WATER QUALITY RESOURCE SITE ASSESSMENT/MITIGATION PLAN

EXHIBIT 8



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Water Quality Resource Site Assessment

Date:	March 21, 2018
To:	Ed Williams, Old Time Investments, Inc.
	Steve Kay, Cascadia Planning + Development Services
From:	C. Mirth Walker, PWS, Senior Wetland Scientist
	Tom Dee, PWS, Wetland Scientist
Subject:	Harmony Road Townhomes, 6115 SE Harmony Road, Milwaukie, Oregon Section 31D, T1S, R2E, Tax Lot 2200, Clackamas County Water Quality Resource Site Assessment

INTRODUCTION

SWCA Environmental Consultants (SWCA) conducted a wetland and waters delineation and a vegetated corridor assessment on behalf of Old Time Investments, Inc., to meet the natural resource assessment requirements under the City of Milwaukie Municipal Code (MMC) Natural Resources (NR) Code Section 19.402 (City of Milwaukie 2016). The site was recently annexed into the City of Milwaukie (City) and is zoned R-2. Vegetated Corridors were preliminarily mapped on the site by Metro and the City (City of Milwaukie 2009). This mapping was later removed on the adopted NR Administrative Map when the site was still located outside of the city limits. Water Quality Resources (WQR), including a wetland and a stream (Minthorn Creek), were delineated on the site by certified Professional Wetland Scientists and surveyed and mapped by a licensed Professional Land Surveyor. The wetland delineation report (WDR) has been submitted to the Oregon Department of State Lands (DSL) for review and concurrence. Once the WDR has been approved by DSL (maximum 120 day timeline), then this will satisfy the Type II boundary verification process in MMC 19.402.15.A.2.

The approximately 1.18-acre site (based on the tax lot map; a 1991 survey showed the site as 1.32 acres) is Tax Lot 2200 on Clackamas County Tax Map 1S 2E 31D, located approximately 500 feet west of the intersection of SE Harmony Road and SE Railroad Avenue, at 6115 SE Harmony Road, in Milwaukie, Oregon (Figures 1–3).

EXISTING CONDITIONS

The site is within the Kellogg Creek watershed (Hydrologic Unit Code [HUC] 12: 170900120102) (Oregon Explorer 2017). The site is bordered by SE Harmony Road to the south; an apartment complex to the west; riparian forest, open meadow, the Union Pacific railroad, and SE Railroad Avenue to the north; and an abandoned residence to the east. A single-family residence and surrounding trees were removed from the site in 2010. Land use adjacent to the site is primarily light industry to the south and residential to the west, north, and east. Surrounding topography is

relatively flat and gently undulating. Site topography slopes gently to the north and then steeply down to the creek drainage. Minthorn Creek flows across the site from west to east. The area north of the creek is relatively flat and then slopes up to the north toward the railroad tracks.

The southern portion of the property consists of a cleared, grassy area with a row of trees along SE Harmony Road. Trees include dawn redwood (*Metasequoia glyptostroboides*), Douglas-fir (*Pseudotsuga menziesii*), bird cherry (*Prunus avium*), and big-leaf maple (*Acer macrophyllum*). The understory beneath the row of trees is predominantly Himalayan blackberry (*Rubus armeniacus*) and English ivy (*Hedera helix*). There is a small gravel pad in the southwest corner of the property, adjacent to SE Harmony Road. Vegetation immediately south of the creek is dominated by invasive species such as English laurel (*Prunus laurocerasus*), Himalayan blackberry, and English ivy. Ivy was observed vining high into the trees in the riparian corridor. A sewer line and easement is present along the northern property boundary, and crosses the stream along the eastern property boundary, with a manhole located south of the stream, in an upland area.

The northern portion of the site is riparian forest dominated by Oregon ash (*Fraxinus latifolia*) and black cottonwood (*Populus trichocarpa*), with a mid-story of red-osier dogwood (*Cornus alba*), English hawthorn (*Crataegus monogyna*), and snowberry (*Symphoricarpos albus*). English ivy is abundant throughout the corridor and a thornless blackberry variety (*Rubus* sp.) is spreading into the site from a nearby clearing to the west. Yellow-flag iris (*Iris pseudacorus*) borders the creek, with occasional patches of skunk cabbage (*Lysichiton americanus*).

According to the Natural Resources Conservation Service (NRCS), soils on the majority of the site are mapped as Wapato silty clay loam (Unit 84), with a small portion of Woodburn silt loam, 3%–8% slopes (Unit 91B) in the southwestern corner and Salem silt loam 0%–7% slopes (Unit 76B) in the northwestern corner of the property (NRCS 2015) (Figure 4). Wapato soils are hydric and Salem soils are upland soils. Woodburn soils are upland soils with small hydric inclusions of Huberly and Dayton soils.

No wetlands or waters were mapped on the North Clackamas Urban Area Wetland Inventory and Goal 5 Assessment for Clackamas County (SRI/Shapiro 1994) (Figure 5). The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (Figure 6) mapped Minthorn Creek as riverine upper perennial, unconsolidated bottom deepwater habitat, with a permanently flooded water regime (R3UBH) (USFWS 2017). The City of Milwaukie's preliminary WQR mapping provided by Metro is shown in Figure 7 (City of Milwaukie 2017). There are no Habitat Conservation Areas (HCA) on the site.

