Wetland Delineation Report

Rivergate Mitigation Project, Port of Portland

Portland, Oregon

July 2001

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DAVID EVANS AND ASSOCIATES, INC.

Wetland Delineation Report

Rivergate Mitigation Project
Port of Portland

Portland, Oregon

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July 2001

PREFACE

This report has been prepared for the exclusive use of the Port of Portland, the David Evans and Associates, Inc. (DEA) project team, and reviewing agency representatives. In preparing this report, DEA has used the site information referenced herein. Findings reported herein are based on information gathered in the field at the time of investigation, our understanding of the US Army Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987), and DEA's understanding of federal, state, and local regulations governing wetlands.

The wetland boundaries and classifications described in this document represent the best professional judgment of our staff. The decisions were based on the circumstances and site conditions at the time of the field investigation. Final verification of wetland delineations is made by the appropriate federal, state, and local jurisdictions. Prior to final design or any construction activities, all appropriate regulatory agencies should be contacted to verify the findings of this report and to obtain appropriate approvals and permits.

This report documents the investigation, best professional judgement and conclusions of the investigator. It should be considered a Preliminary Jurisdictional Determination and used at your own risk until it has been reviewed and approved in writing by the Oregon Division of State Lands in accordance with OAR 141-090-0005 through 141-090-0055.

EXECUTIVE SUMMARY

David Evans and Associates, Inc. (DEA) conducted an on-site wetland delineation on July 11, 2001 for the Port of Portland, on lands adjacent to the Columbia Slough, Portland, Oregon. The delineation was performed in support of the Port of Portland's Rivergate Mitigation project. The project is located on the Rivergate District's Leadbetter Peninsula adjacent to the Columbia Slough and Bybee Lake in Township 2 North, Range 1 West, Section 25, Willamette Meridian (Figure 1).

The study area for this wetland delineation was located along the east bank and flood-bench of the Columbia Slough, starting approximately 100 feet north of the BNSF Railroad bridge crossing of the slough, and ending approximately 1.25 miles to the south (upstream), where a major fork in the slough occurs. The delineation focused on the flood-bench, up to and including the edge of adjacent fill slopes associated with historic development activities.

The purpose of this delineation is to determine the presence, location, and size of wetlands and other waters of the United States (U.S.) as defined under Section 404 of the Clean Water Act. Once verified by the appropriate agencies, this report will allow the City to accurately understand specific impacts to wetlands and other waters of the U.S. associated with the proposed project.

The wetland investigation was conducted using the routine on-site determination method described in the *US Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987). This method requires the presence of hydrophytic vegetation, hydric soils, and positive wetland hydrology in wetland determinations. Plant communities, soils, and hydrology were assessed at 10 data sample plots.

The majority of the flood bench was identified as jurisdictional wetland. The area north of the BNSF Railroad bridge crossing was determined to be upland. A small portion of the flood bench, just south of the BNSF Railroad bridge crossing was also determined to be upland.

Wetlands and other waters of the state are under the jurisdiction of both the Oregon Division of State Lands (DSL) and US Army Corps of Engineers (USACE). Both agencies will make the final determination of jurisdictional wetland limits. Prior to final design or any construction, DSL and USACE should be contacted to verify the findings of this report and to obtain appropriate approvals and permits.

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INTRODUCTION

David Evans and Associates, Inc. (DEA) conducted an on-site wetland delineation on July 11, 2001 for the Port of Portland, on lands adjacent to the Columbia Slough, Portland, Oregon. The delineation was performed in support of the Port of Portland's Rivergate Mitigation project. Specifically, the delineation covers the area in which a proposed hiking trail would be located. The trail would be constructed in accordance with Metro's 40-Mile Loop Master Plan and the City of Portland. The project is located on the Rivergate District's Leadbetter Peninsula adjacent to the Columbia Slough and Bybee Lake in Township 2 North, Range 1 West, Section 25, Willamette Meridian (Figure 1).

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The purpose of this delineation is to determine the presence, location, and size of wetlands and other waters of the United States (U.S.) as defined under Section 404 of the Clean Water Act. Once verified by the appropriate agencies, this report will allow the City to accurately understand specific impacts to wetlands and other waters of the U.S. associated with the proposed project.

SITE DESCRIPTION

The project site is located along the east flood bench of the Columbia Slough, on Pearcy Island. Within the vicinity of the proposed project most of Pearcy Island has been covered with up to 30 plus feet of sandy fill material associated with historic development activities. This fill is located along the eastern edge of most of the project study area. The exception to this is along the southern quarter of the site, which lacks this fill. No development has occurred on the fills immediately abutting the project area, with the exception of the BNSF Railroad Bridge crossing of the slough, located at the northern end of the study area.

Between the open channel of the slough and the historic fill, the northern three fourths of the project study area consists of a vegetated flood bench approximately 150 to 200 feet wide. A natural levee has formed along the eastern bank of the slough. Elevations directly along the bank range between 12 to 16 feet (NGVD). Elevations on the flood-bench, behind the natural levee, are generally 1 to 3 feet below those found at corresponding points along the levee. In the southern quarter of the project study area, where there is no fill material, the flood bench gradually dips, rises, and then dips again as it gently grades into the shoreline of Bybee Lake. Elevations are similar to those previously mentioned.

Vegetation along the flood-bench consisted of two plant communities. The first community was a forested community dominated by black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), Oregon ash (*Fraxinus latifolia*), Pacific willow (*Salix lasiandra*), and Scouler's

willow (*Salix scouleriana*). The second plant community was a herbaceous community dominated solely by reed canarygrass (*Phalaris arundinacea*). The forested community was generally found in the higher elevation areas including alongside the lower portions of the fill slopes. The herbaceous community was generally located in lower lying depressional areas behind the natural levee. Vegetation on top of the historic fill consisted of a mix of weedy herbaceous species.

