" (DBH)? Are there at least 3 downed logs per acre with a diameter > 6" for at least 10' in length? Are there areas (vegetated or unvegetated) within the wetland that are ponded for at least 4 months out of the year, and the wetland has not qualified as having an open water class in Question 4b. ? 	<p>YES = 2 YES = 1 YES = 1 YES = 1 YES = 1 YES = 1 <u>YES = 2</u></p>

<p>4g. Connection to streams. (Score one answer only.)</p> <p>4g.1. Does the wetland provide habitat for fish at any time of the year AND does it have a perennial surface water connection to a fish-bearing stream.</p> <p>4g.2 Does the wetland provide fish habitat seasonally AND does it have a seasonal surface water connection to a fish-bearing stream.</p> <p>4g.3 Does the wetland function to export organic matter through a surface water connection at all times of the year to a perennial stream.</p> <p>4g.4 Does the wetland function to export organic matter through a surface water connection to a stream on a seasonal basis?</p>	<p>YES = 6</p> <p>YES = 4</p> <p>YES = 4</p> <p>YES = 2</p>
<p>4h. Buffers.</p> <p>Score the existing buffers on a scale of 1-5 based on the following four descriptions. If the condition of the buffers do not exactly match the description, score either a point higher or lower depending on whether the buffers are less or more degraded.</p> <p>Forest, scrub, native grassland or open water buffers are present for more than 100' around 95% of the circumference.</p> <p>Forest, scrub, native grassland, or open water buffers wider than 100' for more than 1/2 of the wetland circumference, or a forest, scrub, grasslands, or open water buffers for more than 50' around 95 % of the circumference.</p> <p>Forest, scrub, native grassland, or open water buffers wider than 100' for more than 1/4 of the wetland circumference, or a forest, scrub, native grassland, or open water buffers wider than 50' for more than 1/2 of the wetland circumference.</p> <p>No roads, buildings or paved areas within 100' of the wetland for more than 95% of the wetland circumference.</p> <p>No roads, buildings or paved areas within 25' of the wetland for more than 95% of the circumference, or No roads buildings or paved areas within 50' of the wetland for more than 1/2 of the wetland circumference.</p> <p>Paved areas, industrial areas or residential construction (with less than 50' between houses) are less than 25 feet from the wetland for more than 95 % of the circumference of the wetland.</p>	<p>Score = 5</p> <p>Score = 3</p> <p>Score = 2</p> <p>Score = 2</p> <p>Score = 1</p> <p>Score = 0</p>

<p>4i. Connection to other habitat areas: Select the description, which best matches the site being evaluated.</p> <p>-Is the wetland connected to, or part of, a riparian corridor at least 100' wide connecting two or more wetlands; or, is there an upland connection present >100' wide with good forest or shrub cover (>25% cover) connecting it with a Significant Habitat Area?</p> <p>-Is the wetland connected to any other Habitat Area with either 1) a forested/shrub corridor < 100' wide, or 2) a corridor that is > 100' wide, but has a low vegetative cover less than 6 feet in height?</p> <p>-Is the wetland connected to, or a part of, a riparian corridor between 50 - 100' wide with scrub/shrub or forest cover connection to other wetlands?</p> <p>- Is the wetland connected to any other Habitat Area with narrow corridor (<100') of low vegetation (< 6' in height)?</p> <p>- Is the wetland and its buffer (if the buffer is less than 50' wide) completely isolated by development (urban, residential with a density greater than 2/acre, or industrial)?</p>	<p>YES = 5</p> <p>Yes = 3</p> <p>Yes = 3</p> <p>Yes = 1</p> <p><u>Yes = 0</u></p>
<p>Now add the scores circled (for Q.5a – Q.5i above) to get a total.</p> <p>Is the Total greater than or equal to 22 points?</p> <p style="text-align: right;"><i>Total = 6 points</i></p> <p style="text-align: right;"><u>YES = Category II</u> <u>NO = Category III</u></p>	

Wetlands Rating Field Data Form

Background Information:

Name of Rater: COLIN WORSLEY Affiliation: PMX Date: 11/28/01

Name of wetland (if known): Thorne, Union, Spruce Area - Wetland B

Government Jurisdiction of wetland: City of Lakewood

Location: 1/4 Section: SE of 1/4 S: SE Section: 15 Township: 19N Range: 2E

Sources of Information: (Check all sources that apply)

Site visit: USGS Topo Map: NWI map: Aerial Photo: Soils survey:

Other: _____ Describe: _____

When The Field Data form is complete enter Category here: CATEGORY III

Q.1. High Quality Natural Wetland

Circle Answers

Answer this question if you have adequate information or experience to do so. If not find someone with the expertise to answer the questions. Then, if the answer to questions 1a, 1b and 1c are all NO, contact the Natural Heritage program of DNR.

