

WETLAND DELINEATION REPORT

COTTRELL POND

Boring, Oregon

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INTRODUCTION

The Portland Water Bureau Resource Protection staff conducted a wetland delineation on the proposed project site consisting of a portion of the taxlot R994220180 (state ID 1S4E22CD 300), located at section 22 1S 4E, TL 300. The taxlot is 8.14 acres and located at 8344 SE Cottrell Road, Boring, 97009. The parcel lies just north of the Multnomah County line. The delineation of one wetland and one non-wetland water of the State are presented in this report. The delineation methodology followed the routine determination methodology as outlined by Oregon Division of State Lands.

LANDSCAPE SETTING AND LAND USE

The study area is located in the Johnson Creek Watershed (HUC 170200100505, USGS Water Resources 2025). The site is bordered by SE Cottrell Road to the west, the residence at 8344 SE Cottrell Road to the south and residences at 8320 and 8210 SE Cottrell Road to the north. The east edge of the site is bordered by forested riparian area and some agricultural land on the northeast portion. Johnson Creek extends off-site to the east and west. The larger area is generally a mix of primarily agriculture with residences mixed in.

Land use surrounding the site is a mix of residential and agricultural land. The topography of the site slopes gently down from both the north and the south sides. Johnson Creek flows from the east to the west prior into a manmade pond before crossing under Cottrell Road. The area around the pond is a mixture of reed-canary grass (*Phalaris arundinacea*), yellow flag iris (*Iris pseudoacorus*) and native emergent plants such as sawbeak sedge (*Carex stipata*) and tall mannagrass (*Glyceria elata*). There is a fringe of red alder (*Alnus rubra*) and Douglas spiraea (*Spiraea douglasii*) around parts of the pond. On the east edge of the property, forested wetland plants such as Western red-cedar (*Thuja plicata*), salmonberry (*Rubus spectabilis*) and skunk cabbage (*Lysichiton americanum*) grow along the edge of Johnson Creek.

Natural Resources Conservation Service (NRCS) mapped soils in the study area are Cazadero silty clay loam (map unit 9C, 8-15% slopes) and Wollent silt loam (map unit 57).

The proposed land use for the site is to decommission the dam and create a natural stream channel and a small area of off channel emergent wetland along with restoration of the adjacent riparian and upland areas.

SITE ALTERATIONS

The home on site was constructed in 1964 and includes an outbuilding within the 200' setback of the pond. It is unknown when the pond was constructed but it was at least several decades ago and prior to the last private landowner who acquired the property in 2017. The segment of Johnson Creek below the pond has also been channelized and riprapped before it enters a culvert under Cottrell Road.



Aerial images from 1993 (left) and 1970 (right) show the pond present and absent



The pond was constructed at some time between 1970 and 1993 as evidenced in aerial photos retrieved from the USGS EarthExplorer database.

PRECIPITATION DATA AND ANALYSIS

Precipitation conditions at the project site (approximately 45.4604°N, -122.32542°W; elevation ~568 ft) were evaluated using the EPA/USACE Antecedent Precipitation Tool (APT) for the period ending on the date of field investigation, July 17, 2025. The APT is an approved alternative to the NRCS WETS Table for assessing antecedent moisture conditions. Exported data is included in **Appendix E**.

For the 30 days preceding the site visit, the observed precipitation totaled approximately 1.37 inches, which falls within the 30th–70th percentile (normal range) based on the 30-year NOAA climatological record. The APT classified the wetness condition for this period as Normal.

The preceding 60 days were classified as Dry, with observed precipitation totals of approximately 0.94 inches for the 30-day period ending June 17, 2025, and 2.08 inches for the 30-day period ending May 18, 2025**, both below the 30th percentile thresholds for their respective months. ***Overall, the APT summarized the antecedent precipitation at the site as “Drier than Normal” when weighted across the 90-day evaluation period.***

The daily precipitation for July 17, 2025, and the 14 days prior to the investigation was within typical summer dry-season conditions for the region, consistent with mild drought reported in the June 2025 Palmer Drought Severity Index (PDSI). The closest NOAA stations used in the analysis included Troutdale, Sandy, Gresham, and Boring, Oregon.

METHODS

The methodology used for determining wetland presence and boundary was defined by the Corps of Engineers *Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (Version 2.0) (USACE 2010). The delineation followed the Route Determination Method outlined in the Manual.

The site visit to collect field data was completed on July 16 and July 22nd, 2025 by Angie Kimpo and Nate Jefcoat. Soils, vegetation and hydrology were sampled at ten plot locations (Appendix A6).

Wetland boundaries were flagged with pink pin flags. Plots were flagged with red pin flags. Ground level photographs are included in Appendix C. A list of vegetation observed at the site along with their indicator status is included in Appendix D.

Soils mapped by the Natural Resources Conservation Service (NRCS) were as follows: wetland areas are mapped as Wollent silt loam (Unit 57) and upland areas are mapped as Cazadero silty clay loam (Unit 9C), occurring on 8-15% slopes.

There is no Local Wetland Inventory map (LWI) for the site. This site is mapped on the National Wetlands Inventory and the same data is shown on the State Wetland Inventory map as shown in Appendix A3. Field methods are documented in Appendix F.

For determinations of Waters on the site, the Ordinary High-Water Line (OHWL) determination was made based on field observations, including sediment deposition, scour, and debris flow. The OHWL was marked in the field with yellow pin flags. The OHWM was identified using the 2005 USACE Regulatory Guidance Letter 05-05.

DESCRIPTION OF ALL WETLANDS AND OTHER NON-WETLAND WATERS

Wetlands

There is one wetland within the study area that is a 1.30 acres (56,628 square foot) wetland which Johnson Creek runs through from east to west (Figure A6). The wetland is classified by Cowardin et al. as palustrine unconsolidated bottom (PUBHh) 1.06 acres and a palustrine scrub-shrub (PSS1) 0.24 acres using the *Classification of Deepwater Habitats of the United States* (1979). The Hydrogeomorphic (HGM) classification of this site is riverine impounding (RI) as defined by the *Guidebook for Hydrogeomorphic (HGM)-based Assessment of Oregon Wetland and Riparian Sites: Statewide Classification and Profiles* (Adamus 2001). The wetland is contiguous throughout the mapped boundary and hydrologically connected with Johnson Creek, flowing east to west through the center. Various Cowardin classifications were determined by variation in inundation and dominant vegetation types.

Field investigation identified two distinct wetland types:

- 1.06 acres of PUBHh (permanently flooded open-water pond), and
- 0.24 acres of Palustrine Scrub-Shrub (PSS1) wetland located along the eastern edge of the pond.

Wetland determination data forms are provided in Appendix B. The wetland is dominated by floating pondweed (*Potamogeton natans*), reed-canary grass (*Phalaris arundinacea*), Douglas spiraea (*Spiraea douglasii*) and red alder (*Alnus rubra*). Soils met the Redox Dark Surface (F6), Depleted below Dark Surface (A11), Redox Depressions (F8), and Depleted Matrix (F3) hydric soil indicators. Hydrology indicators in or adjacent to soil plots include Saturation (A3), high water table (A2), surface water (A1), drift deposits (B3), water-stained leaves (B9), dry season water table (C2), presence of reduced iron (C4), and geomorphic position (D2). The wetland receives hydrology from Johnson Creek which flows through the wetland and is impounded on the site before flowing out a culvert.

Non-wetland Waters

Non-wetland Waters

Two non-wetland water features of Johnson Creek occur within the study area (Figure A6). Both reaches have defined bed and bank morphology and do not meet wetland criteria but are hydraulically connected to the surrounding PSS1 and PUPH wetlands.

The upstream segment of the stream flows along the eastern boundary of the property through the PSS1

wetland area and transitions into the PUPH wetland before entering the on-site pond. The downstream segment flows out of the pond via a culvert and continues off-site.

The upstream segment (PSS1 reach) occupies approximately 129.67 linear feet. This reach maintains a well-defined bed and banks throughout the year and does not experience backflow from the pond. The channel reaches a maximum width of 5.46 feet and has an average width of approximately 3.7 feet. This portion of the stream was mapped as a surveyed stream centerline in lieu of an OHWL, consistent with DSL guidance for streams less than 6 feet in width.

The downstream segment occurs below the pond outlet and occupies approximately 99.72 linear feet (measurement confirmed on-site). Water exits the pond through a culvert and continues off-site, which has an average width of approximately 7.48 feet and a maximum width of 14.62 feet near the inlet. The OHWL was delineated in the field based on topographic breaks, changes in vegetation, and sediment/wrack indicators. The bed and banks of the creek in this area are composed of silty clay loam with surface sand and cobble. The channel has steep (>25%) banks stabilized in places with riprap. Flow in this reach appears stable and is metered during high-flow periods by the culvert size.

Both stream segments have a Cowardin classification of Riverine, Upper Perennial, Unconsolidated Bottom, Permanently Flooded (R3UBH) with an HGM class of Riverine Flow-Through (RFT). The PUPH wetland, pond, and stream segment from the PSS1 wetland between these two reaches is considered a wetland waters where the channel loses definition during the wet season. No OHWL or stream centerline was delineated or submitted for the pond or the stream reach in the PUPH, as these areas function as part of the wetland system Uplands.

Uplands on the site are characterized by a sharp change in elevation and a quick transition to upland vegetation. The area north of the pond transitions sharply into fragmented forest with Siberian elm (*Ulmus pumila*) and black cottonwood (*Populus trichocarpa* ssp. *balsamifera*) and pasture dominated by orchardgrass (*Dactylis glomerata*) and tall fescue (*Schedonorus arundinaceus*). The area south of the pond rises quickly through a slope dominated by blackberry and into a livestock pasture on the eastern portion. The portion on the western half rises up a steep slope to the driveway of the house. This portion of the slope has been treated with herbicide and has very sparse vegetation and primarily bare soil.

Outside of the riparian area on Johnson Creek, west of the pond, the banks transition sharply with a steep rise on to lawn and landscaped areas on both sides. There are ornamental trees such as sweet gum (*Liquidambar styraciflua*) and Norway maple (*Acer platanoides*).

DEVIATION FROM SWI OR NWI

This area occurs in Boring, Oregon. There is no local wetlands inventory for the area. The State Wetlands Inventory references National Wetland Inventory Data. The NWI identifies the wetland as Palustrine Unconsolidated Bottom Permanently Flooded Diked/Impounded (PUBHh). The field investigation for this site resulted in characterization of one wetland as classifications which include 1.05 acres PUBHh and 0.24 acres Palustrine scrub-shrub (PSS1).

The USFWS National Wetlands Inventory (NWI), identifies multiple wetland classifications within the project boundary, including:

- Palustrine Unconsolidated Bottom, Permanently Flooded, Diked/Impounded (PUBHh), and
- Palustrine Forested, Broad-Leaved Deciduous, Seasonally Flooded (PFO1C)

There were several differences between the NWI and the results of our field investigation. First, we mapped some of the area between the east property boundary and the PUBHh as palustrine scrub shrub wetland. This area was generally higher in elevation and had dominant vegetation including Douglas

spiraea, Sitka willow and red alder. Second, NWI mapping extended a significant amount beyond actual mapped presence of wetlands on the north, south and west sides. Field investigation determined that portions of these areas are upland or transitional and do not meet wetland criteria. Discrepancies are attributed to a lack of ground-truthing in the NWI mapping process.

Johnson Creek, which flows through the site, was mapped in the NWI as a combination of PFO1C, R5UBH, and R3UBH. Based on field indicators, both the upstream and downstream segments of the creek were classified as R3UBH, indicating perennial flow and an unvegetated, permanently flooded channel.