METHODS

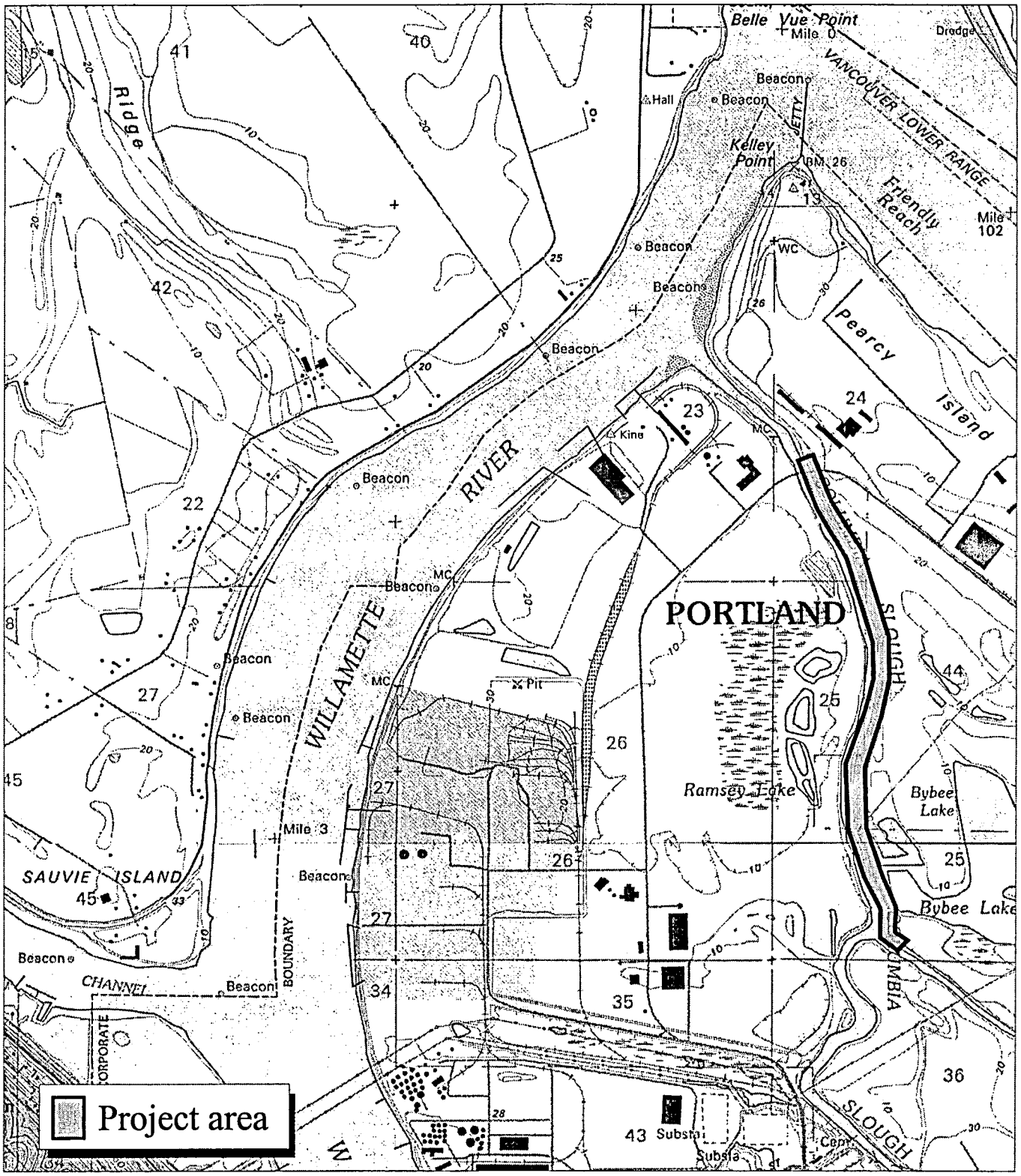
PRELIMINARY RESOURCE REVIEW

A review of preliminary resource materials, including National Wetlands Inventory (NWI) map (Figure 2) for identification of possible wetlands and Soil Conservation Service (SCS) soil series maps (Figure 4) for location of possible hydric soils, was conducted prior to the field work. The materials reviewed included:

- Linnton, Oregon and, Sauvie Island, Oregon-Washington, 7.5 minute Quadrangles, U.S. Geological Survey (USGS), 1990.
- Linnton, Oregon and, Sauvie Island, Oregon-Washington, NWI, U.S. Department of the Interior, Fish and Wildlife Service, 1989.
- Soil Survey of Multnomah County, Oregon, U.S. Department of Agriculture (USDA), Soil Conservation Service (SCS), 1983.

FIELD METHODS

In performing the fieldwork, the objective was to identify the location of wetlands occurring within the project area. Wetland areas were delineated using the routine on-site method described in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987). This method requires an area to possess a prevalence of hydrophytic vegetation, hydric soils, and wetland hydrology. Normal circumstances exist on site and therefore positive indicators of each of these three parameters must be present for an area to satisfy the criteria for jurisdictional wetlands.



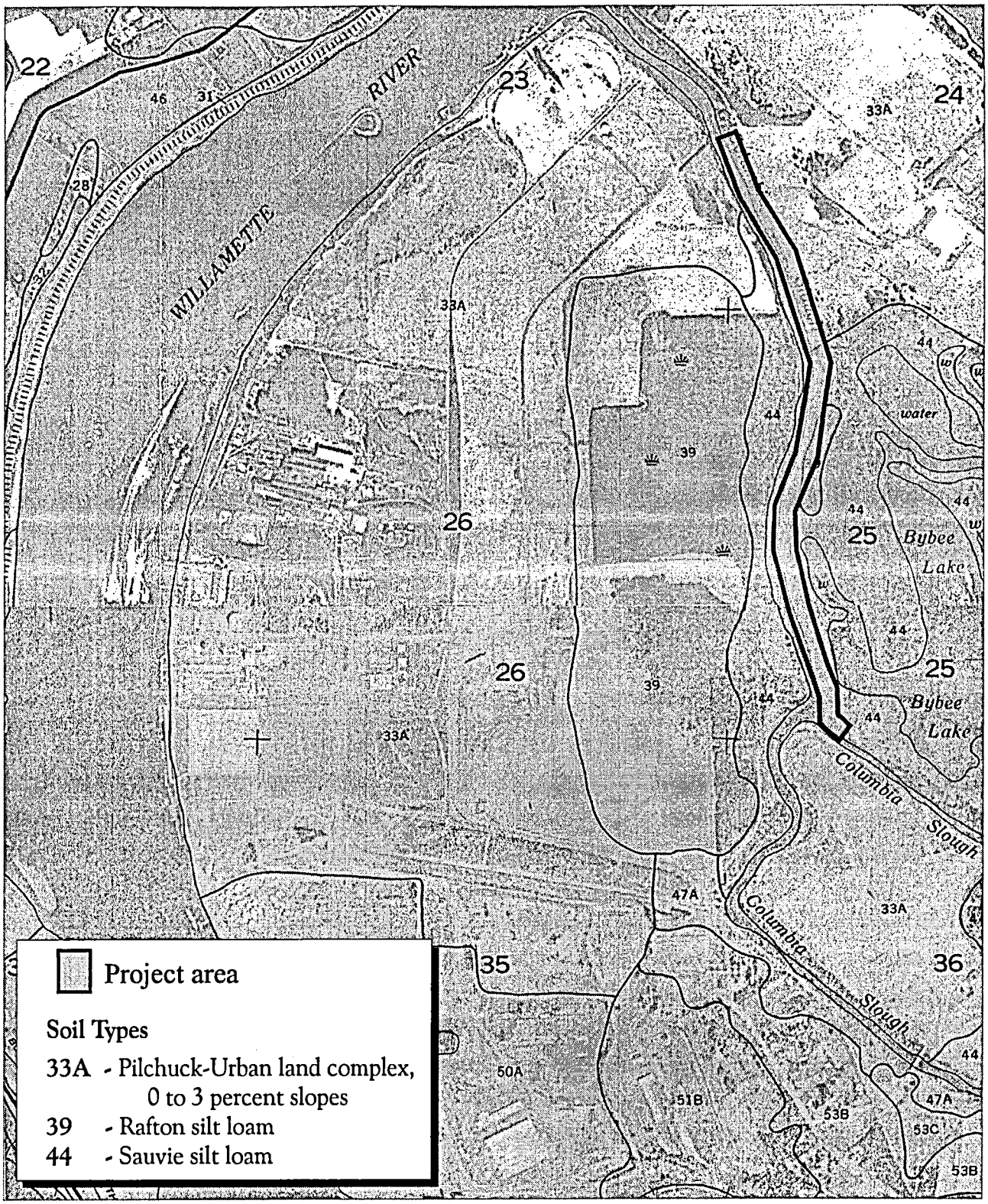
Source: USGS 7.5 minute Quandrangle, Linnton and Sauvie Island, Oregon, 1990