METHODS

SWCA used guidance presented in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (USACE 2010), *Regulatory Guidance Letter 05-05* (USACE 2005), and Oregon Administrative Rules (OAR) (DSL 2017a), to characterize wetlands and waters within the site. The wetlands and waters delineation was conducted on August 25, 2016, by C. Mirth Walker, Professional Wetland Scientist (PWS) and Evan Dulin, wetland scientist. An additional site visit was conducted after city annexation on October 17, 2017, by C. Mirth Walker and Tom Dee, PWS. Soils, vegetation, and

indicators of hydrology were recorded at seven sample plot locations (Attachment A). The wetland boundary, Ordinary High Water Line (OHWL), and sample plot locations were flagged in the field, and mapped by a professional land surveyor. Map accuracy is within ± 1 foot.

The vegetated corridor was assessed according to the MMC NR Table 19.402.11.C, Mitigation Requirements for WQRs. Class A WQRs are in "good" condition, Class B WQRs are in "marginal" condition, and Class C WQRs are in "poor" condition. The City is currently using the Portland Plant List as the "Milwaukie Native Plant List" (City of Portland Bureau of Planning and Sustainability 2016). A list of vegetation observed on the site is provided in Attachment B. Representative site photographs are included in Attachment C.

The wetland was assessed using the Oregon Freshwater Wetland Assessment Method (OFWAM) (Roth et al. 1996), as outlined in MCC 19.402.15.A.2.a.(1)(b).

RESULTS

Water Quality Resources

Minthorn Creek

Minthorn Creek is a freshwater, perennial stream that flows across the center of the site from west to east (Figure 8). The stream is designated a Primary Protected Water Feature because of its perennial character (MMC 19.402.15.D). Minthorn Creek occupies approximately 0.16 acre within the study area, and extends off-site to the east and west. Minthorn Creek is a tributary of Mt. Scott Creek.

The DSL Essential Salmonid Habitat (ESH) mapper (DSL 2017b) illustrates Mt. Scott Creek, approximately 400 feet south of the site, as ESH containing coho salmon (*Oncorhynchus kisutch*) and winter steelhead (*O. mykiss*). Minthorn Creek is not mapped as ESH, and it is assumed that there is a fish passage barrier present. The Oregon Department of Fish and Wildlife (ODFW) Fish Passage Barrier mapper does not depict a barrier at the confluence with Mt. Scott Creek (ODFW 2017).

The OHWL of Minthorn Creek was delineated based on evidence of high water, such as drift deposits (including sediment on tires and some Styrofoam debris), debris wracks, sparse vegetation, soil cracks, and changes in topography and plant communities. The bed and banks are composed of silt loam. The channel is relatively stable due to the abundant root systems of adjacent vegetation. Minthorn Creek overtops its banks seasonally. Floodplain roughness is high, due to abundant riparian vegetation and large woody debris. There is a small concrete dam and weir approximately 50 feet east and downstream of the eastern site boundary. The dam impounds water that backs up into the site throughout much of the year. Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) 41005C0036D indicates there is no 100-year floodplain within the site (FEMA 2017).

Wetland A

Wetland A is a small, approximately 0.12-acre wetland on the north side of Minthorn Creek (Figure 8). The wetland is classified as palustrine forested (PFO) using the *Classification of Deepwater Habitats of the United States* (Cowardin et al. 1979), and as valley slope (SV) and

riverine flow-through (RFT) using the *Guidebook for Hydrogeomorphic (HGM)–based Assessment* of Oregon Wetland and Riparian Sites: Statewide Classification and Profiles (Adamus 2001).

Wetland determination data forms are provided in Attachment A. The wetland was dominated by Oregon ash, red osier dogwood, English Hawthorn, colonial bentgrass (*Agrostis capillaris*), taper-fruit short-scale sedge (*Carex leptopoda*), skunk cabbage, yellow-flag iris, and soft rush (*Juncus effusus*). Soils met the Redox Dark Surface (F6) and Depleted Matrix (F3) hydric soil indicators. The Saturation (A3) wetland hydrology indicator was observed at Plot 6 during the October 2017 site visit.

Wetland A receives hydrology from the hyporheic zone associated with Minthorn Creek and from the slope to the northwest. The wetland is contiguous with the stream and occasionally receives overbank flooding during seasonal precipitation events.

OFWAM results for Wetland A (Attachment D) indicate that Wetland A has intact Water Quality and Hydrologic Control functions and is therefore considered a Title 3 wetland (Metro 2016).

Vegetated Corridors

Vegetated Corridor A: Approximately 0.23 acre (10,230 square feet)

Vegetated Corridor A (VECO A), on the south side of Minthorn Creek, is 50 feet wide based on the Primary Protected Water Feature designation of the stream and the slope being less than 25% (Figure 9), except where there is a small portion of the slope that is greater than 25%. The City has determined that because the steep portion is less than 150 feet in length that the buffer is still 50 feet in width (City of Milwaukie 2017). VECO A is measured from the southern OHWL of Minthorn Creek.