1a. Human caused disturbances.

Is there significant evidence of human-caused changes to topography or hydrology of the wetland as indicated by any of the following conditions? Consider only changes that may have taken place in the last 5 decades. The impacts of changes done earlier have probably been stabilized and the wetland ecosystem will be close to reaching some new equilibrium that may represent a high quality wetland.

- 1a.1 Upstream watershed > 12% impervious.
- 1a.2. Wetland is ditched and water flow is not obstructed.
- 1a.3. Wetland has been graded, filled, logged.
- 1a.4. Water in wetland is controlled by dikes, weirs, etc.
- 1a.5. Wetland is grazed.
- 1a.6. Other indicators of disturbance (list below)

Wetland is adjacent to a Koi pond. Located on a fill slope, below Spruce Street and Union Avenue.

Yes: go to Q.2
Yes: go to Q.2
Yes: go to Q.2
Yes: go to Q.2
Yes: go to Q.2
Yes: go to Q.2
No: go to 1b.

<p>1b Are there populations of non-native plants which are currently present, cover more than 10% of the wetland, and appear to be invading native populations? Briefly describe any non-native plant populations and Information source(s): _____</p> <hr/> <p>1c. Is there evidence of human-caused disturbances which have visibly degraded water quality. Evidence of the degradation of water quality include: direct (untreated) runoff from roads or parking lots; presence, or historic evidence, of waste dumps; oily sheens; the smell of organic chemicals; or livestock use. Briefly describe:</p> <hr/> <hr/>	<p>YES: go to Q.2 No: go to 1c.</p> <p>YES: go to Q.2 NO: Possible Cat. I Contact DNR</p>
<p>Q.2. Irreplaceable Ecological Functions: Does the wetland:</p> <p>have at least 1/4 acre of organic soils deeper than 16 inches and the wetland is relatively undisturbed; OR [If the answer is NO because the wetland is disturbed briefly describe: Indicators of disturbance may include:</p> <ul style="list-style-type: none"> - Wetland has been graded, filled, logged; - Organic soils on the surface are dried-out for more than half of the year; - Wetland receives direct stormwater runoff from urban or agricultural areas.]; <p>OR</p> <p>have a forested class greater than 1 acre; OR have characteristics of an estuarine system; OR have eel grass floating or non-floating kelp beds?</p>	<p>(NO to all: go to Q.3) YES go to 2a</p> <p>YES: Go to 2b Yes: Go to 2c Yes: Go to 2d</p>
<p>2a. Bogs and Fens Are any of the three following conditions met for the area of organic soil?</p> <p>2a.1. Are Sphagnum mosses a common ground cover (>30%) and the cover of invasive species (see Table 3) is less than 10%?</p> <p>Is the area of sphagnum mosses and deep organic soils > 1/2 acre? Is the area of sphagnum mosses and deep organic soils 1/4-1/2 acre?</p> <p>2a.2. Is there an area of organic soil which has an emergent class with at least one species from Table 2, and cover of invasive species is < 10% (see Table 3)?</p> <p>Is the area of herbaceous plants and deep organic soils > 1/2 acre? Is the area of herbaceous plants and deep organic soils 1/4-1/2acre?</p>	<p>YES: Category I YES: Category II</p> <p>NO: Go to 2a.3</p> <p>YES: Category I YES: Category II</p> <p>NO: Go to 2a.3</p>