Scale - 1:24,000

RIVERGATE MITIGATION PROJECT

PORTLAND, OREGON

Figure 1
Vicinity



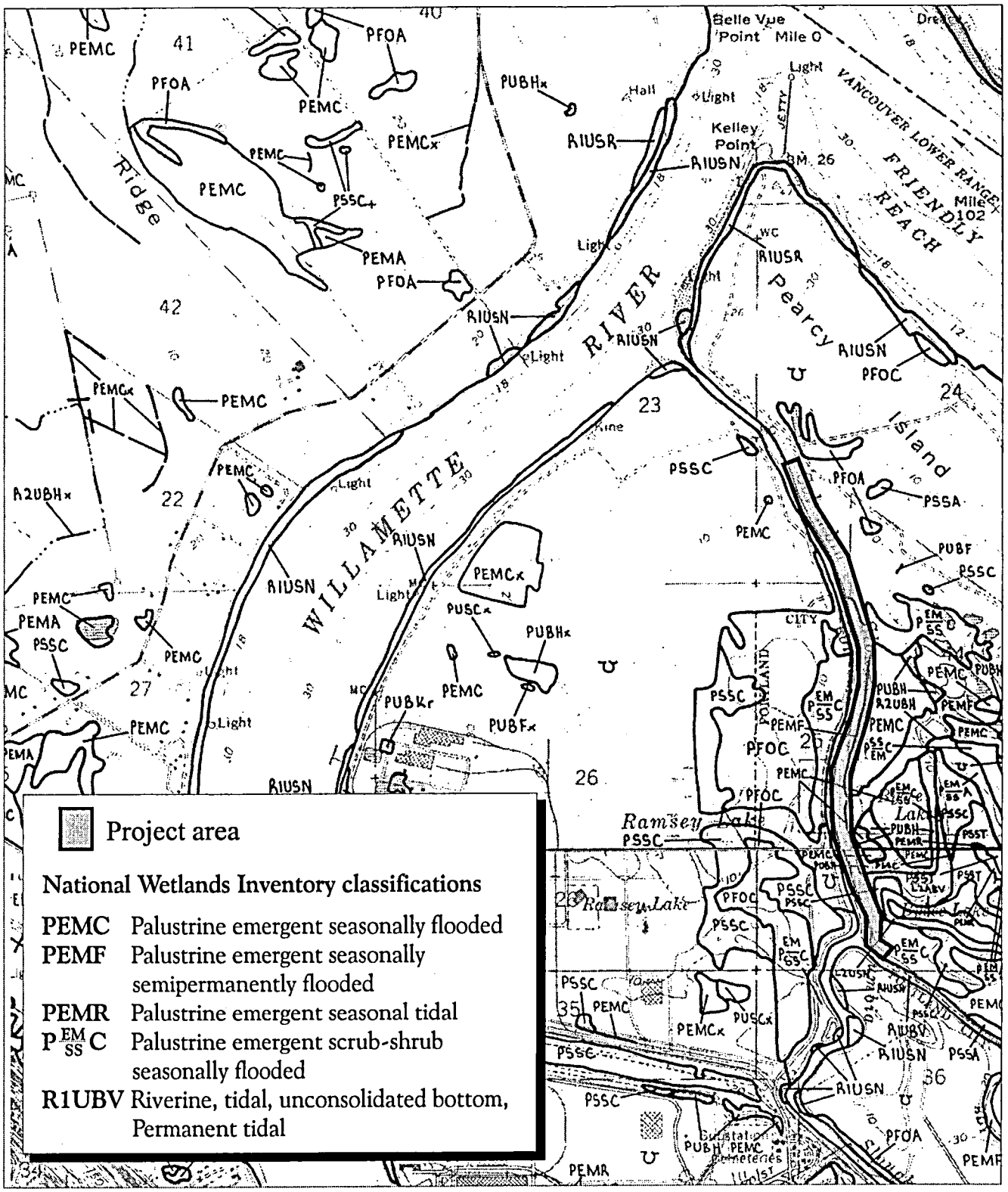
Source: Soil Survey of Multnomah County, Oregon, Sheets 5 and 6, 1983

Scale - 1:20,000

RIVERGATE MITIGATION PROJECT

PORTLAND, OREGON

Figure 2
Soil Survey



Source: NWI, Linnton and Sauvie Island, Oregon, 1981

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RIVERGATE MITIGATION PROJECT

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Figure 3
National
Wetlands Inventory

Hydrology

Data on hydrology should be collected during the early growing season (March through early May in the project area). Otherwise, wetland hydrology is determined using field indicators. Field indicators of wetland hydrology are divided into two categories: primary and secondary. Primary indicators include visual observation of inundation or saturation within 12 inches of the surface during the growing season, evidence of wetland drainage patterns, drift lines, sediment deposits, and water marks on woody vegetation or other fixed objects such as fence posts. Secondary field indicators include the presence of oxidized rhizospheres (rust-colored channels around living roots or along old roots) in the upper 12 inches, water-stained vegetation, morphological plant adaptations, and local soil survey data. At each sample plot the surrounding area was examined for the presence of primary and secondary indicators of wetland hydrology. One primary or two secondary indicators must be present for an area to be considered to have wetland hydrology.

Soils

The project site was examined for the presence of hydric soils. Hydric soils are soils that are saturated, flooded, or ponded long enough (usually a week or more) during the growing season to develop anaerobic conditions in the upper part (Environmental Laboratory, 1987). Typical field indicators of hydric conditions include organic layers (hystic epipidons), gleying (gray soil colors), and low soil chromas (intensity of the soil hue) with or without redoximorphic features (mottles). Low soil chroma and mottles are indicators of reduced soil conditions caused by anaerobic, wet environments. Mottles indicate a fluctuating water table. Local Natural Resource Conservation Service (NRCS) offices and the National Technical Committee for Hydric Soils (NTCHS) have published complete lists of hydric soils series. Local NRCS determinations take precedence over the NTCHS. The *Soil Survey of Multnomah County, Oregon* (USDA, 1983) was consulted prior to fieldwork to determine if hydric soils are mapped for the site.

Soil pits were dug to an average depth of 14 inches at each sample location. Soil at a depth of between four and 12 inches was analyzed for color using the *Munsell Soil Color Chart* (Munsell Color, 1990). Soil color is based on hue, value, and chroma. Prescribed methods require a "colormetric" determination immediately below the "A" horizon, or ten inches, whichever is less. A hydric mineral soil will usually have either a matrix chroma of 2 or less in soils with redoximorphic features, or a matrix chroma of 1 in soils without redoximorphic features.

Vegetation

The U.S. Fish and Wildlife Service (FWS) has classified vegetation according to its frequency of occurrence in wetlands (FWS, 1988). Many plant species have been given wetland indicator status of either obligate wetland (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), or upland (UPL) based on their probabilities for occurring in wetlands. For each of the three facultative plant indicator categories, the Region 9 list uses a

plus (+) sign to denote the affinity of a particular species for a slightly more hydrophytic habitat. Similarly, a minus (-) sign indicates a plant species with a preference for a less hydrophytic habitat. Table 1 provides the definitions of plant indicators used to determine wetland status.

Table 1: Plant Indicators Used To Determine Wetland Status

Indicator Symbol	Indicator Status	Definition
OBL	Obligate	Species that occur almost always (estimated probability >99%) in wetlands under natural conditions.
FACW	Facultative wetland	Species that occur in wetlands (estimated probability 67 to 99%), but occasionally are found in non-wetlands.
FAC	Facultative	Species that are equally likely to occur in wetlands or non-wetlands (estimated probability 34-66%).
FACU	Facultative upland	Species that usually occur in non-wetlands (estimated probability 67-99%), but occasionally are found in wetlands.
UPL	Upland	Species that occur almost always in non-wetlands under normal conditions (estimated probability >99%).
NI	No indicator	Species for which insufficient information was available to determine an indicator status.

Source: *National List of Plant Species that Occur in Wetlands: Northwest (Region 9) (Reed, 1988).*

Vegetation plots were established in areas of typical homogeneous vegetation, and all plant species observed were identified (Hitchcock and Cronquist, 1973; Reed, 1988). Percent cover of all plant species identified was estimated. Dominant species are those species in each stratum (tree, shrub, and herb layer) that, when ranked in descending order of estimated percent areal coverage and cumulatively totaled, immediately exceed 50 percent of the total coverage. Additionally, any species comprising at least 20 percent of the total coverage for their respective stratum was also considered dominant. When more than 50 percent of the dominant plant species have an indicator status of OBL, FACW, FAC (excluding FAC-), the area is considered to support hydrophytic vegetation.