In addition to the SWI/NWI polygons within the site boundary, the City of Gresham's 2009 mapping, included in the More Oregon Wetlands (MOW), consisting of an edited subset of records from the Oregon Wetlands Cover, identifies waters within and near the project area (Appendix 3b). Within the site, only the stream segments upstream and downstream of the pond are shown, and they are classified as Riverine, Upper Perennial, Unconsolidated Bottom, Permanently Flooded (R3UBH). This Cowardin class describes a perennial stream channel with continuous flow and an unvegetated bottom and is considered a deepwater habitat—not a wetland—under the Cowardin system. This R3UBH classification aligns with field observations, which also characterized the upstream and downstream segments of Johnson Creek as R3UBH based on evidence of year-round flow, lack of hydrophytic vegetation, and a permanently flooded channel.

Table 1. Current NWI Mapping for Study Area

Code	Name	Description
PFO1C	Palustrine Forested, Broad-Leaved Deciduous, Seasonally Flooded	Forested wetland dominated by deciduous trees (e.g., red alder, cottonwood) with seasonal flooding; possibly mapped near pond edges or streambanks.
PUBHh	Palustrine Unconsolidated Bottom, Permanently Flooded, Diked/Impounded	Open-water pond, permanently flooded, likely impounded or man-made; generally unvegetated bottom.
R3UBH	Riverine, Upper Perennial, Unconsolidated Bottom, Permanently Flooded	Perennial stream with continuous flow; unvegetated bottom, permanently flooded.
R5UBH*	Riverine, Unknown Perennial, Unconsolidated Bottom, Permanently Flooded	Impounded segment of a riverine channel; permanently flooded. <i>Not a standard Cowardin class but used in NWI to indicate modified riverine flow.</i>

* R5 is not a standard Cowardin category but is sometimes used by NWI for impounded perennial riverine waters (essentially a modified river channel).

Table 2. Wetland Units derived from 7-17-25 Field Investigation

Cowardin (Class/Subclass)	Water Regime Modifier	Special Modifier	HGM Class
Palustrine unconsolidated bottom (PUBHh)	Permanently flooded	Diked/impounded	Riverine impounding (RI)
Palustrine scrub-shrub (PSS1)	Intermittently flooded	Diked/Impounded	Riverine Impounding (RI)- Floodplain

MAPPING METHOD

Wetland boundaries and the Ordinary High-Water Line (OHWL) were delineated in the field following Oregon DSL protocols and USACE Regulatory Guidance Letter 05-05. Red flags marked the boundaries of PSS1 wetlands, and pink flags marked the boundaries of PUBHh wetlands. Where these wetland types occurred adjacent to one another, two flags (one of each color) were placed to delineate the transition.

Sample plots were established in paired wetland and upland locations at least 30’ apart. Plots located in PSS1 wetlands were marked with red flags, and those in PUBHh wetlands were marked with pink flags. OHWL locations were flagged with yellow flags along visible stream channels.

All wetland boundaries and sample plots were mapped using an Arrow Lite 100 GNSS receiver, achieving sub- meter horizontal accuracy (typically 0.3–1.0 meters). Data were collected using GPS line streaming, and site conditions were documented with photographs. Ordinary High Water Line (OHWL) features were delineated using a combination of Arrow GNSS and survey-grade topographic data, with adjustments made where field-mapped OHWL indicators did not align with survey elevations. The stream centerline was surveyed by a field crew using a total-station instrument with prism and rod, providing an accuracy range of approximately 1–5 millimeters for distance and 1–5 arcseconds for angular measurements.

RESULTS AND CONCLUSIONS

PWB delineated one wetland and one water within the study area. Neither of the segments of stream in the study area are considered Essential Salmonid Habitat by ODFW or DSL. The nearest segment of Johnson Creek identified by ODFW as Essential Salmonid Habitat is approximately 1.9 miles downstream on Johnson Creek and is identified as significant habitat for Coho (DSL, 2025).

Table 3. Wetland 1 Summary

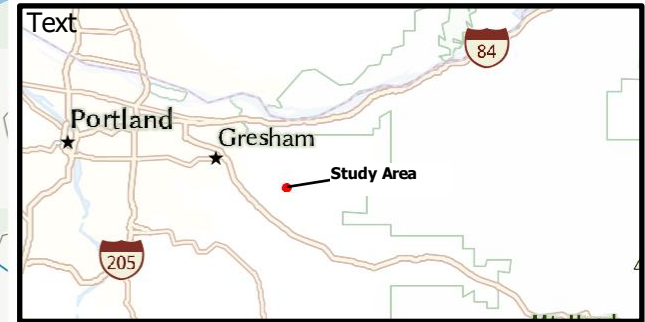
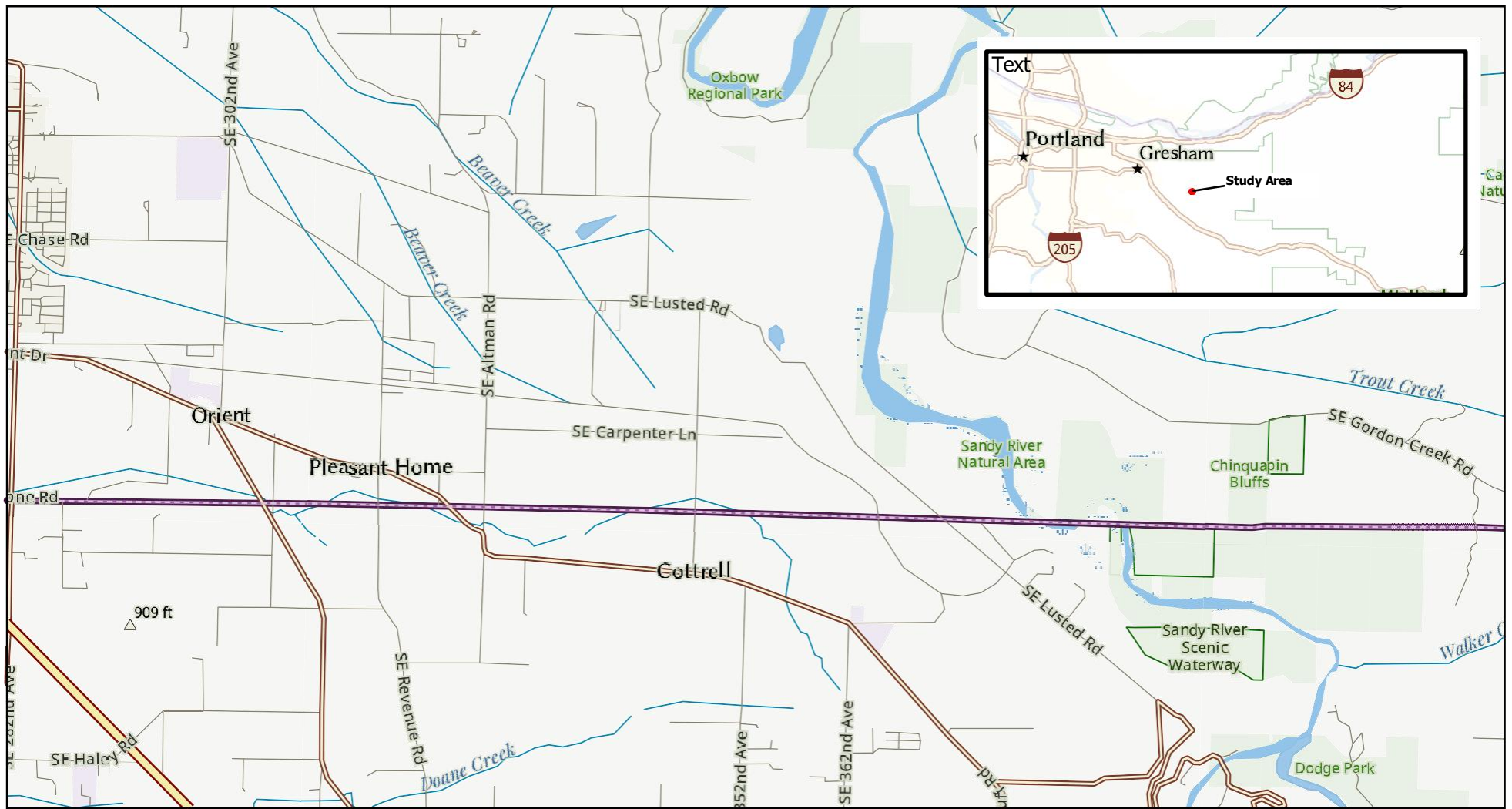
Acreage	Cowardin Class	HGM Class
1.06	PUBHh	Riverine impounding (RI)
0.24	PSS1	Riverine impounding (RI) floodplain
	Total: 1.30 acres	

Table 4. Summary of Waters

Water Name	Linear Feet	Average Width (ft)	Cowardin Class	HGM Class
Upper Johnson Creek	129.67	3.7	R3UBH	Riverine flow through (RFT)
Lower Johnson Creek	99.72	7.48	R3UBH	Riverine flow through (RFT)
Total	229.39			

REQUIRED DISCLAIMER

This report documents the investigation, best professional judgment, and conclusions of the investigators. It is correct and complete to the best of our knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055.



Location Map

Cottrell Wetland Delineation Report
Appendix A

 Study Area

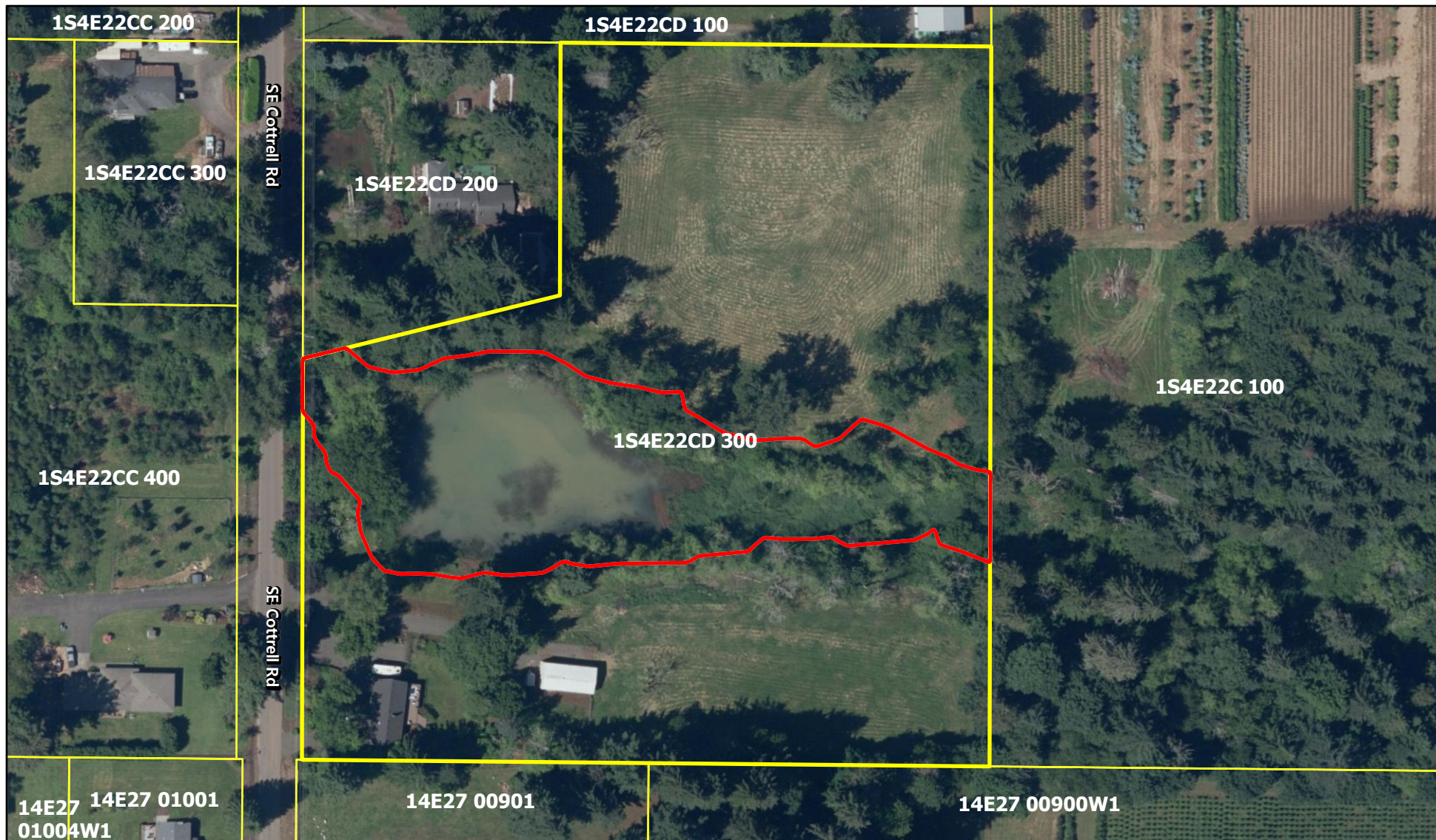
1a



Created by the Portland Water Bureau on 8/5/2025. Data Sources Oregon Metro, Oregon State Parks, State of Oregon GEO, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies,