<p>2a.3. Is the vegetation a mixture of only herbaceous plants and Sphagnum mosses with no scrub/shrub or forested classes? Is the area of herbaceous plants, Sphagnum, and deep organic soils > 1/2 acre? Is the area of herbaceous plants, Sphagnum, and deep organic soils ¼-1/2 acre?</p>	<p>YES: Category I YES: Category II NO: Go to Q.3.</p>
<p>Q.2b. Mature forested wetland.</p> <p>2b.1. Does 50% of the cover of upper forest canopy consist of evergreen trees older than 80 years or deciduous trees older than 50 years? <i>Note:</i> The size of trees is often not a measure of age, and size cannot be used as a surrogate for age (see guidance).</p> <p>2b.2. Does 50% of the cover of forest canopy consist of evergreen trees older than 50 years, AND is the structural diversity of the forest high as characterized by an additional layer of trees 20'-49' tall, shrubs 6'- 20', tall, and a herbaceous groundcover?</p> <p>2b.3. Does < 25% of the areal cover in the herbaceous/groundcover or the shrub layer consist of invasive/exotic plant species from the list on p. 19?</p>	<p>YES: Category I NO: Go to 2b.2</p> <p>YES: Go to 2b.3 NO: Go to Q.3</p> <p>YES: Category I NO: Go to Q.3</p>
<p>Q.2c. Estuarine wetlands.</p> <p>2c.1. Is the wetland listed as National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park, or Educational, Environmental or Scientific Reserves designated under WAC 332-30-151?</p> <p>2c.2. Is the wetland > 5 acres; <i>Note:</i> If an area contains patches of salt tolerant vegetation that are 1) less than 600 feet apart and that are separated by mudflats that go dry on a Mean Low Tide, or 2) separated by tidal channels that are less than 100 feet wide; all the vegetated areas are to be considered together in calculating the wetland area.</p> <p>or is the wetland 1-5 acres;</p> <p>or is the wetland < 1 acre?</p>	<p>YES: Category I NO: Go to 2c.2</p> <p>YES: Category I</p> <p>YES: Go to 2c.3</p> <p>YES: Go to 2c.4</p>

<p>2c.3. Does the wetland meet at least 3 of the following 4 criteria:</p> <ul style="list-style-type: none"> - minimum existing evidence of human related disturbance such as diking, ditching, filling, cultivation, grazing or the presence of non-native plant species (see guidance for definition); - surface water connection with tidal saltwater or tidal freshwater; - at least 75% of the wetland has a 100 buffer of ungrazed pasture, open water, shrub or forest; - has at least 3 of the following features: low marsh; high marsh; tidal channels; lagoon(s); woody debris; or contiguous freshwater wetland. <p>2c.4. Does the wetland meet all of the four criteria under 2c3? (above)?</p>	<p>YES: Category I NO Category II</p> <p>YES: Category II NO: Category III</p>
<p>Q.2d. Eel Grass and Kelp Beds.</p> <p>2d.1. Are eelgrass beds present?</p> <p>2d.2. Are their floating or non-floating kelp bed(s) present with greater than 50% macro algal cover in the month of August or September?.....</p>	<p>YES: Category I NO: go to 2d.2</p> <p>YES: Category I NO: Category II</p>
<p>Q.3. Category IV wetlands.</p> <p>3a. Is the wetland: less than 1 acre <u>and</u>, hydrologically isolated <u>and</u>, comprised of one vegetated class that is dominated (> 80% areal cover) by one species from Table 3 (page 19) or Table 4 (page 20)</p> <p>3b. Is the wetland: less than two acres and, hydrologically isolated, with one vegetated class, and > 90% of areal cover in any combination of species from Table 3 (page 19)</p> <p>3c. Is the wetland excavated from upland <u>and</u> a pond smaller than 1 acre without a surface water connection to streams, lakes, rivers, or other wetland, and has < 0.1 acre of vegetation.</p>	<p>YES: Category IV NO: go to 3b</p> <p>YES: Category IV NO: go to 3c</p> <p>YES: Category IV NO: go to Q.4</p>

Q.4. Significant habitat value.

Answer all questions and enter data requested.

4a. Total wetland area

Estimate area, select from choices in the near-right column, and score in the far column:

Enter acreage of wetland here: <0.1 acres, and source: site visit + survey map

Circle scores that qualify

acres	points
>200	6
40-200	5
10-40	4
5-103	
1-5	2
0.1-1	1
<u><0.10</u>	

4b. Wetland classes: Circle the wetland classes below that qualify:

Open Water: if the area of open water is > 1/4 acre

Aquatic Beds: if the area of aquatic beds > 1/4 acre,

Emergent: if the area of emergent class is > 1/4 acre,

Scrub-Shrub: if the area of scrub-shrub class is > 1/4 acre,

Forested: if area of forested class is > 1/4 acre,

Add the number of wetland classes, above, that qualify, and then Score according to the columns at right.

e.g. If there are 4 classes (aquatic beds, open water, emergent & Scrub-shrub), you would circle 8 points in the far right column.

#of classes	Points
1.....	0
2.....	3
3.....	6
4.....	8
5.....	10

4c. Plant species diversity.

For each wetland class (at right) that qualifies in 4b above, count the number of different plant species you can find that cover more than 5% of the ground. You do not have to name them.