Field Data Documentation

Data sheets were completed at each sample plot documenting the vegetation, soils and hydrology. Sample plots were chosen that would best define the boundary between wetland and upland areas. The data sheets for the sample plots are included in Appendix A.

Areas in which wetland hydrology, hydric soils and hydrophytic vegetation are all simultaneously present would likely be considered wetlands by the US Army Corps of Engineers (USACE) or Oregon Division of State Lands (DSL).

RESULTS

PRELIMINARY RESOURCE REVIEW

Soils

The *Soil Survey of Multnomah County, Oregon* (USDA, 1983) identifies three soil series within the project area (Figure 2). The three soil series are Pilchuk-Urban land complex, 0 to 3 percent slopes (mapping unit 33A), Rafton silt loam (mapping unit 39), and Sauvie silt loam (mapping unit 44). These mapping units are described in the following section.

Pilchuk-Urban land complex, O to 3 percent slopes

This complex consists of excessively drained soil on flood plains of the Columbia and Willamette Rivers. The soil formed in sandy alluvium or sandy dredge spoils. In most areas of this complex the soils have been graded, cut, filled, or otherwise disturbed. About 15 percent of this complex are areas of Pilchuck soils that are relatively undisturbed. These soils typically have a surface layer of very dark grayish-brown (10YR 3/2) sand about 12 inches thick. The underlying material is dark grayish-brown (10YR 4/2) sand to a depth of 60 inches or more. About 35 percent of the complex is comprised of sandy dredge spoils 20 feet or more in depth that has been deposited over Moag, Rafton , and Sauvie soils. The water table is at a depth of 2 to 4 feet from November through April. Another 35 percent of this complex is urban land. The remaining 15 percent of this complex consists of inclusions of Moag, Rafton Faloma, and Sauvie soils. In areas of Pilchuk soils where vegetation has become established, dominant vegetation consists of black cottonwood, willow, trailing blackberry (*Rubus ursinus*), forbs, and grasses.

Pilchuk-Urban land complex, O to 3 percent slopes, is not listed as a hydric soil by the Multnomah County NRCS or the NTCHS. However, inclusions of Moag, Rafton, Faloma, and Sauvie soils, are listed as hydric soils by the Multnomah County NRCS or the NTCHS.

Rafton silt loam

Rafton silt loam is a deep, very poorly drained soil that formed in the broad floodplains along the Columbia River. Parent material is recently deposited silty alluvium (fragments of rock material transported and deposited by running water) and some intermixed volcanic ash. Slopes range from 0 to 2 percent and elevation is 10 to 20 feet. In a typical profile, the surface layer is a dark grayish-brown (10YR 4/2) silt loam about 9 inches thick with yellowish-red (5YR 4/8 and 5/8) mottles. The subsoil is composed of two layers. The upper subsoil is grayish-brown (10YR 5/2) silt loam between 9 and 21 inches depth with yellowish-red (5YR 5/6 and 5/8) mottles. The lower subsoil, between 21 and 40 inches depth, is a variegated brown (10YR 4/3) and gray (10YR 5/1) silt loam with yellowish-red (5YR 4/8) mottles. The substratum, between 40 and 60 inches depth, is a dark grayish-brown (10YR 4/2) and very dark gray (10YR 4/2) silt loam with reddish-brown 5YR 4/4), yellowish red (5YR 4/8) and red (2.5YR 4/6) mottles. Native vegetation is black cottonwood, willow, common snowberry *(Symphoricarpos alba),* roses *(Rosa sp.),* sedges *(Carex sp.),* cattail *(Typha latifolia),* and

grasses. Permeability is moderate and these soils have low shrink-swell potential. Runoff is very slow and the hazard of erosion from overflow is high. Rafton soils are frequently (more often than once every two years) flooded from December through June and the water table is within a depth of 12 inches from December through July.

Included in the Rafton series are areas of Moag, Pilchuck, and Sauvie soils which can occupy as much as 10 percent of this mapping unit. Rafton, and the inclusions of Moag and Sauvie, are listed as hydric soils by the Multnomah County NRCS or the NTCHS. Pilchuck is not a hydric soil.

Sauvie silt loam

The Sauvie silt loam is a deep, poorly drained soil that formed in silty alluvium on convex areas of floodplains along the Columbia River. Parent material is recent alluvium (rock fragments transported and deposited by flowing water), with some volcanic ash. Slopes range from 0 to 2 percent and elevation is 10 to 20 feet. In a representative profile the surface layer is a very dark grayish-brown (10YR 3/2) silt loam about 15 inches thick with brown (7.5YR 4/4) mottles between 6 to 10 inches depth. The subsoil is a very dark grayish-brown (10YR 3/1) silty clay loam between 15 and 39 inches depth with brown (7.5YR 4/4) mottles. The substratum, between 39 and 60 inches depth, is a dark grayish-brown (10YR 4/2) fine sandy loam with brown (7.5YR 4/4) and reddish-brown (5YR 4/4) mottles. Native vegetation is black cottonwood, Oregon white oak *(Quercus garryana),* Oregon ash, willows, common snowberry, trailing blackberry, roses, forbs, and grasses. Permeability is moderately slow and these soils have low to moderate shrink-swell potential. Runoff is slow and the hazard of erosion from overflow is high. Sauvie soils are frequently flooded between December and June. Apparent high water tables (0 to 1.0 feet deep) can occur from May through June. An apparent water table is a seasonal water table suggested by mottles and concretions in the soil.

Included in the Sauvie series are areas of Moag, protected Sauvie silty clay loam, Rafton, and Pilchuck soils which can occupy as much as 10 percent of this mapping unit. Sauvie, and inclusions of Moag and the Rafton series are listed as hydric soils by the Multnomah County NRCS or the NTCHS. Sauvie silty clay loam, protected, and Pilchuck are not hydric soils.

National Wetlands Inventory

Analysis of the Sauvie-Island, Oregon-Washington, and Linnton, Oregon, National Wetlands Inventory Quad Maps (NWI) shows the following wetlands mapped within the project study area: palustrine emergent/scrub-shrub, seasonally flooded (PEM/SSC); and, palustrine emergent, semipermanently flooded (PEMF). These wetlands were mapped along the southern three fourths of the project study area. The open channel of the slough is mapped as a riverine, tidal, unconsolidated bottom, permanent-tidal wetland (R1UBV).

FIELD RESULTS

The on-site wetland delineation was conducted on July 11, 2001. Hydrology, soils, and plant communities were assessed at 10 data sample plots (Figure 4). Data sheets containing plot information are included in Appendix A. Results of the field investigation are presented below.

Wetland Plots (Plots 2, 4, 6, 8, and 9)

Plots 2, 4, 6, 8, and 9 were identified as jurisdictional wetlands as they all contained a hydrophytic plant community, wetland hydrology, and hydric soils. Plots 2, 4, 6, and 8 were located on the flood bench near the base of the fill slope. Plot 9 was located on the natural levee associated with the flood bench and adjacent to the open channel of the Columbia Slough.

Vegetation

Vegetation along the flood-bench, including the natural levee, consisted of two plant communities. The first community was a forested community dominated by black cottonwood (FAC), Oregon ash (FACW), Pacific willow (FACW+), and Scouler's willow (FAC). The second plant community, represented by Plot 8, was a herbaceous community dominated solely by reed canarygrass (FACW). The forested community was generally found in the higher elevation areas including alongside the lower portions of the fill slopes and along the natural levee. The herbaceous community was generally located in lower lying depressional areas behind the natural levee.