VECO A was in was in poor (Class C) and marginal (Class B) condition, according to Table 19.402.11.C. In VECO Plot A1, the combination of tree, shrub, and herbs cover was at least 80% but canopy coverage was only 25% to 50%. VECO Plot A1 had moderate tree canopy, moderate shrub cover, and very little groundcover. Dominant trees in this area included big-leaf maple and English laurel in the tree canopy. The shrub layer was dominated by English hawthorn and English laurel. English ivy and Himalayan blackberry dominated the understory. VECO Plot A2 was dominated by perennial ryegrass (*Lolium perenne*), with a few mature trees, including western red cedar (*Thuja plicata*), Douglas-fir, and dawn redwood.

Vegetated Corridor B: Approximately 0.25 acre (11,044 square feet)

VECO B, on the north side of Minthorn Creek and Wetland A, is 50 feet wide, based on the Title 3 designation of Wetland A and the slope being less than 25%. VECO B is measured from the northern edge of Wetland A.

VECO B was in good (Class A) condition according to Table 19.402.11.C. The combination of trees, shrubs, and herbs was greater than 80%, with more than 50% tree canopy coverage. Dominant trees included horse chestnut (*Aesculus hippocastanum*) and Oregon ash. The shrub layer was dominated by English laurel and clustered rose (*Rosa pisocarpa*), and the herb layer was dominated by sword fern (*Polystichum munitum*), field horsetail (*Equisetum arvense*), and wild mint (*Mentha arvensis*). Vegetated corridor data are summarized in Table 1.

Species Name	Common Name	Native Status	VECO A1 Cover	VECO A2 Cover	VECO B Cover
Trees					
Acer macrophyllum	big-leaf maple	Native	30	-	-
Aesculus hippocastanum	horse chestnut	Invasive, Nuisance*	-	-	60
Fraxinus latifolia	Oregon ash	Native	-	-	20
Prunus laurocerasus	English laurel	Invasive, Nuisance*	20	-	20
Shrubs					
Crataegus monogyna	English hawthorn	Invasive	20	-	-
Corylus cornuta	Beaked hazelnut	Native	10	-	-
llex aquifolium	English holly	Invasive	10	-	-
Rosa pisocarpa	Clustered rose	Native	-	-	20
Rubus armeniacus	Himalayan blackberry	Invasive, Noxious	10	-	-
Herbs					
Hedera helix	English ivy	Invasive	90	-	-
Lolium perenne	Perennial ryegrass	Non-native	-	100	-
Rubus leucodermis	Black-cap raspberry	Native	-	-	10
Total Aerial Cover			100	100	100
Total Canopy Cover			80	0	80
Corridor Condition			Marginal	Poor	Good

Table 1. Vegetated Corridor Assessment Summary

*Nuisance plant according to the Portland Plant List

Functions and Values Assessment

The functions and values of the WQRs within the site were assessed according to MMC 19.402.1.C.2. Seven functions were assessed using best professional judgment.

Vegetated corridors to separate protected water features from development.

VECO A: The southern portion of VECO A has a few large trees but no significant woody cover to separate the WQR from the proposed development. The northern portion of VECO has moderate woody cover to separate the WQR from proposed development.

VECO B contained substantial tree and shrub cover to separate Minthorn Creek and Wetland A from adjacent development.

Microclimate and shade.

VECO A provides moderate microclimate and shade to Minthorn Creek.

VECO B provides substantial microclimate and shade to WQRs within the site.

Streamflow moderation and water storage.

VECO A has considerable slope that conveys surface runoff to Minthorn Creek. Vegetation in the corridor helps to slow surface runoff to help offset peak flows during storm events. There is an upland depression in the northwestern part of the corridor that stores water and promotes infiltration.

VECO B is well vegetated, contains numerous small depressions, and a moderate amount of woody debris. Vegetation and woody debris add floodplain roughness that slows streamflow velocities. The microtopography stores water to attenuate peak flows.

Water filtration, infiltration, and natural purification.

VECO A is mostly steep and water only infiltrates at the toe of slope and in the small depression.

VECO B contains extensive microtopography that promotes infiltration, water filtration, and natural purification.

Bank stabilization and sediment and pollution control.

VECO A and VECO B both promote bank stabilization with abundant vegetation and associated root systems adjacent to Minthorn Creek. Their floodplains and upland depressions trap sediments and nutrients, and prevent them from flowing into the stream.

Large wood recruitment and retention and natural channel dynamics.

VECO A and VECO B both exhibit large wood recruitment and retention but the presence of invasive species hinders the growth of native species that would contribute to future recruitment and retention. Minthorn Creek is unconstrained within the site and possesses natural habitat features such as a convoluted shoreline, overhanging and in-water woody vegetation, and floodplain connection. The dam and weir downstream, just outside of the site, poses a threat to the reach of the stream within the site. If the dam and weir were removed, headcutting would occur and eventually alter the channel profile of the site reach. This could cause channel incision, disconnection from the floodplain, and conversion of adjacent wetland to upland.

Organic material resources.

VECO A provides moderate to minimal organic inputs to Minthorn Creek, and this is gradually decreasing over time, as invasive species suppress new plant growth.