0 0.28 0.55 1.1 Miles



Study Area Tax Lot and Surrounding Parcels

Cottrell Wetland Delineation Report
Appendix A

Study Area

Tax Lot of Study Area

Tax Lots

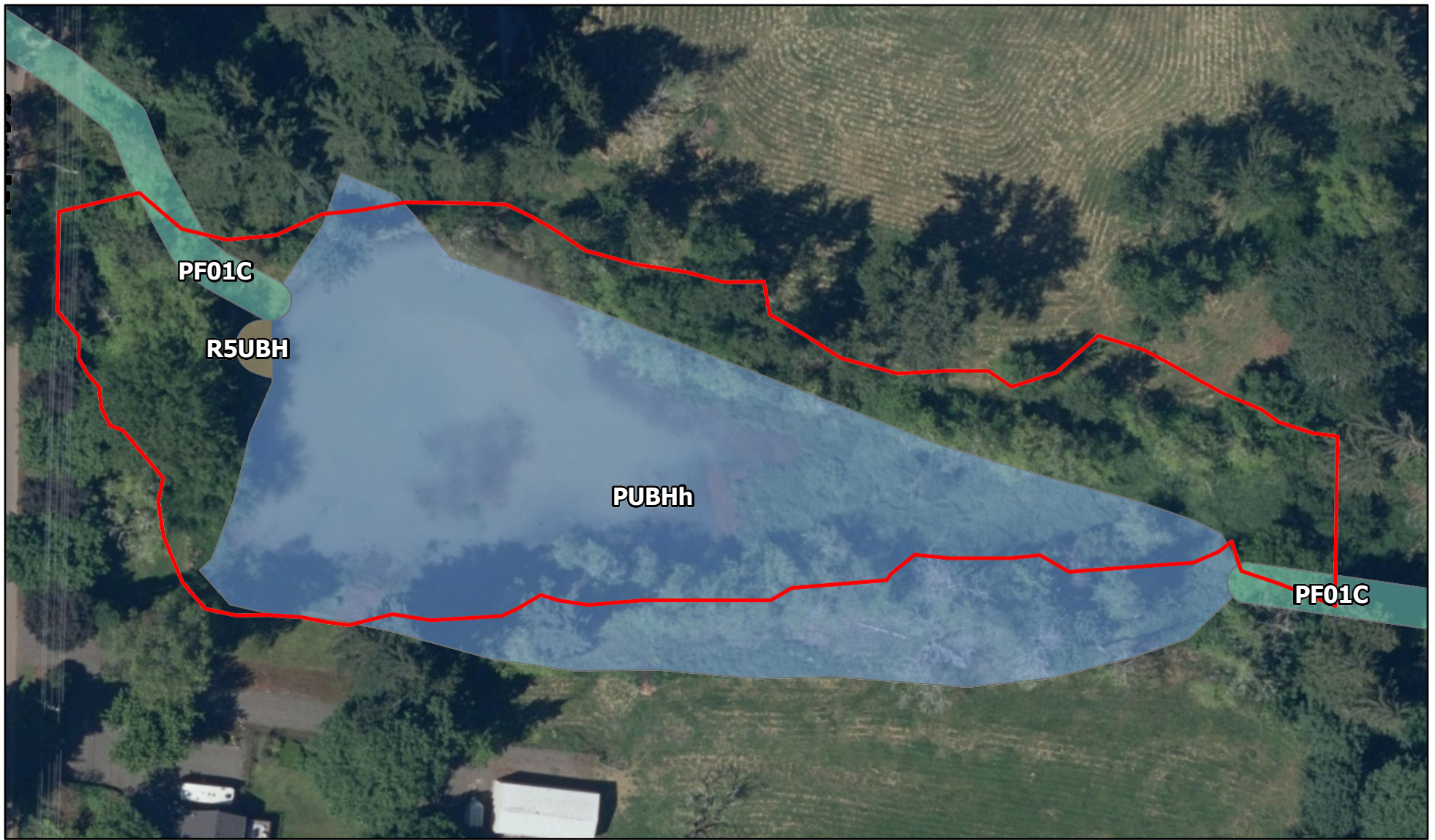


Created by the Portland Water Bureau on 8/5/2025.
Data Sources: City of Portland; Basemap: City of Portland, Oregon Metro.



0 75 150 300 US Feet

2a



NWI Mapped Wetlands

Cottrell Wetland Delineation Report
Appendix A

 Study Area

NWI Wetland

-  PF01C
-  PUBHh
-  R5UBH

3a



Created by the Portland Water Bureau on 8/5/2025.
Data Sources: National Wetland Inventory; Basemap:
City of Portland, Oregon Metro.



0 0.01 0.01 0.02 Miles



NWI Mapped Wetlands - More Oregon Wetlands

Cottrell Wetland Delineation Report
Appendix A

 Study Area

 R3UBH

3b



Created by the Portland Water Bureau on 8/5/2025.
Data Sources: City of Gresham, National Wetland Inventory; Basemap: City of Portland, Oregon Metro.



0 0.01 0.01 0.02 Miles



Study Area and Surrounding NRCS Soils Map

Cottrell Wetland Delineation Report
Appendix A

- Soils**
- Study Area
 - 57 - Wollent silt loam (Hydric)
 - 9C - Cazadero silty clay loam
8 to 15 percent slopes

4a



Created by the Portland Water Bureau on 8/6/2025.
Data Sources: NRCS Web Soil Survey; Basemap: City of
Portland, Oregon Metro.



0 30 60 120 US Feet



Aerial Map

Cottrell Wetland Delineation Report
Appendix A

 Study Area

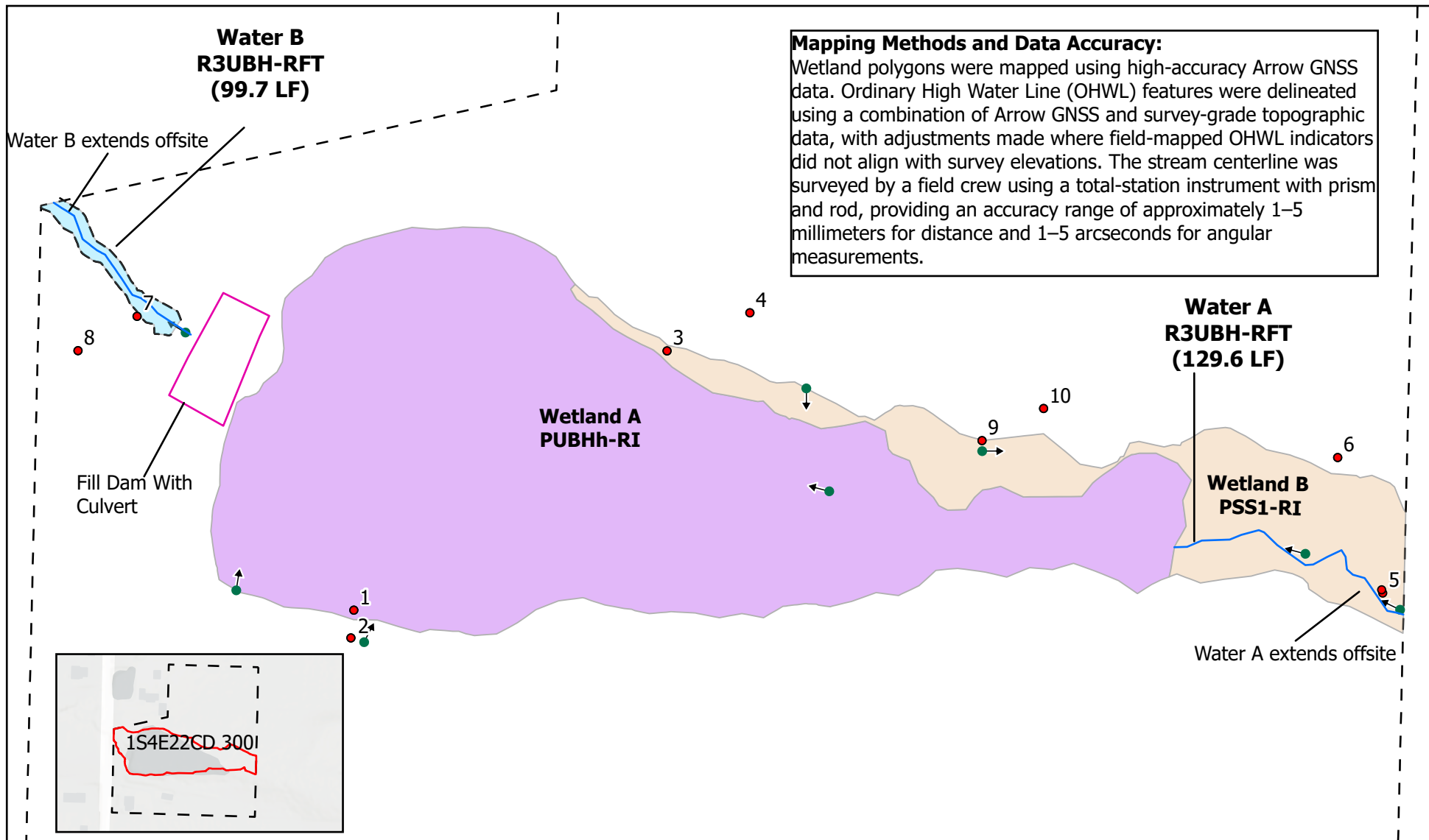


Created by the Portland Water Bureau on 8/5/2025.
Data Sources: City of Portland; Basemap: City of
Portland, Oregon Metro.



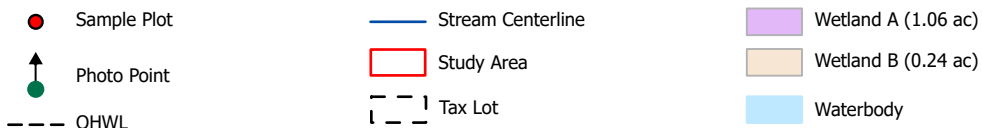
0 25 50 100 US Feet


5a



Wetland Delineation Map

Cottrell Wetland Delineation Report
 Appendix A



6a



Created by the Portland Water Bureau on
 10/29/2025. Data Sources: City of Portland; Basemap:
 City of Portland, Oregon Metro.