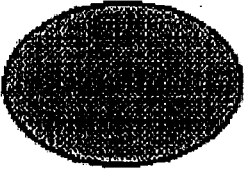
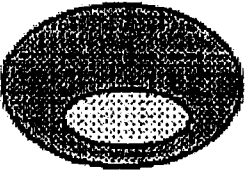
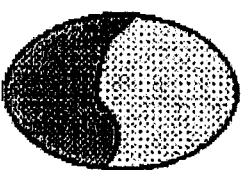
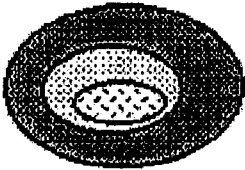
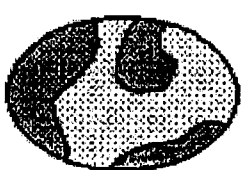
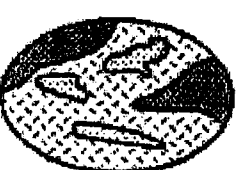
Score in column at far right:

e.g. If a wetland has an aquatic bed class with 3 species, an emergent class with 4 species and a scrub-shrub class with 2 species you would circle 2, 2, and 1 in the far column.

Note: Any plant species with a cover of > 5% qualifies for points within a class, even those that are not of that class.

There are 4 species with cover of > 5%. Class is forested but wetland area is < 0.1 acres.

Class	# species in class	Points
Aquatic	1	0
	2	1
	3	2
	>3	3
Emergent	1	0
	2-3	1
	4-5	2
	>5	3
Scrub-Scrub	1	0
	2	1
	3-4	2
	>4	3
Forested	1	0
	2	1
	<u>3-4</u>	<u>2</u>
	>4	3

<p>4d. Structural diversity. If the wetland has a forested class, add 1 point if each of the following Classes is present within the forested class and is <u>larger than 1/4 acre</u>:</p> <ul style="list-style-type: none"> -trees > 50' tall..... -trees 20'- 49' tall..... -shrubs..... -herbaceous ground cover..... <p>Also add 1 point if there is any "open water" or "aquatic bed" class Immediately next to the forested area (i.e. there is no scrub/shrub or emergent vegetation between them).</p>	<p>YES - 1 YES - 1 YES - 1 YES - 1 YES - 1</p>
<p>4e. Decide from the diagrams below whether interspersions between wetland classes is high, moderate, low or none? If you think the amount of interspersions falls in between the diagrams score accordingly (i.e. a moderately high amount of interspersions would score a 4, while a moderately low amount would score a 2)</p> <div style="display: flex; flex-wrap: wrap; justify-content: space-around; text-align: center;"> <div style="margin: 10px;"> none</div> <div style="margin: 10px;"> low</div> <div style="margin: 10px;"> low</div> <div style="margin: 10px;"> moderate</div> <div style="margin: 10px;"> moderate</div> <div style="margin: 10px;"> high</div> </div>	<p>High - 5 Moderate - 3 Low - 1 <u>None - 0</u></p>
<p>4f Habitat features. Answer questions below, circle features that apply, and score to right:</p> <ul style="list-style-type: none"> Is there evidence that the open or standing water was caused by beavers Is a heron rookery located within 300'? Are raptor nest/s located within 300'? Are there at least 3 standing dead trees (snags) per acre greater than 10" in diameter at "breast height" (DBH)? Are there at least 3 downed logs per acre with a diameter > 6" for at least 10' in length? Are there areas (vegetated or unvegetated) within the wetland that are ponded for at least 4 months out of the year, and the wetland has not qualified as having an open water class in Question 4b. ? 	<p>YES = 2 YES = 1 YES = 1 YES = 1 YES = 1 YES = 2</p>