VECO B provides moderate to abundant organic inputs to Minthorn Creek. This is decreasing over time in this area also, with the establishment of invasive species and the suppression of native plants.

Habitat Conservation Areas

There are no Habitat Conservation Areas (HCAs) within the site. There are a low value and a high value HCA approximately 350 feet west of the site.

PROPOSED IMPACTS

The proposed 15-unit multi-family apartment complex, pedestrian walkway, and parking area would permanently impact 2,734 square feet (0.06 acre) of VECO A (Figure 10), leaving 7,496 square feet (0.17 acre) of the vegetated corridor present on the south side of Minthorn Creek. No wetland, stream, or VECO B impacts are proposed.

Water Quality Resource Mitigation

Mitigation will be implemented according to MCC 19.402.11.B and 19.402.11.C. The applicant is proposing enhancement of the remaining VECO A per the planting specifications shown in Tables 2 and 3. VECO A is in poor (1,500 square feet) and marginal (5,883 square feet) condition (Figure 11) and mitigation will conform to the requirements in Table 19.402.11.C for poor condition. Those requirements include:

- Restore disturbed areas with native species from the Milwaukie (Portland) Native Plant List, using a City-approved plan developed to represent the vegetative composition that would naturally occur on the site.
- Plant and/or seed all bare areas to provide 100% surface coverage.
- Inventory and remove debris and noxious materials.

VECO A will be vegetatively enhanced through the removal of invasive vegetation and the installation of native plants. Invasive vegetation is prolific within the corridor, and will be removed by manual, mechanical, and chemical treatment. Invasive trees, shrubs, and vines will be cut and swabbed with herbicide. Invasive and non-native grasses and will be cut and sprayed with herbicide. Treated areas will be reseeded with native herbaceous species.

Native vegetation will be planted throughout the majority of VECO A. There are small pockets of native vegetation that will not require planting with trees and shrubs, but will receive some herbaceous plants. All planted vegetation will be mulched in an area 18 inches in diameter and 3 inches deep, taking care to pull mulch away from the stem. Planted areas of VECO A will be watered with 1 inch of water per week between June 1 and October 1 for the first 2 years after planting. The area is small enough that an intricate irrigation system will not be required, and a few impact sprinklers should be sufficient. Vegetation maintenance must be conducted several times throughout the growing season.

The pre-settlement vegetation class consisted of riparian hardwoods and conifers (Oregon Explorer 2017). Plant species and locations have been selected based on historic composition, site conditions, and public safety. Fast-growing, short-lived species such as red alder (*Alnus rubra*) and black cottonwood have not been proposed within the mitigation area. Large trees have not been proposed immediately adjacent to the proposed development.

VECO A has been divided into two planting areas, based on the light and moisture tolerances of the proposed plants. VECO A1 contains species that prefer moisture and partial sun. VECO A2 contains species that prefer drier soils and full sun to partial shade. Tables 2 and 3 provide plant specifications for VECO A1 and VECO A2, respectively.

VECO A1 is located at the toe of the slope. Parts of the planting area are in full sun and parts are beneath the canopy of existing trees. Grass seed is specified for areas with full sun to partial shade. Ferns are specified in the area under existing canopy. Planting specifications for VECO A1 are shown in Table 2.

VECO A2 occupies the sloped portion of the corridor. This area is in direct sunlight and is drier than VECO A1. This area is currently dominated by a non-native grass species that will be replaced with native upland grasses. Upland plants that are good for stabilizing slopes have been specified in VECO A2. Low-growing shrubs will be planted immediately adjacent to the proposed structure, to avoid future hazards from large trees. Planting specifications for VECO A2 are shown in Table 3.

A few large trees have been recently removed from VECO A, and will be replaced with 0.5-inch caliper trees of the same species. Western red cedar and Douglas-fir were removed but 3 Douglas-fir are specified because western red cedar does not do well in direct sun when it is young.

Species Name	Common Name	Quantity	Size	Spacing
Trees				
Fraxinus latifolia	Oregon ash	7	1 gallon	18' on center (o.c.)
Malus fusca	Pacific crabapple	6	1 gallon	18' o.c.
Thuja plicata	Western red cedar	7	1 gallon	18' o.c.
Shrubs				
Cornus alba	Red-osier dogwood	20	1 gallon	8' o.c
Rosa pisocarpa	Clustered rose	20	1 gallon	8' o.c.
Rubus spectabilis	Salmonberry	20	1 gallon	8' o.c.
Symphoricarpos albus	Snowberry	20	1 gallon	8' o.c.
Herbs				
Athyrium cyclosorum	Lady fern	20	1 gallon	8' o.c.
Polystichum munitum	Sword-fern	20	1 gallon	8' o.c.
Grasses				
Agrostis exarata	Spike bentgrass	2 lbs	seed	broadcast
Deschampsia caespitosa	Tufted hairgrass	2 lbs	seed	broadcast
	Blue wildrye	2 lbs	seed	broadcast
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Table 2. Planting Specifications for VECO A1 (5,883 square feet)

MONITORING AND REPORTING

Monitoring of the mitigation site is the ongoing responsibility of the property owner. Plants that die shall be replaced in kind as needed to ensure the minimum 80% survival rate. The City Planning Director may require a maintenance bond to cover the continued health and survival of all plantings. An annual report on the survival rate of all plantings shall be submitted for 2 years.