Plots 2, 4, 6, and 9 represent the forested community; however, it should be noted that these plots were located near the edge of this community and so the data sheets also reflect the presence of the adjacent herbaceous community. Under full forest canopy the percent cover of the herbaceous layer was generally much less than that reflected by the data sheets. The data sheets also do not reflect the presence of black cottonwood, which was noted at similar elevations as Plots 2, 4, 6, and 9.

Both plant communities (Plots 2, 4, 6, 8, and 9) met the criteria for a hydrophytic plant community.

Hydrology

Evidence of hydrology consisted of drift lines occurring up to two feet up the side of several tree trunks within the project study area. The upper extent of the height of the drift lines corresponds approximately with elevation 16 feet (NGVD). Wetland drainage patterns were also evident in the form of scour marks and the lack of persistent woody vegetation within the depressional areas along the flood bench. At the time of the site visit, conducted well past the early growing season, soils were not saturated and no surface water was evident in the study area.

Based on the above evidence, wetland hydrology was present at Plots 2, 4, 6, 8, and 9.

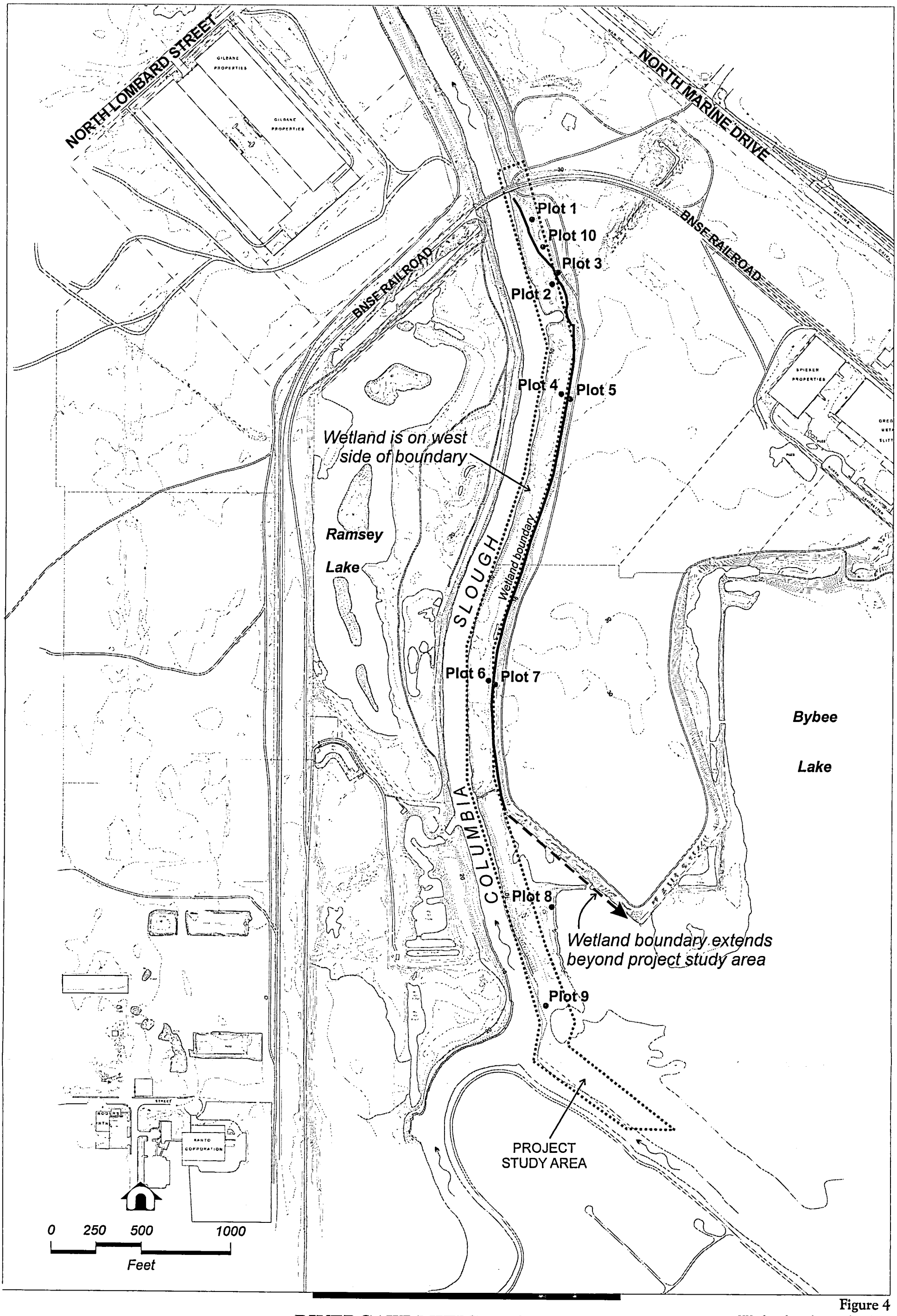

Figure 4
Wetland and sample plots

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Soils

Soils at Plots 2, 4, 6, 8, and 9 were all similar in character to each other. Soil color from 0 to 12 inches was generally a very dark gray or very dark grayish-brown (10YR 3/1 or 3/2) and contained common to abundant yellowish-brown to reddish-brown (10YR 5/8 to 5YR 4/4) mottles. Soil texture was clay loam. Plot 2 contained a dark grayish-brown (10YR 4/2) sandy layer in the upper 8 inches that contained no mottles. Below 8 inches, soils were similar to those described previously.

Soils at Plots 2, 4, 6, 8, and 9 were determined to be hydric soils.

Upland Plots (Plots 1, 3, 5, 7, 10)

Plots 1, 3, 5, 7, and 10 were identified as upland. A hydrophytic plant community was identified in most of these plots; however, all of these plots lacked wetland hydrology and hydric soils. Plots 3, 5, and 7 were located along the upper half of the fill slope. Plots 1 and 10 were located below the edge of the fill slope, but behind what appears to be an old manmade berm located between the fill slope and the open channel of the slough.

Vegetation

Vegetation at Plots 1, 5, 7, and 10 consisted of a mix of hydrophytic and non-hydrophytic species. Overall, the plant community represented by these plots was similar to the forested plant community described in the section for wetland plots, with the exception of some non-hydrophytic species present in the understory. Dominant tree and shrub species consisted of black cottonwood, Oregon ash, Pacific willow, Scouler's willow, Himalayan blackberry (*Rubus discolor*, FACU), trailing blackberry (*Rubus ursinus*, FACU), and gooseberry (*Ribes divaricatum*, FAC). Dominant herbaceous species consisted of an unidentified species of goldenrod (*Solidago* sp.), common horsetail (*Equisetum hyemale*, FACW), and reed canarygrass.

Plot 3 was located in an open area along the fill slope containing upland weedy species. Dominant vegetation consisted of goldenrod, and common St. John's wort (*Hypericum perforatum*, UPL).

The plant community represented by Plots 1, 5, 7, and 10 met the criteria for a hydrophytic plant community. The plant community represented by Plot 3 did not meet the criteria for a hydrophytic plant community.

Hydrology

No evidence of wetland hydrology was present at Plots 1, 3, 5, 7, and 10. Soils located along the fill slope, Plots 3, 5, and 7, consist of fine sand, which is well drained. Soils at Plots 1 and 10 also consisted of fine sand, which likely has eroded off of the edge of fill. No organic layer or organic streaking was evident in any of the above plots.

Based on the above evidence, wetland hydrology was not present at Plots 1, 3, 5, 7, and 10.

Soils

Soils at Plots 1, 3, 5, 7, and 10 were a dark grayish-brown (2.5Y 4/2) fine sand. No signs of hydric soil conditions (i.e. mottling, organic streaking, build up of an organic layer, etc.) were present. These soils are well drained.