0 25 50 100 US Feet

Appendix B. Datacards

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R				OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)	
Project/Site: <u>Cottrell Pond</u>		City/County: <u>Boring, Multnomah</u>		Sampling Date: <u>7-16-25</u>	
Applicant/Owner: <u>Portland Water Bureau</u>		State: <u>OR</u>		Sampling Point: <u>1</u>	
Investigator(s): <u>A. Kimpo, N. Jefcoat</u>		Section, Township, Range: <u>S22 1S 4E TL 300</u>			
Landform (hillside, terrace, etc.): <u>terrace</u>		Local relief (concave, convex, none): <u>convex</u>		Slope (%): <u>5</u>	
Subregion (LRR/MLRA): <u>LRR A, MLRA 2</u>		Lat: <u>45.462171</u>	Long: <u>-122.304898</u>	Datum: _____	
Soil Map Unit Name: <u>cazadero silty clay loam</u>				NWI classification: <u>PUBHh</u>	
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No <u>x</u> (If no, explain in Remarks.)					
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes <u>x</u> No _____					
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)					
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present? Yes <u>x</u> No _____ Hydric Soil Present? Yes <u>x</u> No _____ Wetland Hydrology Present? Yes <u>x</u> No _____			Is the Sampled Area within a Wetland? Yes <u>X</u> No _____		
Remarks: drier than normal for this time of year					
VEGETATION – Use scientific names of plants.					
Tree Stratum (Plot size: <u>30</u>) 1. _____ 2. _____ 3. _____ 4. _____ _____ =Total Cover		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
Sapling/Shrub Stratum (Plot size: <u>5</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ =Total Cover					
Herb Stratum (Plot size: <u>5</u>) 1. <u>Carex stipata</u> 2. <u>Lapsana communis</u> 3. <u>Crepis capillaris</u> 4. <u>Phalaris arundinacea</u> 5. <u>Potamogeton natans</u> 6. <u>Athyrium filix-femina</u> 7. <u>Ludwigia palustris</u> 8. _____ 9. _____ 10. _____ 11. _____ _____ =Total Cover					
Woody Vine Stratum (Plot size: <u>15</u>) 1. _____ 2. <u>Rubus ursinus</u> _____ =Total Cover					
% Bare Ground in Herb Stratum <u>1</u>					
Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____					
Hydrophytic Vegetation Indicators: _____ 1 - Rapid Test for Hydrophytic Vegetation X _____ 2 - Dominance Test is >50% _____ 3 - Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.					
Hydrophytic Vegetation Present? Yes <u>x</u> No _____					
Remarks:					

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 3/1	100					Loamy/Clayey	
2-6	10YR 5/1	80	7.5YR 6/8	20	C		Loamy/Clayey	Prominent redox concentrations
6-14	10YR 6/1	80	10YR 8/8	20	C		Loamy/Clayey	Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Gleyed Matrix (S4)	☐ 2 cm Muck (A10) (LRR A, E)
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)	☐ Iron-Manganese Masses (F12) (LRR D)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)
☐ 1 cm Muck (A9) (LRR D, G)	☐ Loamy Gleyed Matrix (F2)	☐ Other (Explain in Remarks)
☒ Depleted Below Dark Surface (A11)	☒ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Iron Monosulfide (A18)	☐ Depleted Dark Surface (F7)	
☐ Sandy Mucky Mineral (S1)	☒ Redox Depressions (F8)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No ☒
---	--

Remarks:
very dry

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>	
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☒ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☒ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☒ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations: Surface Water Present? Yes ☒ No _____ Depth (inches): _____ Water Table Present? Yes ☒ No _____ Depth (inches): 14 Saturation Present? Yes ☒ No _____ Depth (inches): 11 (includes capillary fringe)	Wetland Hydrology Present? Yes ☒ No ☒
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Surface water present 8" from soil pit

U.S. Army Corps of Engineers				OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)	
WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R					
Project/Site: Cottrell Pond		City/County: Boring, Multnomah		Sampling Date: 7-16-25	
Applicant/Owner: Portland Water Bureau		State: OR		Sampling Point: ;	
Investigator(s): A. Kimpo, N. Jefcoat		Section, Township, Range: S22 1S 4E TL 300			
Landform (hillside, terrace, etc.): hillside		Local relief (concave, convex, none): convex		Slope (%): 20	
Subregion (LRR/MLRA): LRR A, MLRA 2		Lat: 45.462171		Long: -122.304898	
Datum:		Soil Map Unit Name: cazadero silty clay loam			
NW1 classification: PUBHh					
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)					
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No					
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)					
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present ? Yes No x		Is the Sampled Area within a Wetland? Yes No X			
Hydric Soil Present? Yes No x					
Wetland Hydrology Present? Yes No x					
Remarks:					
VEGETATION – Use scientific names of plants.					
Tree Stratum (Plot size: 30)		Absolute % Cover		Dominant Species?	
Indicator Status		Dominance Test worksheet:			
1.		Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)			
2.		Total Number of Dominant Species Across All Strata: 3 (B)			
3.		Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)			
4.					
		=Total Cover			
Sapling/Shrub Stratum (Plot size: 5)		Absolute % Cover		Dominant Species?	
Indicator Status		Prevalence Index worksheet:			
1.		Total % Cover of: Multiply by:			
2.		OBL species 0 x 1 = 0			
3.		FACW species 0 x 2 = 0			
4.		FAC species 0 x 3 = 0			
5.		FACU species 51 x 4 = 204			
		UPL species 0 x 5 = 0			
		Column Totals: 51 (A) 204 (B)			
		Prevalence Index = B/A = 4.00			
Herb Stratum (Plot size: 5)		Absolute % Cover		Dominant Species?	
Indicator Status		Hydrophytic Vegetation Indicators:			
1. Polystichum munitum 5 Yes FACU		1 - Rapid Test for Hydrophytic Vegetation			
2. Lapsana communis 2 No FACU		2 - Dominance Test is >50%			
3. Crepis capillaris 1 No FACU		3 - Prevalence Index is ≤3.0 ¹			
4. Polystichum munitum 5 Yes FACU		4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
5. Hypochaeris radicata 1 No FACU		5 - Wetland Non-Vascular Plants ¹			
6.		Problematic Hydrophytic Vegetation ¹ (Explain)			
7.		1Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
8.					
9.					
10.					
11.					
		14 =Total Cover			
Woody Vine Stratum (Plot size: 15)		Absolute % Cover		Dominant Species?	
Indicator Status		Hydrophytic Vegetation Present? Yes No x			
1.		35 Yes FACU			
2. Rubus ursinus 2 No FACU					
		37 =Total Cover			
% Bare Ground in Herb Stratum 51					
Remarks:					

SOIL

Sampling Point: 2

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): Water Table Present? Yes ☐ No ☒ Depth (inches): Saturation Present? Yes ☐ No ☒ Depth (inches): (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R		OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)																
Project/Site: <u>Cottrell Pond</u>		City/County: <u>Boring, Multnomah</u>																
Applicant/Owner: <u>Portland Water Bureau</u>		State: <u>OR</u>																
Investigator(s): <u>A. Kimpo, N. Jefcoat</u>		Sampling Date: <u>7-16-25</u>																
Section, Township, Range: <u>S22 1S 4E TL 300</u>		Sampling Point: <u>3</u>																
Landform (hillside, terrace, etc.): <u>terrace</u>	Local relief (concave, convex, none): <u>convex</u>	Slope (%): <u>1</u>																
Subregion (LRR/MLRA): <u>LRR A, MLRA 2</u>	Lat: <u>45.462386</u>	Long: <u>-122.304740</u>																
Soil Map Unit Name: <u>wollent silt loam</u>	Datum: _____																	
NW1 classification: <u>PUBHh</u>																		
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No <u>x</u> (If no, explain in Remarks.)																		
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes <u>x</u> No _____																		
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)																		
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.																		
Hydrophytic Vegetation Present? Yes <u>x</u> No _____ Hydric Soil Present? Yes <u>x</u> No _____ Wetland Hydrology Present? Yes <u>x</u> No _____		Is the Sampled Area within a Wetland? Yes <u>X</u> No _____																
Remarks: abnormally dry																		
VEGETATION – Use scientific names of plants.																		
Tree Stratum (Plot size: <u>30</u>) 1. <u>Alnus rubra</u> Absolute % Cover: <u>70</u> Dominant Species? <u>Yes</u> Indicator Status: <u>FAC</u> 2. <u>Ulmus pumila</u> Absolute % Cover: <u>10</u> Dominant Species? <u>No</u> Indicator Status: <u>UPL</u> 3. _____ 4. _____ <u>80</u> =Total Cover		Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
Sapling/Shrub Stratum (Plot size: <u>15</u>) 1. <u>Spiraea douglasii</u> Absolute % Cover: <u>40</u> Dominant Species? <u>Yes</u> Indicator Status: <u>FACW</u> 2. <u>Rubus armeniacus</u> Absolute % Cover: <u>10</u> Dominant Species? <u>No</u> Indicator Status: <u>FAC</u> 3. <u>Rubus spectabilis</u> Absolute % Cover: <u>20</u> Dominant Species? <u>Yes</u> Indicator Status: <u>FAC</u> 4. _____ 5. _____ <u>70</u> =Total Cover																		
Herb Stratum (Plot size: <u>5</u>) 1. <u>Phalaris arundinacea</u> Absolute % Cover: <u>15</u> Dominant Species? <u>Yes</u> Indicator Status: <u>FACW</u> 2. <u>Geum macrophyllum</u> Absolute % Cover: <u>1</u> Dominant Species? <u>No</u> Indicator Status: <u>FAC</u> 3. <u>Scirpus microcarpus</u> Absolute % Cover: <u>35</u> Dominant Species? <u>Yes</u> Indicator Status: <u>OBL</u> 4. <u>Juncus effusus</u> Absolute % Cover: <u>5</u> Dominant Species? <u>No</u> Indicator Status: <u>FACW</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ <u>56</u> =Total Cover		Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">Total % Cover of:</th> <th style="text-align: left;">Multiply by:</th> </tr> <tr> <td>OBL species <u>35</u></td> <td>x 1 = <u>35</u></td> </tr> <tr> <td>FACW species <u>60</u></td> <td>x 2 = <u>120</u></td> </tr> <tr> <td>FAC species <u>101</u></td> <td>x 3 = <u>303</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>10</u></td> <td>x 5 = <u>50</u></td> </tr> <tr> <td>Column Totals: <u>206</u> (A)</td> <td><u>508</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.47</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>35</u>	x 1 = <u>35</u>	FACW species <u>60</u>	x 2 = <u>120</u>	FAC species <u>101</u>	x 3 = <u>303</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>10</u>	x 5 = <u>50</u>	Column Totals: <u>206</u> (A)	<u>508</u> (B)	Prevalence Index = B/A = <u>2.47</u>	
Total % Cover of:	Multiply by:																	
OBL species <u>35</u>	x 1 = <u>35</u>																	
FACW species <u>60</u>	x 2 = <u>120</u>																	
FAC species <u>101</u>	x 3 = <u>303</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>10</u>	x 5 = <u>50</u>																	
Column Totals: <u>206</u> (A)	<u>508</u> (B)																	
Prevalence Index = B/A = <u>2.47</u>																		
Woody Vine Stratum (Plot size: <u>5</u>) 1. <u>Hedera helix</u> Absolute % Cover: <u>0</u> 2. _____ _____ =Total Cover		Hydrophytic Vegetation Indicators: _____ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
% Bare Ground in Herb Stratum _____ Remarks: 10% bare ground is standing water																		
Hydrophytic Vegetation Present? Yes <u>X</u> No _____																		