QUALIFICATIONS

C. Mirth Walker is a certified PWS with 27 years of experience delineating wetlands and streams and conducting inventories and functional assessments of riparian corridors and other habitats in the Pacific Northwest. Tom Dee is a certified PWS with 14 years of experience delineating wetlands and streams and conducting inventories and functional assessments of riparian corridors and other habitats in the Pacific Northwest. Ms. Walker and Mr. Dee have conducted hundreds of wetland and waters delineations, riparian corridor inventories, and functional assessments, and have many years of experience in wetland permitting, designing mitigation plans, and implementing and monitoring mitigation projects.

LIST OF FIGURES:

- Figure 1. Site location map
- Figure 2. Tax lot map (aerial base).
- Figure 3. Tax lot map (paper base).
- Figure 4. Soils map.
- Figure 5. Local Wetland Inventory map.
- Figure 6. National Wetlands Inventory map.
- Figure 7. City of Milwaukie's preliminary WQR mapping provided by Metro map.
- Figure 8. Existing condition wetland and waters delineation map.
- Figure 9. Existing condition vegetated corridor map.
- Figure 10. Proposed site development plan.
- Figure 11. Vegetated Corridor Plot Locations and Planting Areas

LIST OF ATTACHMENTS:

Attachment A. Wetland determination data forms Attachment B. Site vegetation list Attachment C. Representative site photographs Attachment D. OFWAM data forms

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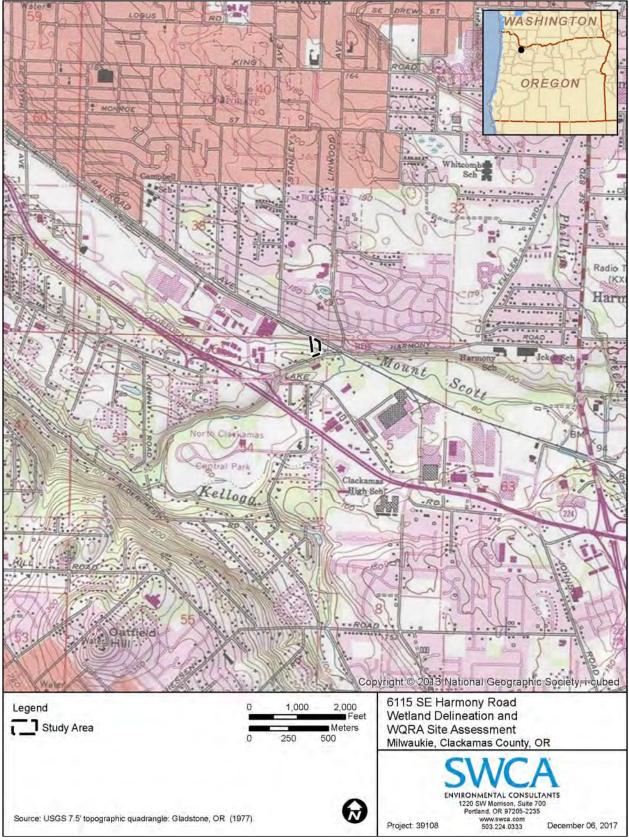


Figure 1. Site location map.

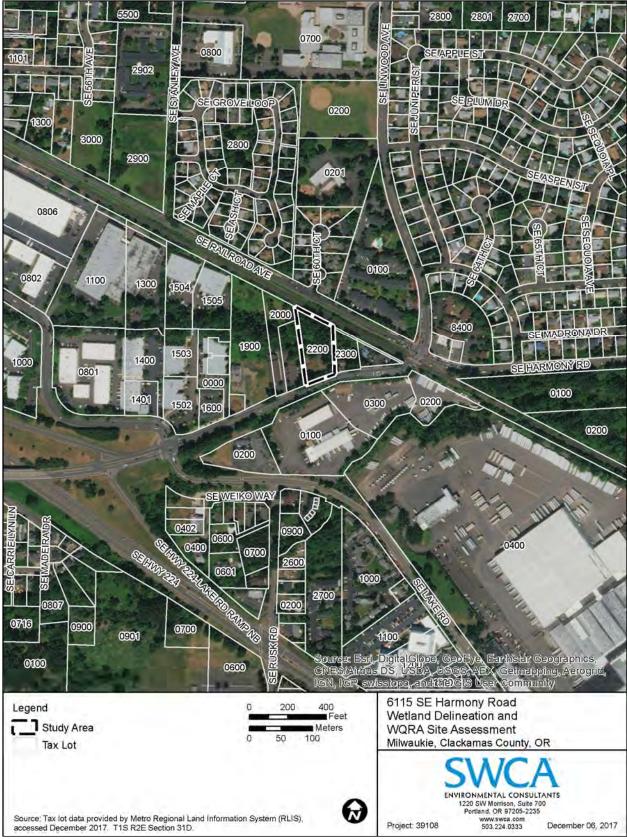


Figure 2. Tax lot map (Metro RLIS aerial base).