Soils at Plots 1, 3, 5, 7, and 10 were non-hydric.

DETERMINATION OF WETLAND BOUNDARY

A majority of the sample plots were set up as paired upland and wetland plots in order to determine the boundary of the jurisdictional wetland within the project study area. All of the plots used in this delineation contained a hydrophytic plant community, with the exception of Plot 3. Because of this, vegetation was not used as the primary determinant of where the wetland boundary should be set. However, in some places along the fill slope there was a notable change in the composition of herbaceous species associated with a change in elevation. This change generally occurred around the 16 to 18 foot elevation mark. Hydrophytic herbaceous species (i.e. reed canarygrass) were located below these elevations and non-hydrophytic species (i.e. common St. John's wort [Plot 3]) were located above these elevations.

The wetland boundary within the study area was determined primarily from the presence/absence of wetland hydrology and hydric soil indicators. Watermarks noted at the approximately 16 foot elevation were used to define the upper limit of wetland hydrology in most places. It was determined that in some areas along the side of the fill slope, wetland hydrology may occur slightly higher due to seepage –up to the 18 foot elevation mark. This determination was based on soils evidence that showed hydric soils occuring up to this elevation. The wetland boundary was generally flagged between the 16 and 18 foot elevations. The line was adjusted slightly upward or downward based on the presence/absence of hydric soils. The presence/absence of hydric soils was determined based on information collected at the ten documented sample plots as well as many additional undocumented soil plots taken along the project route. The wetland boundary was flagged and professionally land surveyed.

The boundary delineation resulted in the majority of the flood bench being identified as jurisdictional wetland. The area north of the BNSF Railroad bridge crossing consisted of riprap and other construction fills sparsely vegetated with upland weedy species. This area was determined to be upland. A small portion of the flood bench, just south of the BNSF Railroad bridge crossing was also determined to be upland. This area was located between the edge of the fill slope and what appears to be an old manmade berm. The berm likely limits flooding of this area, as no signs of wetland hydrology or hydric soils were present here (Plots 1 and 10).

REGULATORY REQUIREMENTS AND IMPLICATIONS

Several federal, state, and local laws regulate development in and around wetlands and other waters of the United States. Agencies having jurisdiction over development impacts associated with on-site wetlands and other waters of the U.S. include DSL and USACE. Wetland boundaries delineated by DEA are subject to verification and approval by these agencies. **Prior to final design or any construction, DSL and USACE should be contacted to verify the findings of this report and to obtain appropriate approvals and permits.**

If wetland impacts are unavoidable, the project will require permits from DSL and USACE. DSL requires a permit when the total removal or fill from a water of the state, including wetlands, is equal to or exceeds 50 cubic yards (zero cubic yards for most activities in water bodies mapped as essential salmonid habitat). As a condition of receiving a Removal/Fill permit, DSL will require replacing wetland acreage and functions lost due to construction impacts.

USACE administers Section 404 of the federal Clean Water Act, which regulates discharge of fill material into waters of the United States, including wetlands. USACE presumes that other upland alternatives for development are available until the applicant clearly demonstrates otherwise. Filling of wetlands is not permitted in documented habitat for listed endangered, threatened, or sensitive plant or animal species.

PREPARERS AND CONTRIBUTORS

Ethan Rosenthal, DEA Natural Resource Specialist, and Phil Rickus, DEA Ecologist, conducted the on-site delineation. Mr. Rosenthal is the author of this report. Kevin O'Hara, DEA Senior Ecologist, provided Total Quality Management reviews.

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United States Fish and Wildlife Service (FWS). 1988. *National list of plant species that occur in wetlands: Northwest (Region 9).* US. Fish and Wildlife Service, Biological Report 88 (26.9).

APPENDIX A

Wetland Delineation Data Forms

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Form

Project Site:	Rivergate Mitigation Project	Date:	July 11, 2001
Applicant/Owner:		County:	Multnomah
Investigator:	Ethan Rosenthal	State:	Oregon

Do Normal Circumstances exist on the site?	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is Area a Potential Problem Area? *(if needed, explain on reverse)*		Yes	X	No	Plot ID: Plot 1

VEGETATION

	Dominant Plant Species*	Percent	Stratum	Indicator		Dominant Plant Species	Percent	Stratum	Indicator
1	* Populus balsamifera	50	T	FAC	8				
2	* Salix lucida	20	T	FACW+	9				
3	* Populus balsamifera	30	S	FAC	10				
4	* Ribes divaricatum	20	S	FAC	11				
5	Mahonia nervosa	Trace	S	FACU	12				
6	Rubus ursinus	Trace	S	FACU	13				
7	* Solidago sp.	5	H	UNK	14				

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Although marked as a dominant, Solidago sp. was not included in the calculation of percent dominant species since its indicator status for is unknown.

HYDROLOGY

- [ ] Recorded Data (describe in Remarks)
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [ ] No recorded data available

Field Observations:
- Depth of Surface Water: NA (In.)
- Depth to Free Water in Pit: >14 (In.)
- Depth to Saturated Soil: >14 (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [ ] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patters in Wetlands

Secondary Indicators (2 or more required):
- [ ] Oxidized Root Channels in Upper 12"
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (explain in remarks)

Remarks: No signs of wetland hydrology present (i.e. no ponding, sediment deposits, drift lines, organic streaking in soils, etc.).

SOILS

Map Unit Name (series and Phase): Pilchuk-Urban Land complex, 0 to 3 percent slopes
Taxonomy (Subgroup):

Drainage Class: excessively drained
Field Observations Confirm Mapped Type? *Circle* (Yes) No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0 to 12		2.5Y 4/2	No mottles		Fine sand

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] Organic Streaking in Sandy Soils
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Listed on National Hydric Soils List
- [ ] Listed on Local Hydric Soils List
- [ ] Other (explain in remarks)

Remarks: Sandy soils with no significant organic layer or organic streaking.
Crushed rock found in upper 8 inches.

WETLAND DETERMINATION

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

Remarks: This plot is considered upland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Form

Project Site:	Rivergate Mitigation Project	Date:	July 11, 2001
Applicant/Owner:		County:	Multnomah
Investigator:	Ethan Rosenthal	State:	Oregon

Do Normal Circumstances exist on the site?	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is Area a Potential Problem Area? *(if needed, explain on reverse)*		Yes	X	No	Plot ID: Plot 2

VEGETATION

	Dominant Plant Species*	Percent	Stratum	Indicator		Dominant Plant Species	Percent	Stratum	Indicator
1	* Salix lucida	25	T	FACW+	8				
2	* Salix lucida	5	S	FACW+	9				
3	* Cornus stolonifera	5	S	FACW	10				
4	* Phalaris arundinacea	100	H	FACW	11				
5					12				
6					13				
7					14				

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

- [ ] Recorded Data (describe in Remarks)
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [ ] No recorded data available

Field Observations:
- Depth of Surface Water: NA (In.)
- Depth to Free Water in Pit: >14 (In.)
- Depth to Saturated Soil: >14 (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [ ] Saturated in Upper 12 inches
- [ ] Water Marks
- [X] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patters in Wetlands

Secondary Indicators (2 or more required):
- [ ] Oxidized Root Channels in Upper 12"
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (explain in remarks)

Remarks: Drift lines noted approximately 2 ft up side of tree trunk.