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features			Texture	Remarks	
	Color (moist)	%	Color (moist)	%	Type ¹			
0-11	10YR 3/1	85	7.5YR 5/8	15	C	Loamy/Clayey		
11-16	10YR 6/1	100				Loamy/Clayey		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Gleyed Matrix (S4)	☐ 2 cm Muck (A10) (LRR A, E)
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)	☐ Iron-Manganese Masses (F12) (LRR D)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)
☐ 1 cm Muck (A9) (LRR D, G)	☐ Loamy Gleyed Matrix (F2)	☐ Other (Explain in Remarks)
☒ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☒ Redox Dark Surface (F6)	
☐ Iron Monosulfide (A18)	☐ Depleted Dark Surface (F7)	
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No ☐
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☒ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☒ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations: Surface Water Present? Yes ☒ No ☐ Depth (inches): 0 Water Table Present? Yes ☒ No ☐ Depth (inches): 1 Saturation Present? Yes ☒ No ☐ Depth (inches): 0 (includes capillary fringe)	Wetland Hydrology Present? Yes ☒ No ☐
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: surface water present 5" from soil pit	

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Cottrell Pond City/County: Boring, Multnomah Sampling Date: 7-16-25

Applicant/Owner: Portland Water Bureau State: OR Sampling Point: 4

Investigator(s): A. Kimpo, N. Jefcoat Section, Township, Range: S22 1S 4E TL 300

Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): convex Slope (%): 1

Subregion (LRR/MLRA): LRR A, MLRA 2 Lat: 45.462296 Long: -122.304127 Datum:

Soil Map Unit Name: cazadero silty clay loam NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u></u> No <u>x</u> Hydric Soil Present? Yes <u></u> No <u>x</u> Wetland Hydrology Present? Yes <u></u> No <u>x</u>	Is the Sampled Area within a Wetland? Yes <u></u> No <u>x</u>
Remarks: dry conditions	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>15</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25.0%</u> (A/B)
1. <u></u>					
2. <u>Ulmus pumila</u>		<u>20</u>	<u>Yes</u>	<u>UPL</u>	
3. <u></u>					
4. <u></u>					
		<u>20</u>	<u>=Total Cover</u>		
Sapling/Shrub Stratum	(Plot size: <u>15</u>)				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>20</u> x 3 = <u>60</u> FACU species <u>116</u> x 4 = <u>464</u> UPL species <u>20</u> x 5 = <u>100</u> Column Totals: <u>156</u> (A) <u>624</u> (B) Prevalence Index = B/A = <u>4.00</u>
1. <u>Rubus laciniatus</u>		<u>1</u>	<u>No</u>	<u>FACU</u>	
2. <u></u>					
3. <u></u>					
4. <u></u>					
		<u>1</u>	<u>=Total Cover</u>		
Herb Stratum	(Plot size: <u>5</u>)				Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u>5</u> - Wetland Non-Vascular Plants ¹ <u>Problematic Hydrophytic Vegetation¹ (Explain)</u> ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Dactylis glomerata</u>		<u>60</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Lapsana communis</u>		<u>5</u>	<u>No</u>	<u>FACU</u>	
3. <u>Festuca arundinacea</u>		<u>20</u>	<u>Yes</u>	<u>FAC</u>	
4. <u></u>					
5. <u></u>					
6. <u></u>					
7. <u></u>					
8. <u></u>					
9. <u></u>					
10. <u></u>					
		<u>85</u>	<u>=Total Cover</u>		
Woody Vine Stratum	(Plot size: <u>15</u>)				Hydrophytic Vegetation Present? Yes <u></u> No <u>x</u>
1. <u></u>		<u>0</u>			
2. <u>Rubus ursinus</u>		<u>50</u>	<u>Yes</u>	<u>FACU</u>	
		<u>50</u>	<u>=Total Cover</u>		
% Bare Ground in Herb Stratum <u> </u> : <u> </u>					
Remarks: 21					

Sampling Point: 4

HYDROLOGY

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ENG FORM 6116-9, SEP 2024

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R		OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)																		
Project/Site: <u>Cottrell Pond</u>		City/County: <u>Boring, Multnomah</u>																		
Applicant/Owner: <u>Portland Water Bureau</u>		State: <u>OR</u>																		
Investigator(s): <u>A. Kimpo, N. Jefcoat</u>		Section, Township, Range: <u>S22 1S 4E TL 300</u>																		
Landform (hillside, terrace, etc.): <u>hillside</u>		Local relief (concave, convex, none): <u>convex</u>																		
Slope (%): <u>8</u>																				
Subregion (LRR/MLRA): <u>LRR A, MLRA 2</u>	Lat: <u>45.461959</u>	Long: <u>-122.30347</u>																		
Datum: _____																				
Soil Map Unit Name: <u>wollent silt loam</u>		NWI classification: <u>PUBHh</u>																		
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No <u>x</u> (If no, explain in Remarks.)																				
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes <u>x</u> No _____																				
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)																				
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.																				
Hydrophytic Vegetation Present? Yes <u>x</u> No _____ Hydric Soil Present? Yes <u>x</u> No _____ Wetland Hydrology Present? Yes <u>x</u> No _____		Is the Sampled Area within a Wetland? Yes <u>X</u> No _____																		
Remarks: abnormally dry																				
VEGETATION – Use scientific names of plants.																				
Tree Stratum (Plot size: <u>3C</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80.0%</u> (A/B)																
1. <u>Thuja plicata</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>																	
2. <u>Quercus rubra</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
<u>100</u> =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Salix sitchensis</u>	<u>75</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Rubus armeniacus</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
3. <u>Rubus spectabilis</u>	<u>15</u>	<u>No</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
<u>100</u> =Total Cover																				
Herb Stratum (Plot size: <u>5</u>)				Prevalence Index worksheet: <table style="width:100%; font-size: small;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>135</u></td> <td>x 2 = <u>270</u></td> </tr> <tr> <td>FAC species <u>135</u></td> <td>x 3 = <u>405</u></td> </tr> <tr> <td>FACU species <u>20</u></td> <td>x 4 = <u>80</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>290</u> (A)</td> <td><u>755</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.60</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>135</u>	x 2 = <u>270</u>	FAC species <u>135</u>	x 3 = <u>405</u>	FACU species <u>20</u>	x 4 = <u>80</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>290</u> (A)	<u>755</u> (B)	Prevalence Index = B/A = <u>2.60</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>135</u>	x 2 = <u>270</u>																			
FAC species <u>135</u>	x 3 = <u>405</u>																			
FACU species <u>20</u>	x 4 = <u>80</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>290</u> (A)	<u>755</u> (B)																			
Prevalence Index = B/A = <u>2.60</u>																				
1. <u>Phalaris arundinacea</u>	<u>60</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Athyrium felix-femina</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
<u>90</u> =Total Cover																				
Woody Vine Stratum (Plot size: <u>5</u>)				Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u>5</u> - Wetland Non-Vascular Plants ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Hedera helix</u>	_____	_____	_____																	
2. _____	_____	_____	_____																	
_____ =Total Cover																				
% Bare Ground in Herb Stratum _____ : _____																				
Remarks: 10% bare ground is standing water																				

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 6/2	100					Loamy/Clayey	
8-16	10YR 4/1	60	7.5YR 5/8	40	C		Loamy/Clayey	Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Gleyed Matrix (S4)	☐ 2 cm Muck (A10) (LRR A, E)
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)	☐ Iron-Manganese Masses (F12) (LRR D)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)
☐ 1 cm Muck (A9) (LRR D, G)	☐ Loamy Gleyed Matrix (F2)	☐ Other (Explain in Remarks)
☐ Depleted Below Dark Surface (A11)	☒ Depleted Matrix (F3)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Iron Monosulfide (A18)	☐ Depleted Dark Surface (F7)	
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)		

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No ☐
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☒ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations: Surface Water Present? Yes ☒ No ☐ Depth (inches): 0 Water Table Present? Yes ☒ No ☐ Depth (inches): 0 Saturation Present? Yes ☒ No ☐ Depth (inches): 16 (includes capillary fringe)	Wetland Hydrology Present? Yes ☒ No ☐
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: Pit is 5" from Johnson Creek. Stream flow is low at moment. Sharp rise from channel to adjacent reed canary grass flat. Surface water and water table present at survey 5" from pit in stream bed.	

U.S. Army Corps of Engineers				OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)	
WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R					
Project/Site: Cottrell Pond		City/County: Boring, Multnomah		Sampling Date: 7-16-25	
Applicant/Owner: Portland Water Bureau		State: OR		Sampling Point: 6	
Investigator(s): A. Kimpo, N. Jefcoat		Section, Township, Range: S22 1S 4E TL 300			
Landform (hillside, terrace, etc.): hillside		Local relief (concave, convex, none): concave		Slope (%): 4	
Subregion (LRR/MLRA): LRR A, MLRA 2		Lat: 45.462170		Long: -122.303433	
Soil Map Unit Name: wollent silt loam		Datum: NWI classification: none			
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)					
Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No					
Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)					
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present? Yes x No			Is the Sampled Area within a Wetland? Yes No X		
Hydric Soil Present? Yes No x					
Wetland Hydrology Present? Yes No x					
Remarks: dry conditions					
VEGETATION – Use scientific names of plants.					
Tree Stratum (Plot size: 15)		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A) Total Number of Dominant Species Across All Strata: 9 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 55.6% (A/B)
1. Populus trichocarpa		20	Yes	FAC	
2. Ulmus pumila		30	Yes	UPL	
3.					
4.					
		50 =Total Cover			
Sapling/Shrub Stratum (Plot size: 15)					Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species x 1 = FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 = Column Totals: (A) (B) Prevalence Index = B/A =
1. Rubus spectabilis		3	No	FAC	
2. Sambucus racemosa		1	No	FACU	
3.					
4.					
		4 =Total Cover			
Herb Stratum (Plot size: 5)					Hydrophytic Vegetation Indicators : 1 - Rapid Test for Hydrophytic Vegetation X 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 ¹ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 5 - Wetland Non-Vascular Plants ¹ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. Athyrium felix-femina		1	Yes	FAC	
2. Lactuca muralis		1	Yes	FACU	
3. Elymus glaucus		2	Yes	FACU	
4. Geum macrophyllum		1	Yes	FAC	
5. Phalaris arundinacea		2	Yes	FACW	
6. Epilobium ciliatum		1	Yes	FACW	
7.					
8.					
9.					
10.					
		8 =Total Cover			
Woody Vine Stratum (Plot size: 15)					Hydrophytic Vegetation Present? Yes x No
1.		0			
2. Rubus ursinus		70	Yes	FACU	
		70 =Total Cover			
% Bare Ground in Herb Stratum :					
Remarks: 25					

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	7.5R 3/2	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Sandy Gleyed Matrix (S4)	☐ 2 cm Muck (A10) (LRR A, E)
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)	☐ Iron-Manganese Masses (F12) (LRR D)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)
☐ 1 cm Muck (A9) (LRR D, G)	☐ Loamy Gleyed Matrix (F2)	☐ Other (Explain in Remarks)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Iron Monosulfide (A18)	☐ Depleted Dark Surface (F7)	
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)	
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>x</u>
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Remarks:
very dry