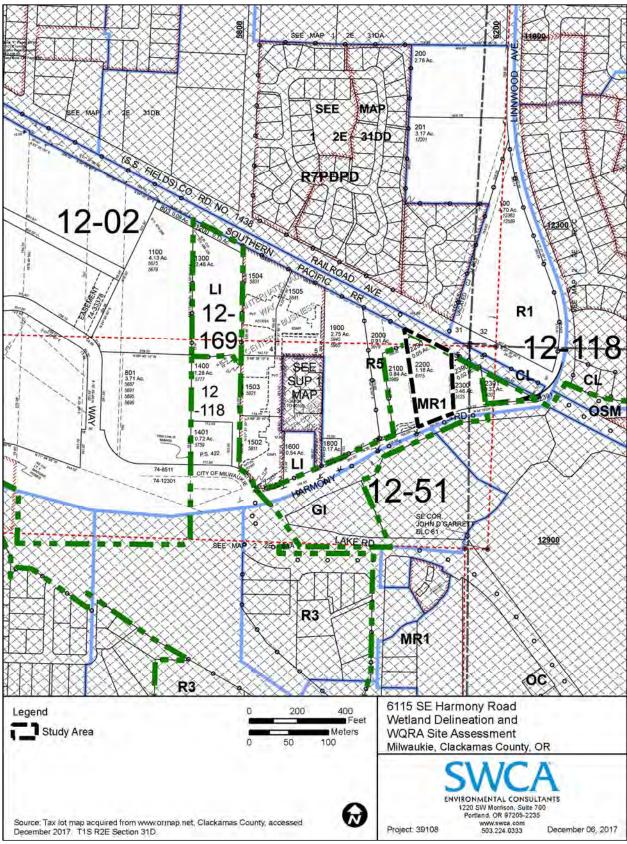


Figure 3. Tax lot map (ORmap paper base).

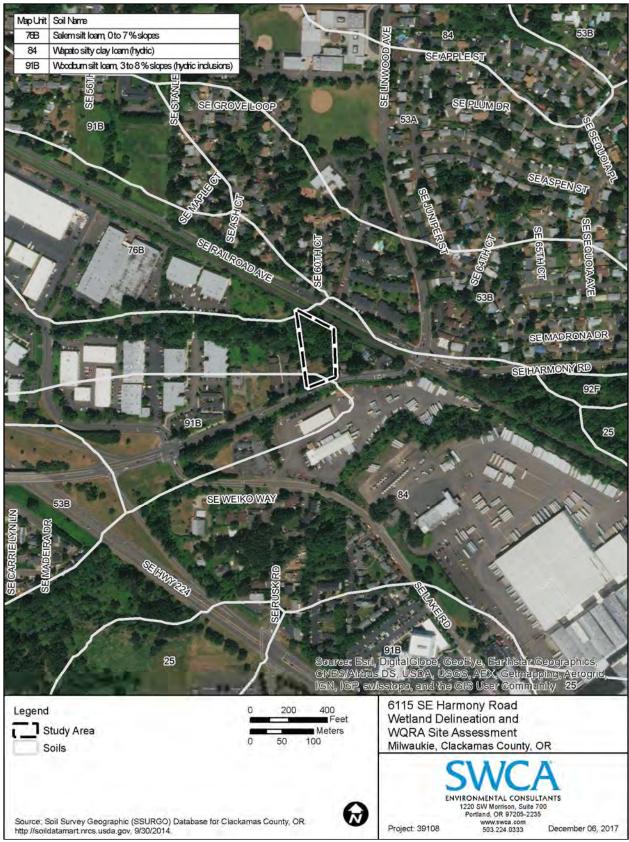


Figure 4. Soils map.

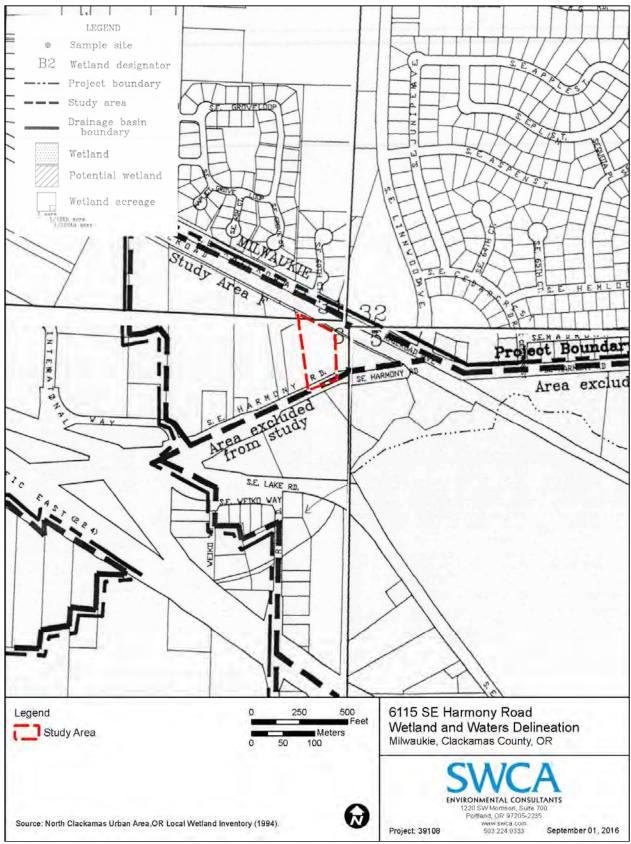


Figure 5. Local Wetland Inventory map.