SOILS

Map Unit Name (series and Phase): Pilchuk-Urban Land complex, 0 to 3 percent slopes
Taxonomy (Subgroup):

Drainage Class: excessively drained
Field Observations Confirm Mapped Type? Yes (No) *Circle*

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0 to 8		10YR 4/2	No mottles		Sandy loam, with crushed rock
8 to 12		10YR 3/2	5YR 4/6	Common, distinct	Sandy loam

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] Organic Streaking in Sandy Soils
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Listed on National Hydric Soils List
- [ ] Listed on Local Hydric Soils List
- [ ] Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

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

Remarks: This plot is considered wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Form

Project Site:	Rivergate Mitigation Project	Date:	July 11, 2001
Applicant/Owner:		County:	Multnomah
Investigator:	Ethan Rosenthal	State:	Oregon

Do Normal Circumstances exist on the site?	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is Area a Potential Problem Area? *(if needed, explain on reverse)*		Yes	X	No	Plot ID: Plot 3

VEGETATION

	Dominant Plant Species*	Percent	Stratum	Indicator		Dominant Plant Species	Percent	Stratum	Indicator
1	* Rubus discolor	10	S	FACU	8				
2	* Hypericum perforatum	25	H	UPL	9				
3	* Solidago sp.	25	H	UNK	10				
4	*Unidentified grass	10	H	UNK	11				
5					12				
6	Bare ground	30			13				
7					14				

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0%

Remarks: Although marked as a dominant, Solidago sp. and the unidentified grass were not included in the calculation of percent dominant species since there indicator status is unknown.

HYDROLOGY

- [ ] Recorded Data (describe in Remarks)
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [ ] No recorded data available

Field Observations:
- Depth of Surface Water: NA (In.)
- Depth to Free Water in Pit: >14 (In.)
- Depth to Saturated Soil: >14 (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [ ] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patters in Wetlands

Secondary Indicators (2 or more required):
- [ ] Oxidized Root Channels in Upper 12"
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (explain in remarks)

Remarks: No signs of wetland hydrology present (i.e. no ponding, sediment deposits, drift lines, organic streaking in soils, etc.).

SOILS

Map Unit Name (series and Phase): Pilchuk-Urban Land complex, 0 to 3 percent slopes
Taxonomy (Subgroup):

Drainage Class: excessively drained
Field Observations Confirm Mapped Type? *Circle* (Yes) No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0 to 12		2.5Y 4/2	No mottles		Fine sand

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] Organic Streaking in Sandy Soils
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Listed on National Hydric Soils List
- [ ] Listed on Local Hydric Soils List
- [ ] Other (explain in remarks)

Remarks: Sandy soils with no significant organic layer or organic streaking.

WETLAND DETERMINATION

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

Remarks: This plot is considered upland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Form

Project Site:	Rivergate Mitigation Project	Date:	July 11, 2001
Applicant/Owner:		County:	Multnomah
Investigator:	Ethan Rosenthal	State:	Oregon

Do Normal Circumstances exist on the site?	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is Area a Potential Problem Area? *(if needed, explain on reverse)*		Yes	X	No	Plot ID: Plot 4

VEGETATION

	Dominant Plant Species*	Percent	Stratum	Indicator		Dominant Plant Species	Percent	Stratum	Indicator
1	* Salix lucida	25	T	FACW+	8				
2	* Salix lucida	25	S	FACW+	9				
3	* Phalaris arundinacea	95	H	FACW	10				
4					11				
5					12				
6					13				
7					14				

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

- [ ] Recorded Data (describe in Remarks)
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [ ] No recorded data available

Field Observations:
- Depth of Surface Water: NA (In.)
- Depth to Free Water in Pit: >14 (In.)
- Depth to Saturated Soil: >14 (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [ ] Saturated in Upper 12 inches
- [ ] Water Marks
- [X] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patters in Wetlands

Secondary Indicators (2 or more required):
- [ ] Oxidized Root Channels in Upper 12"
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (explain in remarks)

Remarks: Drift lines noted approximately 2 ft base of tree trunk.

SOILS

Map Unit Name (series and Phase): Pilchuk-Urban Land complex, 0 to 3 percent slopes
Taxonomy (Subgroup):

Drainage Class: excessively drained
Field Observations Confirm Mapped Type? Yes (No) *Circle*

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0 to 12		10YR 4/1	5YR 4/4	Abundant distinct	Clay loam

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] Organic Streaking in Sandy Soils
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Listed on National Hydric Soils List
- [ ] Listed on Local Hydric Soils List
- [ ] Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

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

Remarks: This plot is considered wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Form

Project Site:	Rivergate Mitigation Project	Date:	July 11, 2001
Applicant/Owner:		County:	Multnomah
Investigator:	Ethan Rosenthal	State:	Oregon

Do Normal Circumstances exist on the site?	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is Area a Potential Problem Area? *(if needed, explain on reverse)*		Yes	X	No	Plot ID: Plot 5

VEGETATION

	Dominant Plant Species*	Percent	Stratum	Indicator		Dominant Plant Species	Percent	Stratum	Indicator
1	* Salix scouleriana	30	T	FAC	8				
2	* Salix lucida	30	T	FACW+	9				
3	* Rubus discolor	20	S	FACU	10				
4	* Equisetum hyemale	65	H	FACW	11				
5					12				
6					13				
7					14				

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 75%

Remarks:

HYDROLOGY

- [ ] Recorded Data (describe in Remarks)
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [ ] No recorded data available

Field Observations:
- Depth of Surface Water: NA (In.)
- Depth to Free Water in Pit: >14 (In.)
- Depth to Saturated Soil: >14 (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [ ] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patters in Wetlands

Secondary Indicators (2 or more required):
- [ ] Oxidized Root Channels in Upper 12"
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (explain in remarks)

Remarks: No signs of wetland hydrology present (i.e. no ponding, sediment deposits, drift lines, organic streaking in soils, etc.).

SOILS

Map Unit Name (series and Phase): Pilchuk-Urban Land complex, 0 to 3 percent slopes
Taxonomy (Subgroup):

Drainage Class: excessively drained
Field Observations Confirm Mapped Type? *Circle* (Yes) No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0 to 12		2.5Y 4/2	No mottles		Fine sand

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] Organic Streaking in Sandy Soils
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Listed on National Hydric Soils List
- [ ] Listed on Local Hydric Soils List
- [ ] Other (explain in remarks)

Remarks: Sandy soils with no significant organic layer or organic streaking.

WETLAND DETERMINATION

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

Remarks: This plot is considered upland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Form

Project Site:	Rivergate Mitigation Project	Date:	July 11, 2001
Applicant/Owner:		County:	Multnomah
Investigator:	Ethan Rosenthal	State:	Oregon

Do Normal Circumstances exist on the site?	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is Area a Potential Problem Area? *(if needed, explain on reverse)*		Yes	X	No	Plot ID: Plot 6

VEGETATION

	Dominant Plant Species*	Percent	Stratum	Indicator		Dominant Plant Species	Percent	Stratum	Indicator
1	* Fraxinus latifolia	25	T	FACW	8				
2	* Salix hookeriana	15	S	FACW-	9				
3	Rosa pisocarpa	2	S	FAC	10				
4	* Phalaris arundinacea	95	H	FACW	11				
5	Dipsacus sylvestris	Trace	H	FAC	12				
6					13				
7					14				

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

- [ ] Recorded Data (describe in Remarks)
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [ ] No recorded data available

Field Observations:
- Depth of Surface Water: NA (In.)
- Depth to Free Water in Pit: >14 (In.)
- Depth to Saturated Soil: >14 (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [ ] Saturated in Upper 12 inches
- [ ] Water Marks
- [X] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patters in Wetlands

Secondary Indicators (2 or more required):
- [ ] Oxidized Root Channels in Upper 12"
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (explain in remarks)

Remarks: Drift lines noted approximately 2 ft up base of tree trunk.