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations: Surface Water Present? Yes _____ No <u>x</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>x</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>x</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>x</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers				OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)	
WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R					
Project/Site: Cottrell Pond		City/County: Boring, Multnomah		Sampling Date: 7-16-25	
Applicant/Owner: Portland Water Bureau		State: OR		Sampling Point: 7	
Investigator(s): A. Kimpo, N. Jefcoat		Section, Township, Range: S22 1S 4E TL 300			
Landform (hillside, terrace, etc.): drainage		Local relief (concave, convex, none): convex		Slope (%): 1	
Subregion (LRR/MLRA): LRR A, MLRA 2		Lat: 45.412185		Long: -122.305609	
Soil Map Unit Name: wollent silt loam		Datum: NWI classification: PUBHh			
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)					
Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No					
Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)					
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present? Yes x No			Is the Sampled Area within a Wetland? Yes X No		
Hydric Soil Present? Yes x No					
Wetland Hydrology Present? Yes x No					
Remarks: abnormally dry					
VEGETATION – Use scientific names of plants.					
Tree Stratum (Plot size: 30)		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A) Total Number of Dominant Species Across All Strata: 6 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)
1. Alnus rubra		70	Yes	FAC	
2.					
3.					
4.					
		70 =Total Cover			
Sapling/Shrub Stratum (Plot size: 15)					Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species x 1 = FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 = Column Totals: (A) (B) Prevalence Index = B/A =
1. Salix sitchensis		5	Yes	FACW	
2.					
3.					
4.					
		5 =Total Cover			
Herb Stratum (Plot size: 5)					Hydrophytic Vegetation Indicators : 1 - Rapid Test for Hydrophytic Vegetation X 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 ¹ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 5 - Wetland Non-Vascular Plants ¹ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. Bidens cernua		5	No	OBL	
2. Veronica americana		1	No	OBL	
3. Juncus effusus		5	No	FACW	
4. Phalaris arundinacea		15	Yes	FACW	
5. Lysichiton americanus		8	Yes	OBL	
6.					
7.					
8.					
9.					
10.					
		34 =Total Cover			
Woody Vine Stratum (Plot size: 5)					Hydrophytic Vegetation Present? Yes X No
1. Hedera helix		3	Yes	FACU	
2. Rubus ursinus		3	Yes	FACU	
		6 =Total Cover			
% Bare Ground in Herb Stratum 2					
Remarks: 27					

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/2	85	7.5YR 5/8	15	C		Loamy/Clayey	Prominent redox concentrations
4-12	10YR 7/1	100					Loamy/Clayey	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.							² Location: PL=Pore Lining, M=Matrix.	
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)							Indicators for Problematic Hydric Soils³:	
☐ Histosol (A1)			☐ Sandy Gleyed Matrix (S4)			☐ 2 cm Muck (A10) (LRR A, E)		
☐ Histic Epipedon (A2)			☐ Sandy Redox (S5)			☐ Iron-Manganese Masses (F12) (LRR D)		
☐ Black Histic (A3)			☐ Stripped Matrix (S6)			☐ Red Parent Material (F21)		
☐ Hydrogen Sulfide (A4)			☐ Loamy Mucky Mineral (F1) (except MLRA 1)			☐ Very Shallow Dark Surface (F22)		
☐ 1 cm Muck (A9) (LRR D, G)			☐ Loamy Gleyed Matrix (F2)			☐ Other (Explain in Remarks)		
☒ Depleted Below Dark Surface (A11)			☒ Depleted Matrix (F3)					
☐ Thick Dark Surface (A12)			☒ Redox Dark Surface (F6)					
☐ Iron Monosulfide (A18)			☐ Depleted Dark Surface (F7)			³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.		
☐ Sandy Mucky Mineral (S1)			☐ Redox Depressions (F8)					
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)								
Restrictive Layer (if observed):								
Type: _____						Hydric Soil Present? Yes ☒ No ☐		
Depth (inches): _____								
Remarks: Standing water and many roots. Hard to pull good soil profile.								

HYDROLOGY

Wetland Hydrology Indicators:				Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one is required; check all that apply)				Secondary Indicators (2 or more required)	
☒ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except	☐ Water-Stained Leaves (B9) (MLRA 1, 2			
☒ High Water Table (A2)	☐ MLRA 1, 2, 4A, and 4B)	☐ 4A, and 4B)			
☒ Saturation (A3)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)			
☐ Water Marks (B1)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)			
☐ Sediment Deposits (B2)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)			
☐ Drift Deposits (B3)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)			
☐ Algal Mat or Crust (B4)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)			
☐ Iron Deposits (B5)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)			
☐ Surface Soil Cracks (B6)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)			
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)			
☐ Sparsely Vegetated Concave Surface (B8)					
Field Observations:					
Surface Water Present?	Yes ☒	No ☐	Depth (inches):		
Water Table Present?	Yes ☒	No ☐	Depth (inches):		
Saturation Present?	Yes ☒	No ☐	Depth (inches):		
(includes capillary fringe)				Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks: saturation present 4" from pit at a depth of 1"					

U.S. Army Corps of Engineers				OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)	
WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R					
Project/Site: Cottrell Pond		City/County: Boring, Multnomah		Sampling Date: 7-16-25	
Applicant/Owner: Portland Water Bureau		State: OR		Sampling Point: 8	
Investigator(s): A. Kimpo, N. Jefcoat		Section, Township, Range: S22 1S 4E TL 300			
Landform (hillside, terrace, etc.): drainage		Local relief (concave, convex, none): convex		Slope (%): 10	
Subregion (LRR/MLRA): LRR A, MLRA 2		Lat: 45.412153		Long: -122.305581 Datum:	
Soil Map Unit Name: wollent silt loam		NWI classification: none			
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)					
Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No					
Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)					
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present? Yes x No			Is the Sampled Area within a Wetland? Yes No X		
Hydric Soil Present? Yes No x					
Wetland Hydrology Present? Yes No x					
Remarks: dry conditions					
VEGETATION – Use scientific names of plants.					
Tree Stratum (Plot size: 30)		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A) Total Number of Dominant Species Across All Strata: 4 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)
1. Liquidamber styraciflora		75	Yes	FAC	
2. Acer platanoides		25	Yes	FACU	
3.					
4.					
		100 =Total Cover			
Sapling/Shrub Stratum (Plot size: 15)					Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species x 1 = FACW species x 2 = FAC species x 3 = FACU species x 4 = UPL species x 5 = Column Totals: (A) (B) Prevalence Index = B/A =
1.					
2.					
3.					
4.					
5.					
		=Total Cover			
Herb Stratum (Plot size: 5)					Hydrophytic Vegetation Indicators : 1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 ¹ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 5 - Wetland Non-Vascular Plants ¹ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. Polystichum munitum		5	No	FACU	
2. Hypochaeris radicata		1	No	FACU	
3. Poa pratensis		5	No	FAC	
4. Festuca rubra		15	Yes	FAC	
5.					
6.					
7.					
8.					
9.					
10.					
11.					
		26 =Total Cover			
Woody Vine Stratum (Plot size: 15)					Hydrophytic Vegetation Present? Yes x No
1. Hedera helix		30	Yes	FACU	
2.					
		30 =Total Cover			
% Bare Ground in Herb Stratum :					
Remarks:					

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	7.5YR 4/3	100					Loamy/Clayey	
4-12	7.5YR 5/4	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :	
☐ Histosol (A1)	☐ Sandy Gleyed Matrix (S4)		☐ 2 cm Muck (A10) (LRR A, E)	
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)		☐ Iron-Manganese Masses (F12) (LRR D)	
☐ Black Histic (A3)	☐ Stripped Matrix (S6)		☐ Red Parent Material (F21)	
☐ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)		☐ Very Shallow Dark Surface (F22)	
☐ 1 cm Muck (A9) (LRR D, G)	☐ Loamy Gleyed Matrix (F2)		☐ Other (Explain in Remarks)	
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)			
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)			
☐ Iron Monosulfide (A18)	☐ Depleted Dark Surface (F7)			
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)			
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)				

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No ☒
---	--

Remarks:
very dry

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations: Surface Water Present? Yes _____ No ☒ Depth (inches): _____ Water Table Present? Yes _____ No ☒ Depth (inches): _____ Saturation Present? Yes _____ No ☒ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No ☒
--	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R				OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)	
Project/Site: <u>Cottrell Pond</u>		City/County: <u>Boring, Multnomah</u>		Sampling Date: <u>7-16-25</u>	
Applicant/Owner: <u>Portland Water Bureau</u>		State: <u>OR</u>		Sampling Point: <u>9</u>	
Investigator(s): <u>A. Kimpo, N. Jefcoat</u>		Section, Township, Range: <u>S22 1S 4E TL 300</u>			
Landform (hillside, terrace, etc.): <u>terrace</u>		Local relief (concave, convex, none): <u>convex</u>		Slope (%): <u>1</u>	
Subregion (LRR/MLRA): <u>LRR A, MLRA 2</u>		Lat: <u>45.462259</u>		Long: <u>-122.304297</u> Datum: _____	
Soil Map Unit Name: <u>wollett silt loam</u>		NWI classification: <u>none</u>			
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No <u>x</u> (If no, explain in Remarks.)					
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes <u>x</u> No _____					
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)					
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present? Yes <u>x</u> No _____ Hydric Soil Present? Yes <u>x</u> No _____ Wetland Hydrology Present? Yes <u>x</u> No _____			Is the Sampled Area within a Wetland? Yes <u>X</u> No _____		
Remarks: <u>dry conditions</u>					
VEGETATION – Use scientific names of plants.					
<u>Tree Stratum</u> (Plot size: <u>15</u>)		Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83.3%</u> (A/B)
1. <u>Populus trichocarpa</u>		<u>20</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Alnus rubra</u>		<u>40</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Sorbus aucuparia</u>		<u>20</u>	<u>Yes</u>	<u>UPL</u>	
4. _____		_____	_____	_____	
		<u>80</u>	=Total Cover		
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15</u>)					Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>Spiraea douglasii</u>		<u>80</u>	<u>Yes</u>	<u>FACW</u>	
2. _____		_____	_____	_____	
3. _____		_____	_____	_____	
4. _____		_____	_____	_____	
		<u>80</u>	=Total Cover		
<u>Herb Stratum</u> (Plot size: <u>5</u>)					Hydrophytic Vegetation Indicators : _____ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> _____ 2 - Dominance Test is >50% _____ 3 - Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Polystichum munitum</u>		<u>5</u>	<u>No</u>	<u>FACU</u>	
2. <u>Scirpus microcarpus</u>		<u>25</u>	<u>Yes</u>	<u>OBL</u>	
3. <u>Phalaris arundinacea</u>		<u>25</u>	<u>Yes</u>	<u>FACW</u>	
4. <u>Ranunculus repens</u>		<u>10</u>	<u>No</u>	<u>FAC</u>	
5. _____		_____	_____	_____	
6. _____		_____	_____	_____	
7. _____		_____	_____	_____	
8. _____		_____	_____	_____	
9. _____		_____	_____	_____	
10. _____		_____	_____	_____	
11. _____		_____	_____	_____	
		<u>65</u>	=Total Cover		
<u>Woody Vine Stratum</u> (Plot size: <u>15</u>)					Hydrophytic Vegetation Present? Yes <u>x</u> No _____
1. _____		<u>0</u>	_____	_____	
2. <u>Rubus laciniatus</u>		<u>2</u>	<u>No</u>	<u>FACU</u>	
		<u>2</u>	=Total Cover		
% Bare Ground in Herb Stratum _____ ;					
Remarks:					