<p>4g. Connection to streams. (Score one answer only.)</p> <p>4g.1. Does the wetland provide habitat for fish at any time of the year AND does it have a perennial surface water connection to a fish-bearing stream.</p> <p>4g.2 Does the wetland provide fish habitat seasonally AND does it have a seasonal surface water connection to a fish-bearing stream.</p> <p>4g.3 Does the wetland function to export organic matter through a surface water connection at all times of the year to a perennial stream.</p> <p>4g.4 Does the wetland function to export organic matter through a surface water connection to a stream on a seasonal basis?</p>	<p>YES = 6</p> <p>YES = 4</p> <p>YES = 4</p> <p>YES = 2</p>
<p>4h. Buffers.</p> <p>Score the existing buffers on a scale of 1-5 based on the following four descriptions. If the condition of the buffers do not exactly match the description, score either a point higher or lower depending on whether the buffers are less or more degraded.</p> <p>Forest, scrub, native grassland or open water buffers are present for more than 100' around 95% of the circumference.</p> <p>Forest, scrub, native grassland, or open water buffers wider than 100' for more than 1/2 of the wetland circumference, or a forest, scrub, grasslands, or open water buffers for more than 50' around 95 % of the circumference.</p> <p>Forest, scrub, native grassland, or open water buffers wider than 100' for more than 1/4 of the wetland circumference, or a forest, scrub, native grassland, or open water buffers wider than 50' for more than 1/2 of the wetland circumference.</p> <p>No roads, buildings or paved areas within 100' of the wetland for more than 95% of the wetland circumference.</p> <p>No roads, buildings or paved areas within 25' of the wetland for more than 95% of the circumference, or No roads buildings or paved areas within 50' of the wetland for more than 1/2 of the wetland circumference.</p> <p>Paved areas, industrial areas or residential construction (with less than 50' between houses) are less than 25 feet from the wetland for more than 95 % of the circumference of the wetland.</p>	<p>Score = 5</p> <p>Score = 3</p> <p>Score = 2</p> <p>Score = 2</p> <p>Score = 1</p> <p>Score = 0</p>

<p>4i. Connection to other habitat areas: Select the description, which best matches the site being evaluated.</p>	
<p>-Is the wetland connected to, or part of, a riparian corridor at least 100' wide connecting two or more wetlands; or, is there an upland connection present >100' wide with good forest or shrub cover (>25% cover) connecting it with a Significant Habitat Area?</p>	<p>YES = 5</p>
<p>-Is the wetland connected to any other Habitat Area with either 1) a forested/shrub corridor < 100' wide, or 2) a corridor that is > 100' wide, but has a low vegetative cover less than 6 feet in height?</p>	<p>Yes = 3</p>
<p>-Is the wetland connected to, or a part of, a riparian corridor between 50 - 100' wide with scrub/shrub or forest cover connection to other wetlands?</p>	<p>Yes = 3</p>
<p>- Is the wetland connected to any other Habitat Area with narrow corridor (<100') of low vegetation (< 6' in height)?</p>	<p>Yes = 1</p>
<p>- Is the wetland and its buffer (if the buffer is less than 50' wide) completely isolated by development (urban, residential with a density greater than 2/acre, or industrial)?</p>	<p>Yes = 0</p>
<p>Now add the scores circled (for Q.5a – Q.5i above) to get a total. Is the Total greater than or equal to 22 points?</p>	
<p style="text-align: right;"><i>Total = 6 points</i></p> <p style="text-align: right;">YES = Category II NO = Category III</p>	

Wetlands Rating Field Data Form

Background Information:

Name of Rater: COLIN WORSLEY Affiliation: PMX Date: 11/28/01

Name of wetland (if known): Thorne Union, Spruce Area - Wetland C

Government Jurisdiction of wetland: City of Lakewood

Location: 1/4 Section: SE of 1/4 S: SE Section: 15 Township: 19N Range: 2E

Sources of Information: (Check all sources that apply)

Site visit: USGS Topo Map: NWI map: Aerial Photo: Soils survey:

Other: _____ Describe: _____

When The Field Data form is complete enter Category here: CATEGORY III

Q.1. High Quality Natural Wetland

Circle Answers

Answer this question if you have adequate information or experience to do so. If not find someone with the expertise to answer the questions. Then, if the answer to questions 1a, 1b and 1c are all NO, contact the Natural Heritage program of DNR.

1a. Human caused disturbances.

Is there significant evidence of human-caused changes to topography or hydrology of the wetland as indicated by any of the following conditions? Consider only changes that may have taken place in the last 5 decades. The impacts of changes done earlier have probably been stabilized and the wetland ecosystem will be close to reaching some new equilibrium that may represent a high quality wetland.

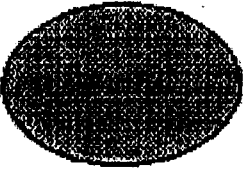
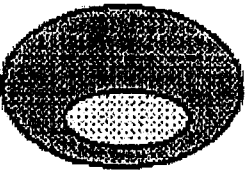
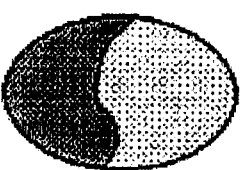
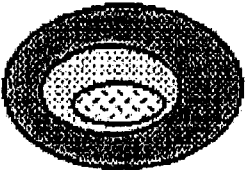
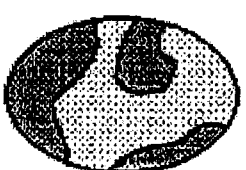
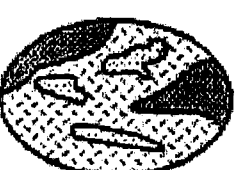
- 1a.1 Upstream watershed > 12% impervious.
 - 1a.2 Wetland is ditched and water flow is not obstructed.
 - 1a.3 Wetland has been graded, filled, logged.
 - 1a.4 Water in wetland is controlled by dikes, weirs, etc.
 - 1a.5 Wetland is grazed.
 - 1a.6 Other indicators of disturbance (list below)
- _____