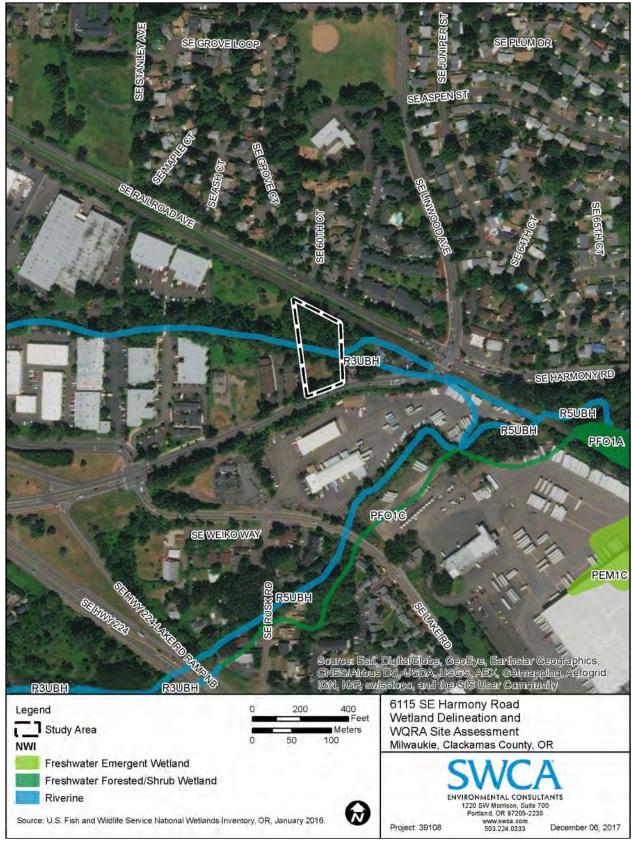


Figure 6. National Wetlands Inventory map .