SOILS

Map Unit Name (series and Phase): Sauvie silt loam
Taxonomy (Subgroup):

Drainage Class: excessively drained
Field Observations Confirm Mapped Type? *Circle* (Yes) No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0 to 12		10YR 4/1	5YR 4/4	Abundant distinct	Clay loam

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] Organic Streaking in Sandy Soils
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Listed on National Hydric Soils List
- [ ] Listed on Local Hydric Soils List
- [ ] Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

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

Remarks: This plot is considered wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Form

Project Site:	Rivergate Mitigation Project	Date:	July 11, 2001
Applicant/Owner:		County:	Multnomah
Investigator:	Ethan Rosenthal	State:	Oregon

Do Normal Circumstances exist on the site?	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is Area a Potential Problem Area? *(if needed, explain on reverse)*		Yes	X	No	Plot ID: Plot 7

VEGETATION

	Dominant Plant Species*	Percent	Stratum	Indicator		Dominant Plant Species	Percent	Stratum	Indicator
1	* Salix lucida	10	S	FACW	8				
2	* Rubus discolor	20	S	FACU	9				
3	* Solidago sp.	10	H	UNK	10				
4	*Unidentified grass	15	H	UNK	11				
5					12				
6					13				
7					14				

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 50%

Remarks: Although marked as a dominants, Solidago sp. and the unidentified grass were not included in the calculation of percent dominant species since their indicator status is unknown.

HYDROLOGY

- [ ] Recorded Data (describe in Remarks)
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [ ] No recorded data available

Field Observations:
- Depth of Surface Water: NA (In.)
- Depth to Free Water in Pit: >14 (In.)
- Depth to Saturated Soil: >14 (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [ ] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patters in Wetlands

Secondary Indicators (2 or more required):
- [ ] Oxidized Root Channels in Upper 12"
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (explain in remarks)

Remarks: No signs of wetland hydrology present (i.e. no ponding, sediment deposits, drift lines, organic streaking in soils, etc.).

SOILS

Map Unit Name (series and Phase): Sauvie silt loam
Taxonomy (Subgroup):

Drainage Class: excessively drained
Field Observations Confirm Mapped Type? Yes (Circle) No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0 to 12		2.5Y 4/2	No mottles		Fine sand

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] Organic Streaking in Sandy Soils
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Listed on National Hydric Soils List
- [ ] Listed on Local Hydric Soils List
- [ ] Other (explain in remarks)

Remarks: Sandy soils with no significant organic layer or organic streaking.

WETLAND DETERMINATION

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

Remarks: This plot is considered upland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Form

Project Site:	Rivergate Mitigation Project	Date:	July 11, 2001
Applicant/Owner:		County:	Multnomah
Investigator:	Ethan Rosenthal	State:	Oregon

Do Normal Circumstances exist on the site?	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is Area a Potential Problem Area? *(if needed, explain on reverse)*		Yes	X	No	Plot ID: Plot 8

VEGETATION

	Dominant Plant Species*	Percent	Stratum	Indicator		Dominant Plant Species	Percent	Stratum	Indicator
1	*Phalaris arundinacea	100	H	FACW	8				
2					9				
3					10				
4					11				
5					12				
6					13				
7					14				

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

- [ ] Recorded Data (describe in Remarks)
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [ ] No recorded data available

Field Observations:
- Depth of Surface Water: NA (In.)
- Depth to Free Water in Pit: >14 (In.)
- Depth to Saturated Soil: >14 (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [ ] Saturated in Upper 12 inches
- [ ] Water Marks
- [X] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patters in Wetlands

Secondary Indicators (2 or more required):
- [ ] Oxidized Root Channels in Upper 12"
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (explain in remarks)

Remarks: Drift lines

SOILS

Map Unit Name (series and Phase): Sauvie silt loam
Taxonomy (Subgroup):

Drainage Class: excessively drained
Field Observations Confirm Mapped Type? *Circle* (Yes) No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0 to 12		10YR 3/1	5YR 4/4	Abundant distinct	Clay loam

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] Organic Streaking in Sandy Soils
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Listed on National Hydric Soils List
- [ ] Listed on Local Hydric Soils List
- [ ] Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

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

Remarks: This plot is considered wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Form

Project Site:	Rivergate Mitigation Project			Date:	July 11, 2001
Applicant/Owner:				County:	Multnomah
Investigator:	Ethan Rosenthal			State:	Oregon
Do Normal Circumstances exist on the site?	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is Area a Potential Problem Area? *(if needed, explain on reverse)*		Yes	X	No	Plot ID: Plot 9

VEGETATION

	Dominant Plant Species*	Percent	Stratum	Indicator		Dominant Plant Species	Percent	Stratum	Indicator
1	* Fraxinus latifolia	30	T	FACW	8				
2	* Phalaris arundinacea	100	H	FACW	9				
3					10				
4					11				
5					12				
6					13				
7					14				

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

- [ ] Recorded Data (describe in Remarks)
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [ ] No recorded data available

Field Observations:
- Depth of Surface Water: NA (In.)
- Depth to Free Water in Pit: >14 (In.)
- Depth to Saturated Soil: >14 (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [ ] Saturated in Upper 12 inches
- [ ] Water Marks
- [X] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patters in Wetlands

Secondary Indicators (2 or more required):
- [ ] Oxidized Root Channels in Upper 12"
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (explain in remarks)

Remarks: Drift lines

SOILS

Map Unit Name (series and Phase): Sauvie silt loam
Taxonomy (Subgroup):

Drainage Class: excessively drained
Field Observations Confirm Mapped Type? *Circle* (Yes) No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0 to 12		10YR 3/2	10YR 5/8	common distinct	Clay loam

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] Organic Streaking in Sandy Soils
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Listed on National Hydric Soils List
- [ ] Listed on Local Hydric Soils List
- [ ] Other (explain in remarks)

Remarks:

WETLAND DETERMINATION

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

Remarks: This plot is considered wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Form

Project Site:	Rivergate Mitigation Project	Date:	July 11, 2001
Applicant/Owner:		County:	Multnomah
Investigator:	Ethan Rosenthal	State:	Oregon

Do Normal Circumstances exist on the site?	X	Yes		No	Community ID:
Is the site significantly disturbed (Atypical Situation)?		Yes	X	No	Transect ID:
Is Area a Potential Problem Area? *(if needed, explain on reverse)*		Yes	X	No	Plot ID: Plot 10

VEGETATION

	Dominant Plant Species*	Percent	Stratum	Indicator		Dominant Plant Species	Percent	Stratum	Indicator
1	* Populus balsamifera	60	T	FAC	8				
2	* Fraxinus latifolia	30	T	FACW	9				
3	* Rubus discolor	15	S	FACU	10				
4	* Rubus ursinus	10	S	FACU	11				
5	Mahonia nervosa	5	S	FACU	12				
6	* Phalaris arundinacea	15	H	FACW	13				
7					14				

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 60%

Remarks:

HYDROLOGY

- [ ] Recorded Data (describe in Remarks)
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [ ] No recorded data available

Field Observations:
- Depth of Surface Water: NA (In.)
- Depth to Free Water in Pit: >14 (In.)
- Depth to Saturated Soil: >14 (In.)

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [ ] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patters in Wetlands

Secondary Indicators (2 or more required):
- [ ] Oxidized Root Channels in Upper 12"
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (explain in remarks)

Remarks: No signs of wetland hydrology present (i.e. no ponding, sediment deposits, drift lines, organic streaking in soils, etc.).

SOILS

Map Unit Name (series and Phase): Pilchuk-Urban Land Complex, 0 to 3 percent slopes

Taxonomy (Subgroup):

Drainage Class: excessively drained

Field Observations Confirm Mapped Type? *Circle* (Yes) No

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0 to 12		2.5Y 4/2	No mottles		Fine sand

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] Organic Streaking in Sandy Soils
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Listed on National Hydric Soils List
- [ ] Listed on Local Hydric Soils List
- [ ] Other (explain in remarks)

Remarks: Sandy soils with no significant organic layer or organic streaking.

WETLAND DETERMINATION

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

Remarks: This plot is considered upland.