Yes: go to Q.2
Yes: go to Q.2
Yes: go to Q.2
Yes: go to Q.2
Yes: go to Q.2
Yes: go to Q.2
No: go to 1b.

<p>2a.3. Is the vegetation a mixture of only herbaceous plants and Sphagnum mosses with no scrub/shrub or forested classes? Is the area of herbaceous plants, Sphagnum, and deep organic soils > 1/2 acre? Is the area of herbaceous plants, Sphagnum, and deep organic soils 1/4-1/2 acre?</p>	<p>YES: Category I YES: Category II NO: Go to Q.3.</p>
<p>Q.2b. Mature forested wetland.</p> <p>2b.1. Does 50% of the cover of upper forest canopy consist of evergreen trees older than 80 years or deciduous trees older than 50 years? <i>Note:</i> The size of trees is often not a measure of age, and size cannot be used as a surrogate for age (see guidance).</p> <p>2b.2. Does 50% of the cover of forest canopy consist of evergreen trees older than 50 years, AND is the structural diversity of the forest high as characterized by an additional layer of trees 20'-49' tall, shrubs 6'- 20', tall, and a herbaceous groundcover?</p> <p>2b.3. Does < 25% of the areal cover in the herbaceous/groundcover or the shrub layer consist of invasive/exotic plant species from the list on p. 19?</p>	<p>YES: Category I NO: Go to 2b.2</p> <p>YES: Go to 2b.3 NO: Go to Q.3</p> <p>YES: Category I NO: Go to Q.3</p>
<p>Q.2c. Estuarine wetlands.</p> <p>2c.1. Is the wetland listed as National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park, or Educational, Environmental or Scientific Reserves designated under WAC 332-30-151?</p> <p>2c.2. Is the wetland > 5 acres; <i>Note:</i> If an area contains patches of salt tolerant vegetation that are 1) less than 600 feet apart and that are separated by mudflats that go dry on a Mean Low Tide, or 2) separated by tidal channels that are less than 100 feet wide; all the vegetated areas are to be considered together in calculating the wetland area.</p> <p>or is the wetland 1-5 acres;</p> <p>or is the wetland < 1 acre?</p>	<p>YES: Category I NO: Go to 2c.2</p> <p>YES: Category I</p> <p>YES: Go to 2c.3</p> <p>YES: Go to 2c.4</p>

<p>2c.3. Does the wetland meet at least 3 of the following 4 criteria:</p> <ul style="list-style-type: none"> - minimum existing evidence of human related disturbance such as diking, ditching, filling, cultivation, grazing or the presence of non-native plant species (see guidance for definition); - surface water connection with tidal saltwater or tidal freshwater; - at least 75% of the wetland has a 100 buffer of ungrazed pasture, open water, shrub or forest; - has at least 3 of the following features: low marsh; high marsh; tidal channels; lagoon(s); woody debris; or contiguous freshwater wetland. <p>2c.4. Does the wetland meet all of the four criteria under 2c3? (above)?</p>	<p>YES: Category I NO Category II</p> <p>YES: Category II NO: Category III</p>
<p>Q.2d. Eel Grass and Kelp Beds.</p> <p>2d.1. Are eelgrass beds present?</p> <p>2d.2. Are their floating or non-floating kelp bed(s) present with greater than 50% macro algal cover in the month of August or September?.....</p>	<p>YES: Category I NO: go to 2d.2</p> <p>YES: Category I NO: Category II</p>
<p>Q.3. Category IV wetlands.</p> <p>3a. Is the wetland: less than 1 acre <u>and</u>, hydrologically isolated <u>and</u>, comprised of one vegetated class that is dominated (> 80% areal cover) by one species from Table 3 (page 19) or Table 4 (page 20)</p> <p>3b. Is the wetland: less than two acres and, hydrologically isolated, with one vegetated class, and > 90% of areal cover in any combination of species from Table 3 (page 19)</p> <p>3c. Is the wetland excavated from upland <u>and</u> a pond smaller than 1 acre without a surface water connection to streams, lakes, rivers, or other wetland, and has < 0.1 acre of vegetation.</p>	<p>YES: Category IV <u>NO</u>: go to 3b</p> <p>YES: Category IV <u>NO</u>: go to 3c</p> <p>YES: Category IV <u>NO</u>: go to Q.4</p>