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix Color (moist)	%	Redox Features			Texture	Remarks	
			Color (moist)	%	Type ¹ Loc ²			
0-6	10YR 6/1	100				Loamy/Clayey		
6-14	10B 8/1	80	7.5R 7/6	20	C	Loamy/Clayey		
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)						Indicators for Problematic Hydric Soils³:		
☐ Histosol (A1)			☐ Sandy Gleyed Matrix (S4)			☐ 2 cm Muck (A10) (LRR A, E)		
☐ Histic Epipedon (A2)			☐ Sandy Redox (S5)			☐ Iron-Manganese Masses (F12) (LRR D)		
☐ Black Histic (A3)			☐ Stripped Matrix (S6)			☐ Red Parent Material (F21)		
☐ Hydrogen Sulfide (A4)			☐ Loamy Mucky Mineral (F1) (except MLRA 1)			☐ Very Shallow Dark Surface (F22)		
☐ 1 cm Muck (A9) (LRR D, G)			☐ X Loamy Gleyed Matrix (F2)			☐ Other (Explain in Remarks)		
☐ Depleted Below Dark Surface (A11)			☐ X Depleted Matrix (F3)					
☐ Thick Dark Surface (A12)			☐ Redox Dark Surface (F6)					
☐ Iron Monosulfide (A18)			☐ Depleted Dark Surface (F7)			³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic .		
☐ Sandy Mucky Mineral (S1)			☐ Redox Depressions (F8)					
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)								
Restrictive Layer (if observed):								
Type: _____						Hydric Soil Present? Yes ☒ No ☐		
Depth (inches): _____								
Remarks: very dry								

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☒ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☒ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present?	Yes ☐ No ☒	Depth (inches):	
(includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Western Mountains, Valleys, and Coast Region See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R		OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)																														
Project/Site: <u>Cottrell Pond</u>		City/County: <u>Boring, Multnomah</u>																														
Applicant/Owner: <u>Portland Water Bureau</u>		State: <u>OR</u>																														
Investigator(s): <u>A. Kimpo, N. Jefcoat</u>		Sampling Date: <u>7-3-25</u>																														
Section, Township, Range: <u>S22 1S 4E TL 300</u>		Sampling Point: <u>10</u>																														
Landform (hillside, terrace, etc.): <u>terrace</u>	Local relief (concave, convex, none): <u>convex</u>	Slope (%): <u>1</u>																														
Subregion (LRR/MLRA): <u>LRR A, MLRA 2</u>	Lat: <u>45.462414</u>	Long: <u>-122.304173</u>																														
Soil Map Unit Name: <u>wollent silt loam</u>	Datum: _____																															
NW1 classification: <u>none</u>																																
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No <u>x</u> (If no, explain in Remarks.)																																
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes <u>x</u> No _____																																
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)																																
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.																																
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> Hydrophytic Vegetation Present? Yes <u>x</u> No _____ Hydric Soil Present? Yes _____ No <u>x</u> Wetland Hydrology Present? Yes _____ No <u>x</u> </td> <td style="width: 50%; vertical-align: top;"> Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> </td> </tr> </table>			Hydrophytic Vegetation Present? Yes <u>x</u> No _____ Hydric Soil Present? Yes _____ No <u>x</u> Wetland Hydrology Present? Yes _____ No <u>x</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>																												
Hydrophytic Vegetation Present? Yes <u>x</u> No _____ Hydric Soil Present? Yes _____ No <u>x</u> Wetland Hydrology Present? Yes _____ No <u>x</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>																															
Remarks: dry conditions																																
VEGETATION – Use scientific names of plants.																																
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 40%;"> Tree Stratum (Plot size: <u>1E</u>) 1. <u>Populus trichocarpa</u> 2. _____ 3. _____ 4. _____ 60 =Total Cover </td> <td style="width: 10%;"> Absolute % Cover </td> <td style="width: 10%;"> Dominant Species? </td> <td style="width: 10%;"> Indicator Status </td> <td style="width: 30%; vertical-align: top;"> Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0%</u> (A/B) </td> </tr> <tr> <td> Sapling/Shrub Stratum (Plot size: <u>15</u>) 1. <u>Ilex aquifolium</u> 2. _____ 3. _____ 4. _____ 5. _____ 10 =Total Cover </td> <td> Absolute % Cover </td> <td> Dominant Species? </td> <td> Indicator Status </td> <td style="vertical-align: top;"> Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ </td> </tr> <tr> <td> Herb Stratum (Plot size: <u>5</u>) 1. <u>Festuca arundinacea</u> 2. <u>Hypochaeris radicata</u> 3. <u>Dactylis glomerata</u> 4. <u>Ranunculus repens</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 65 =Total Cover </td> <td> Absolute % Cover </td> <td> Dominant Species? </td> <td> Indicator Status </td> <td style="vertical-align: top;"> Hydrophytic Vegetation Indicators : _____ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% _____ 3 - Prevalence Index is ≤3.0¹ _____ 4 - Morphological Adaptations¹(Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants¹ _____ Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. </td> </tr> <tr> <td> Woody Vine Stratum (Plot size: <u>15</u>) 1. _____ 2. <u>Rubus armeniacus</u> 50 =Total Cover </td> <td> Absolute % Cover </td> <td> Dominant Species? </td> <td> Indicator Status </td> <td style="vertical-align: top;"> Hydrophytic Vegetation Present? Yes <u>x</u> No _____ </td> </tr> <tr> <td colspan="4"> % Bare Ground in Herb Stratum _____ </td> <td></td> </tr> <tr> <td colspan="5">Remarks:</td> </tr> </table>			Tree Stratum (Plot size: <u>1E</u>) 1. <u>Populus trichocarpa</u> 2. _____ 3. _____ 4. _____ 60 =Total Cover	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0%</u> (A/B)	Sapling/Shrub Stratum (Plot size: <u>15</u>) 1. <u>Ilex aquifolium</u> 2. _____ 3. _____ 4. _____ 5. _____ 10 =Total Cover	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	Herb Stratum (Plot size: <u>5</u>) 1. <u>Festuca arundinacea</u> 2. <u>Hypochaeris radicata</u> 3. <u>Dactylis glomerata</u> 4. <u>Ranunculus repens</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 65 =Total Cover	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators : _____ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% _____ 3 - Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	Woody Vine Stratum (Plot size: <u>15</u>) 1. _____ 2. <u>Rubus armeniacus</u> 50 =Total Cover	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <u>x</u> No _____	% Bare Ground in Herb Stratum _____					Remarks:				
Tree Stratum (Plot size: <u>1E</u>) 1. <u>Populus trichocarpa</u> 2. _____ 3. _____ 4. _____ 60 =Total Cover	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0%</u> (A/B)																												
Sapling/Shrub Stratum (Plot size: <u>15</u>) 1. <u>Ilex aquifolium</u> 2. _____ 3. _____ 4. _____ 5. _____ 10 =Total Cover	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____																												
Herb Stratum (Plot size: <u>5</u>) 1. <u>Festuca arundinacea</u> 2. <u>Hypochaeris radicata</u> 3. <u>Dactylis glomerata</u> 4. <u>Ranunculus repens</u> 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 65 =Total Cover	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators : _____ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% _____ 3 - Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																												
Woody Vine Stratum (Plot size: <u>15</u>) 1. _____ 2. <u>Rubus armeniacus</u> 50 =Total Cover	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <u>x</u> No _____																												
% Bare Ground in Herb Stratum _____																																
Remarks:																																

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 6/2	100					Loamy/Clayey	
4-16	10YR 5/2	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :	
☐ Histosol (A1)	☐ Sandy Gleyed Matrix (S4)	☐ 2 cm Muck (A10) (LRR A, E)		
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)	☐ Iron-Manganese Masses (F12) (LRR D)		
☐ Black Histic (A3)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)		
☐ Hydrogen Sulfide (A4)	☐ Loamy Mucky Mineral (F1) (except MLRA 1)	☐ Very Shallow Dark Surface (F22)		
☐ 1 cm Muck (A9) (LRR D, G)	☐ Loamy Gleyed Matrix (F2)	☐ Other (Explain in Remarks)		
☐ Depleted Below Dark Surface (A11)	☒ Depleted Matrix (F3)			
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)			
☐ Iron Monosulfide (A18)	☐ Depleted Dark Surface (F7)			
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)			
☐ 2.5 cm Mucky Peat or Peat (S2) (LRR G)				

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No ☐
---	---

Remarks:
very dry

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (2 or more required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
☐ High Water Table (A2)	☐ Salt Crust (B11)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Aquatic Invertebrates (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Geomorphic Position (D2)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Shallow Aquitard (D3)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ FAC-Neutral Test (D5)	
☐ Iron Deposits (B5)	☐ Stunted or Stressed Plants (D1) (LRR A)	☐ Raised Ant Mounds (D6) (LRR A)	
☐ Surface Soil Cracks (B6)	☐ Other (Explain in Remarks)	☐ Frost-Heave Hummocks (D7)	
☐ Inundation Visible on Aerial Imagery (B7)			
☐ Sparsely Vegetated Concave Surface (B8)			

Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes ☐ No ☒
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



*Photo 1: Looking north
near paired plots 1 & 2*

*Photo 2: Looking
southeast across
Cottrell Pond
towards paired
plots 3 & 4*



COTTRELL POND PHOTO DOCUMENTATION





Photo 3: Looking south across the east end of the pond at palustrine scrub shrub habitat, near paired plots 9 & 10



Photo 4: Looking east from paired plots 9 & 10 into palustrine scrub shrub habitat

COTTRELL POND PHOTO DOCUMENTATION





Photo 5: From the east property boundary looking west at transition between of PUBHh and PSS1

Photo 6: Looking west through inundated reed-canary grass at the east end of the pond