Q.4. Significant habitat value.		Circle scores that qualify																																								
<p>Answer all questions and enter data requested.</p> <p>4a. Total wetland area</p> <p>Estimate area, select from choices in the near-right column, and score in the far column:</p> <p>Enter acreage of wetland here: <u>< 0.1</u> acres, and source: <u>site visit + survey map</u></p>		<p><u>acres</u></p> <p>>200</p> <p>40-200</p> <p>10-40</p> <p>5-103</p> <p>1-5</p> <p>0.1-1</p> <p><u><0.10</u></p>	<p><u>points</u></p> <p>6</p> <p>5</p> <p>4</p> <p>2</p> <p>1</p>																																							
<p>4b. Wetland classes: Circle the wetland classes below that qualify:</p> <p>Open Water: if the area of open water is > 1/4 acre</p> <p>Aquatic Beds: if the area of aquatic beds > 1/4 acre,</p> <p>Emergent: if the area of emergent class is > 1/4 acre,</p> <p>Scrub-Shrub: if the area of scrub-shrub class is > 1/4 acre,</p> <p>Forested: if area of forested class is > 1/4 acre,</p> <p>Add the number of wetland classes, above, that qualify, and then Score according to the columns at right.</p> <p>e.g. If there are 4 classes (aquatic beds, open water, emergent & Scrub-shrub), you would circle 8 points in the far right column.</p>		<p><u>#of classes</u></p> <p>1..... 0</p> <p>2..... 3</p> <p>3..... 6</p> <p>4..... 8</p> <p>5..... 10</p>																																								
<p>4c. Plant species diversity.</p> <p>For each wetland class (at right) that qualifies in 4b above, count the number of different plant species you can find that cover more than 5% of the ground. You do not have to name them.</p> <p>Score in column at far right:</p> <p>e.g. If a wetland has an aquatic bed class with 3 species, an emergent class with 4 species and a scrub-shrub class with 2 species you would circle 2, 2, and 1 in the far column.</p> <p><i>Note: Any plant species with a cover of > 5% qualifies for points within a class, even those that are not of that class.</i></p> <p><i>There are 3 species with a cover of > 5%. Class is emergent, but the total area is < 1/4 acre.</i></p>		<table border="1"> <thead> <tr> <th>Class</th> <th># species in class</th> <th>Points</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Aquatic</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>1</td> </tr> <tr> <td>3</td> <td>2</td> </tr> <tr> <td>>3</td> <td>3</td> </tr> <tr> <td rowspan="4">Emergent</td> <td>1</td> <td>0</td> </tr> <tr> <td><u>2-3</u></td> <td><u>1</u></td> </tr> <tr> <td>4-5</td> <td>2</td> </tr> <tr> <td>>5</td> <td>3</td> </tr> <tr> <td rowspan="4">Scrub-Scrub</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>1</td> </tr> <tr> <td>3-4</td> <td>2</td> </tr> <tr> <td>>4</td> <td>3</td> </tr> <tr> <td rowspan="4">Forested</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>1</td> </tr> <tr> <td>3-4</td> <td>2</td> </tr> <tr> <td>>4</td> <td>3</td> </tr> </tbody> </table>	Class	# species in class	Points	Aquatic	1	0	2	1	3	2	>3	3	Emergent	1	0	<u>2-3</u>	<u>1</u>	4-5	2	>5	3	Scrub-Scrub	1	0	2	1	3-4	2	>4	3	Forested	1	0	2	1	3-4	2	>4	3	
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<p>4d. Structural diversity. If the wetland has a forested class, add 1 point if each of the following Classes is present within the forested class and is <u>larger than 1/4 acre</u>:</p> <ul style="list-style-type: none"> -trees > 50' tall..... -trees 20'- 49' tall..... -shrubs..... -herbaceous ground cover..... <p>Also add 1 point if there is any "open water" or "aquatic bed" class Immediately next to the forested area (i.e. there is no scrub/shrub or emergent vegetation between them).</p>	<p>YES - 1 YES - 1 YES - 1 YES - 1 YES - 1</p>
<p>4e. Decide from the diagrams below whether interspersions between wetland classes is high, moderate, low or none? If you think the amount of interspersions falls in between the diagrams score accordingly (i.e. a moderately high amount of interspersions would score a 4, while a moderately low amount would score a 2)</p> <div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="text-align: center;">  <p>none</p> </div> <div style="text-align: center;">  <p>low</p> </div> <div style="text-align: center;">  <p>low</p> </div> <div style="text-align: center;">  <p>moderate</p> </div> <div style="text-align: center;">  <p>moderate</p> </div> <div style="text-align: center;">  <p>high</p> </div> </div>	<p>High - 5 Moderate - 3 Low - 1 <u>None - 0</u></p>
<p>4f Habitat features. Answer questions below, circle features that apply, and score to right:</p> <ul style="list-style-type: none"> Is there evidence that the open or standing water was caused by beavers Is a heron rookery located within 300'? Are raptor nest/s located within 300'? Are there at least 3 standing dead trees (snags) per acre greater than 10" in diameter at "breast height" (DBH)? Are there at least 3 downed logs per acre with a diameter > 6" for at least 10' in length? Are there areas (vegetated or unvegetated) within the wetland that are ponded for at least 4 months out of the year, and the wetland has not qualified as having an open water class in Question 4b. ? 	<p>YES = 2 YES = 1 YES = 1 YES = 1 YES = 1 YES = 2</p>