COTTRELL POND PHOTO DOCUMENTATION





Photo 7: Near east boundary of property adjacent to plot 5



Photo 8: Culvert draining pond on west end near plot 7

COTTRELL POND PHOTO DOCUMENTATION

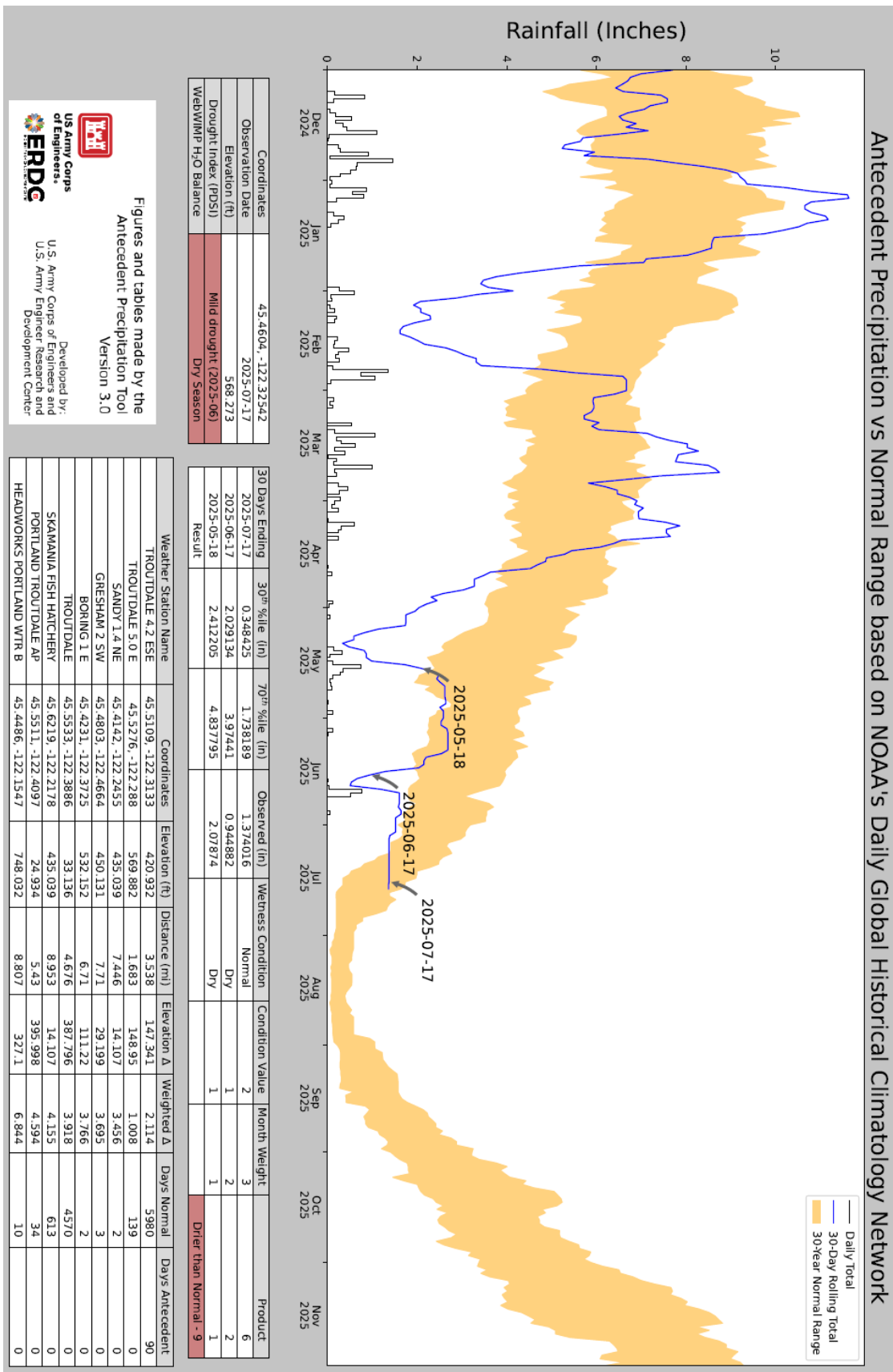


Appendix D. Cottrell Pond Project Botanic Inventory

Scientific Name	Common Name	Form	Indicator Status
<i>Polystichum munitum</i>	Sword fern	fern	FACU
<i>Agrostis capillaris</i>	Colonial bentgrass	herbaceous	FAC
<i>Anthoxanthum odoratum</i>	Sweet vernal grass	herbaceous	FACU
<i>Athrium felix-femina</i>	Lady fern	herbaceous	FAC
<i>Bidens frondosa</i>	Nodding beggarstick	herbaceous	FACW
<i>Bromus hordaceus</i>	Soft brome	herbaceous	FACU
<i>Carex deweyana</i>	Dewey sedge	herbaceous	FAC
<i>Carex stipata</i>	Sawbeak sedge	herbaceous	OBL
<i>Centaureum erythraea</i>	Centaury	herbaceous	FAC
<i>Cirsium arvense</i>	Canada thistle	herbaceous	FAC
<i>Crepis capillaris</i>	Hawksbeard	herbaceous	FACU
<i>Dactylis glomerata</i>	Orchardgrass	herbaceous	FACU
<i>Deschampsia cespitosa</i>	Tufted hairgrass	herbaceous	FACW
<i>Digitalis purpurea</i>	Foxglove	herbaceous	FACU
<i>Elymus glaucus</i>	Blue wildrye	herbaceous	FACU
<i>Epilobium ciliatum</i>	Willowherb	herbaceous	FACW
<i>Geum macrophyllum</i>	Large leaved avens	herbaceous	FAC
<i>Geum urbanum</i>	Wood avens	herbaceous	NL
<i>Glyceria elata</i>	Tall mannagrass	herbaceous	FACW
<i>Hypochaeris radicata</i>	Cat's ear	herbaceous	FACU
<i>Iris pseudoacorus</i>	Yellow flag iris	herbaceous	OBL
<i>Jacobaea vulgaris</i>	Tansy ragwort	herbaceous	FACU
<i>Juncus effusus</i> ssp. <i>effusus</i>	Soft rush	herbaceous	FACW
<i>Lactuca serriola</i>	Prickly lettuce	herbaceous	FACU
<i>Lapsana communis</i>	Nipplewort	herbaceous	FACU
<i>Leucanthemum vulgare</i>	Oxeye daisy	herbaceous	FACU
<i>Lotus corniculatus</i>	Bird's foot trefoil	herbaceous	FAC
<i>Phalaris arundinacea</i>	Reed-canarygrass	herbaceous	FACW
<i>Plantago lanceolata</i>	Lance leaved plantain	herbaceous	FACU
<i>Potamogeton natans</i>	Floating pond weed	herbaceous	OBL
<i>Ranunculus repens</i>	Creeping buttercup	herbaceous	FAC
<i>Schedonous arundinaceus</i>	Tall fescue	herbaceous	FAC
<i>Scirpus microcarpus</i>	Small-fruited bulrush	herbaceous	OBL
<i>Solanum dulcamara</i>	Deadly nightshade	herbaceous	FAC
<i>Sparganium emersum</i>	Bur-reed	herbaceous	OBL
<i>Vicia</i> spp	Vetch	herbaceous	NL
<i>Vinca minor</i>	Periwinkle	herbaceous	NL
<i>Corylus avellana</i>	Domestic filbert	shrub	FACU
<i>Reynoutria japonica</i>	Japanese knotweed	shrub	FACU
<i>Rubus spectabilis</i>	Salmonberry	shrub	FAC

<i>Salix scouleriana</i>	Scouler willow	shrub	FAC
<i>Salix</i> spp.	Willow species	shrub	FAC
<i>Sambucus racemosa</i>	Red elderberry	shrub	FACU
<i>Spiraea douglasii</i>	Douglas spiraea	shrub	FACW
<i>Acer platanoides</i>	Norway maple	tree	FACU
<i>Alnus rubra</i>	Red alder	tree	FAC
<i>Frangula purshiana</i>	Cascara	tree	FAC
<i>Populus trichocarpa</i> ssp. <i>balsamifera</i>	Black cottonwood	tree	FAC
<i>Prunus avium</i>	Pie cherry	tree	FACU
<i>Pseudotsuga menziesii</i>	Douglas fir	tree	FACU
<i>Quercus rubra</i>	Red oak	tree	FACU
<i>Sorbus aucuparia</i>	European mountain ash	tree	NL
<i>Thuja plicata</i>	Western red-cedar	tree	FAC
<i>Ulmus pumila</i>	Siberian elm	tree	FAC
<i>Hedera helix</i>	English ivy	vine	FACU
<i>Rubus ursinus</i>	Trailing blackberry	vine	FACU
<i>Rubus armeniacus</i>	Himalayan blackberry	woody/vine	FAC
<i>Rubus laciniatus</i>	Evergreen blackberry	woody/vine	FACU

Appendix E. Weather Data Derived from Antecedent Precipitation Tool



Appendix F. Field and Mapping Methods

Site Orientation and Study Area Mapping

Upon arrival at the site, the perimeter of the delineation area was walked to assess terrain, vegetation, hydrology, and access. Overview photographs were taken from multiple vantage points, with compass bearings noted.

The study area boundary was derived from aerial imagery before the site visit and refined in the field where necessary. An additional feature, pond fill dam fill, was also digitized using aerial interpretation and confirmed with field observation.

Wetland Boundary Delineation

Wetland boundaries were delineated by first identifying an obvious wetland area and walking outward toward upland conditions. Three parameters—hydrophytic vegetation, hydric soils, and wetland hydrology—were assessed to determine the location of the wetland/upland boundary.

Boundary Determination:

- The boundary was placed at the point where one or more of the three wetland indicators no longer met threshold criteria.
- In areas of gradual transition, boundary placement relied on the best professional judgment of where wetland indicators diminished.

Flag Placement:

- Pin flags were placed along the wetland boundary at intervals of approximately 10–20 feet in areas with clear transitions.
- In areas with irregular or complex boundaries, flags were spaced more closely (approximately 5 feet).
- Flags were aligned along the land contour and placed consistently along a horizontal plane.
- Where multiple wetland types were present, each was flagged separately and assigned a unique identifier.
- At boundaries between adjacent wetland types, two different colored flags were used to distinguish each wetland type.

Documentation:

- Field notes were recorded at representative locations describing vegetation, soils, and hydrology.
- Representative photographs were taken to document flagged boundaries and site conditions.
- Boundaries were mapped using an Arrow Lite 100 high-accuracy GNSS receiver. GPS line streaming was used to generate continuous, spatially accurate data.

Stream and Channel Mapping – OHWL and Derived Centerline

Field Mapping of OHWL:

- Potential stream channels were identified during field reconnaissance by the presence of defined beds and banks.
- Ordinary High Water Line (OHWL) was determined using indicators such as changes in slope, substrate, water marks, exposed roots, wrack lines, vegetative shifts, scour, and sediment deposits.

- OHWL points were flagged approximately every 20–30 feet and more frequently in irregular or complex sections.
- Yellow flags were placed to mark the OHWL and were mapped using GPS in line streaming mode

Derivation of Stream Centerline:

- The stream centerline was not field delineated but instead derived from the left and right OHWL lines using GNSS data.
- OHWL banks were first densified using ArcGIS Pro’s Densify tool to create uniform spacing of vertices (~1-foot intervals).
- Vertices were converted to points using the Feature Vertices to Points tool.
- A Generate Near Table analysis was used to identify point pairs between left and right OHWL lines.
- Midpoints were calculated from paired vertices and stored in a new layer (CenterPoint).
- These points were connected sequentially to generate a STREAM_CL polyline.
- The resulting centerline was smoothed using the PAEK algorithm (2-meter tolerance) to improve visual clarity.

GNSS Accuracy and Metadata

Field data were collected using an Arrow Lite 100 GNSS receiver paired with an iOS mobile device. The system provided sub-meter horizontal accuracy, typically ranging from 0.3 to 1.0 meters. Recorded PDOP values ranged between 2.0 and 3.0.

GNSS metadata stored with collected features included:

- Device model and reported horizontal accuracy
- Date and time of collection

Imagery and Classification Standards

High-resolution aerial imagery was reviewed at scales ranging from 1:1,200 to 1:2,400—exceeding the 1:12,000 scale recommended by the National Wetlands Inventory (NWI). Wetlands were classified using the Cowardin system (e.g., PUBHh, PFO1C, R5UBH), consistent with NWI and Oregon DSL guidance.

Photographs were georeferenced and labeled to document flagged OHWL, wetland boundaries, and other relevant site features.

FIELD METHODS

Sample Plot Design and Data Collection

Paired wetland and upland plots were established along representative boundary segments. Each plot was flagged at its center and mapped as a GPS point.

Vegetation Data:

- Dominant species were identified in each stratum: herbaceous, shrub/sapling, and tree.
- Percent cover and wetland indicator status (FAC, FACW, OBL, etc.) were recorded for each species.
- Dominance was assessed using the 50/20 rule.

Plot Sizes by Stratum:

Stratum	Radius (ft)	Area (ft²)
Herbaceous	~5–6	78–98
Shrub/Sapling	up to ~10	78–314
Tree	~30	~2,827

*Woody vines were recorded in the herbaceous or shrub/sapling stratum depending on their growth form.

Soil Data:

- Soil pits were hand-dug to a minimum of 20 inches or refusal.
- Soil parameters included texture, structure, Munsell color, hydric indicators (e.g., redoximorphic features), and moisture.

Hydrology Indicators:

- Documented hydrologic evidence included surface water, saturation, drift lines, sediment deposits, water marks, and oxidized root channels.

All data were recorded on ENG Form 6116-9 and linked with GPS coordinates and photographic documentation.

Photographic Documentation

Photo points were taken throughout the delineation to document site conditions and verify indicators using GPS. Each photograph was labeled with a photo ID, GPS location, direction, and a brief description.

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