<p>4g. Connection to streams. (Score one answer only.)</p> <p>4g.1. Does the wetland provide habitat for fish at any time of the year AND does it have a perennial surface water connection to a fish-bearing stream.</p> <p>4g.2 Does the wetland provide fish habitat seasonally AND does it have a seasonal surface water connection to a fish-bearing stream.</p> <p>4g.3 Does the wetland function to export organic matter through a surface water connection at all times of the year to a perennial stream.</p> <p>4g.4 Does the wetland function to export organic matter through a surface water connection to a stream on a seasonal basis?</p>	<p>YES = 6</p> <p>YES = 4</p> <p>YES = 4</p> <p>YES = 2</p>
<p>4h. Buffers.</p> <p>Score the existing buffers on a scale of 1-5 based on the following four descriptions. If the condition of the buffers do not exactly match the description, score either a point higher or lower depending on whether the buffers are less or more degraded.</p> <p>Forest, scrub, native grassland or open water buffers are present for more than 100' around 95% of the circumference.</p> <p>Forest, scrub, native grassland, or open water buffers wider than 100' for more than 1/2 of the wetland circumference, or a forest, scrub, grasslands, or open water buffers for more than 50' around 95 % of the circumference.</p> <p>Forest, scrub, native grassland, or open water buffers wider than 100' for more than 1/4 of the wetland circumference, or a forest, scrub, native grassland, or open water buffers wider than 50' for more than 1/2 of the wetland circumference.</p> <p>No roads, buildings or paved areas within 100' of the wetland for more than 95% of the wetland circumference.</p> <p>No roads, buildings or paved areas within 25' of the wetland for more than 95% of the circumference, or No roads buildings or paved areas within 50' of the wetland for more than 1/2 of the wetland circumference.</p> <p>Paved areas, industrial areas or residential construction (with less than 50' between houses) are less than 25 feet from the wetland for more than 95 % of the circumference of the wetland.</p>	<p>Score = 5</p> <p>Score = 3</p> <p>Score = 2</p> <p>Score = 2</p> <p>Score = 1</p> <p>Score = 0</p>

4i. Connection to other habitat areas:

Select the description, which best matches the site being evaluated.

-Is the wetland connected to, or part of, a riparian corridor at least 100' wide connecting two or more wetlands; or, is there an upland connection present >100' wide with good forest or shrub cover (>25% cover) connecting it with a Significant Habitat Area?	YES = 5
-Is the wetland connected to any other Habitat Area with either 1) a forested/shrub corridor < 100' wide, or 2) a corridor that is > 100' wide, but has a low vegetative cover less than 6 feet in height?	Yes = 3
-Is the wetland connected to, or a part of, a riparian corridor between 50 - 100' wide with scrub/shrub or forest cover connection to other wetlands?	Yes = 3
- Is the wetland connected to any other Habitat Area with narrow corridor (<100') of low vegetation (< 6' in height)?	Yes = 1
- Is the wetland and its buffer (if the buffer is less than 50' wide) completely isolated by development (urban, residential with a density greater than 2/acre, or industrial)?	Yes = 0

Now add the scores circled (for Q.5a – Q.5i above) to get a total.

Is the Total greater than or equal to 22 points?

Total = 5 points

YES = Category II

NO = Category III