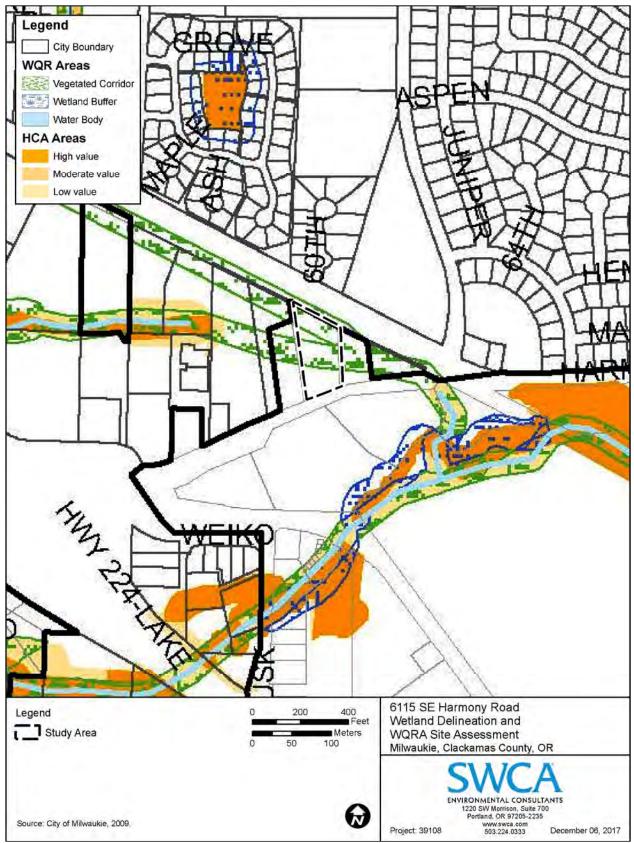
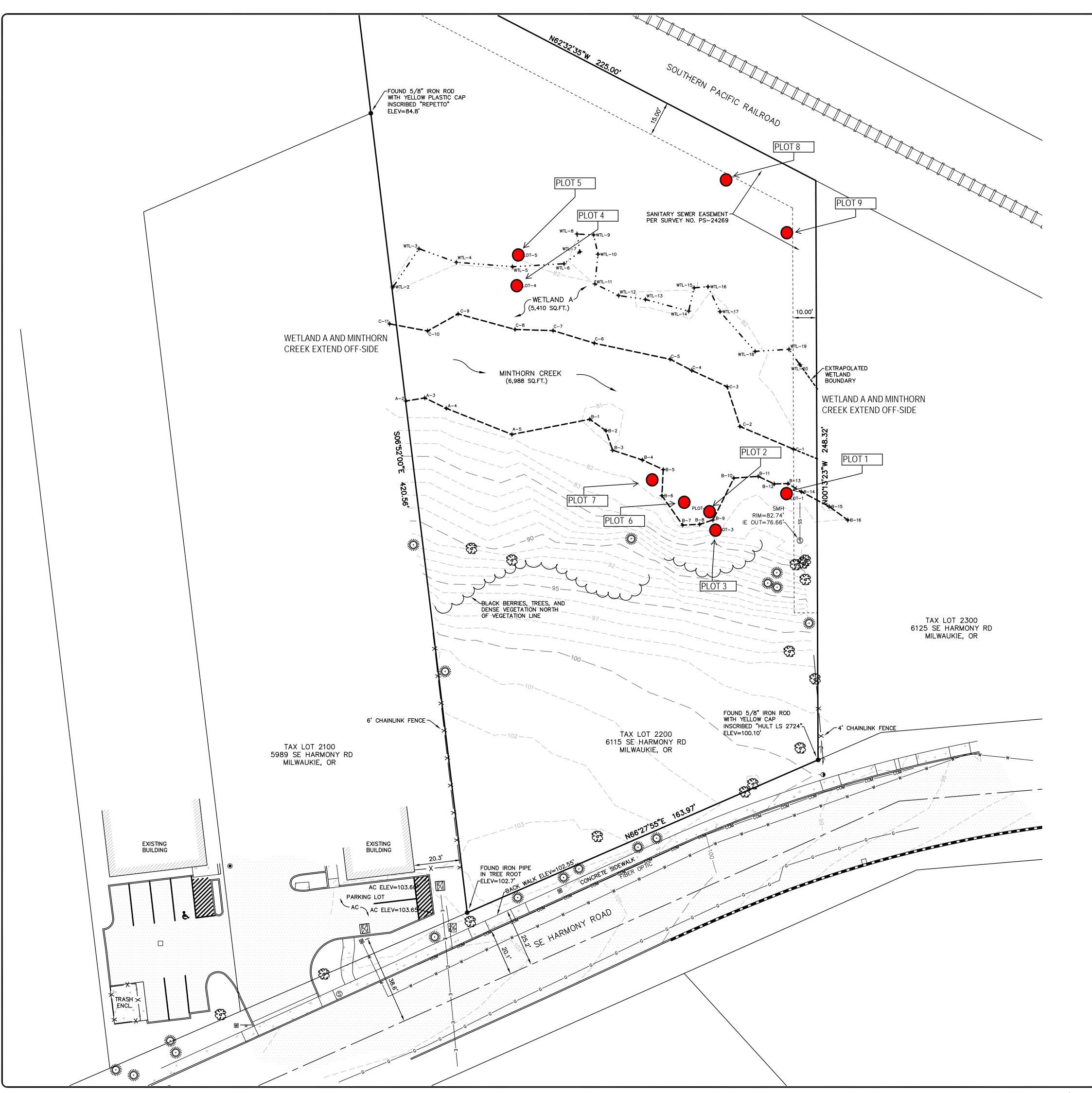
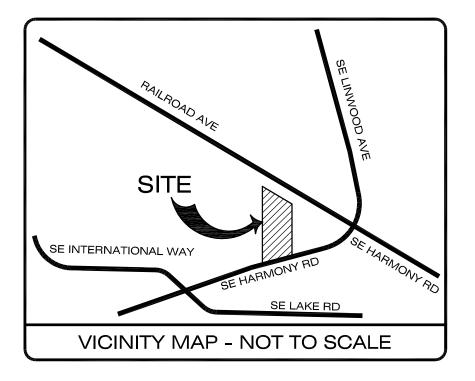
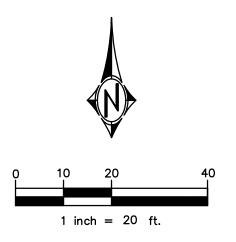


Figure 7. City of Milwaukie's preliminary WQR mapping provided by Metro map.







	CONCRETE WALL
	RAIL ROAD
X X	FENCE
<u> </u>	MINOR CONTOUR
<u> </u>	MAJOR CONTOUR
	WETLAND DELINEATION
ssss	SANITARY SEWER LINE
GG	GAS LINE
ww	WATER LINE
W	WATER METER/SERVICE
8	WATER VALVE
	CATCH BASIN / AREA DRAIN
S	SANITARY SEWER MANHOLE
-0	UTILITY GUY POLE
\rightarrow	UTILITY GUY WIRE
⊠	ELECTRIC VAULT
8	COMMUNICATIONS PEDESTAL
	DECIDUOUS TREE
	EVERGREEN TREE
0	SURVEY FOUND MONUMENT

GENERAL NOTES:

1. BENCHMARK INFORMATION. 3-1/2" BRONZE DISK IN SIDEWALK PER USBT 2001-040. BEING THE NORTHEAST CORNER OF JOHN GARRETT DLC NO. 61, ALSO BEING THE SOUTHEAST CORNER OF JOHN GARRETT DLC NO. 38 ON THE NORTH LINE OF SECTION 5. SEE CLACKAMAS COUNTY SN 2004-356 SHEET 4 OF 14.

ELEVATION = 85.30'

2. THE BOUNDARY DEPICTED HERE ON IS PRELIMINARY AND IS SUBJECT TO CHANGE. IF ADDITIONAL MONUMENTS ARE FOUND ALONG THE NORTH LINE, THE BOUNDARY RETRACEMENT WILL BE REVISED ACCORDINGLY.

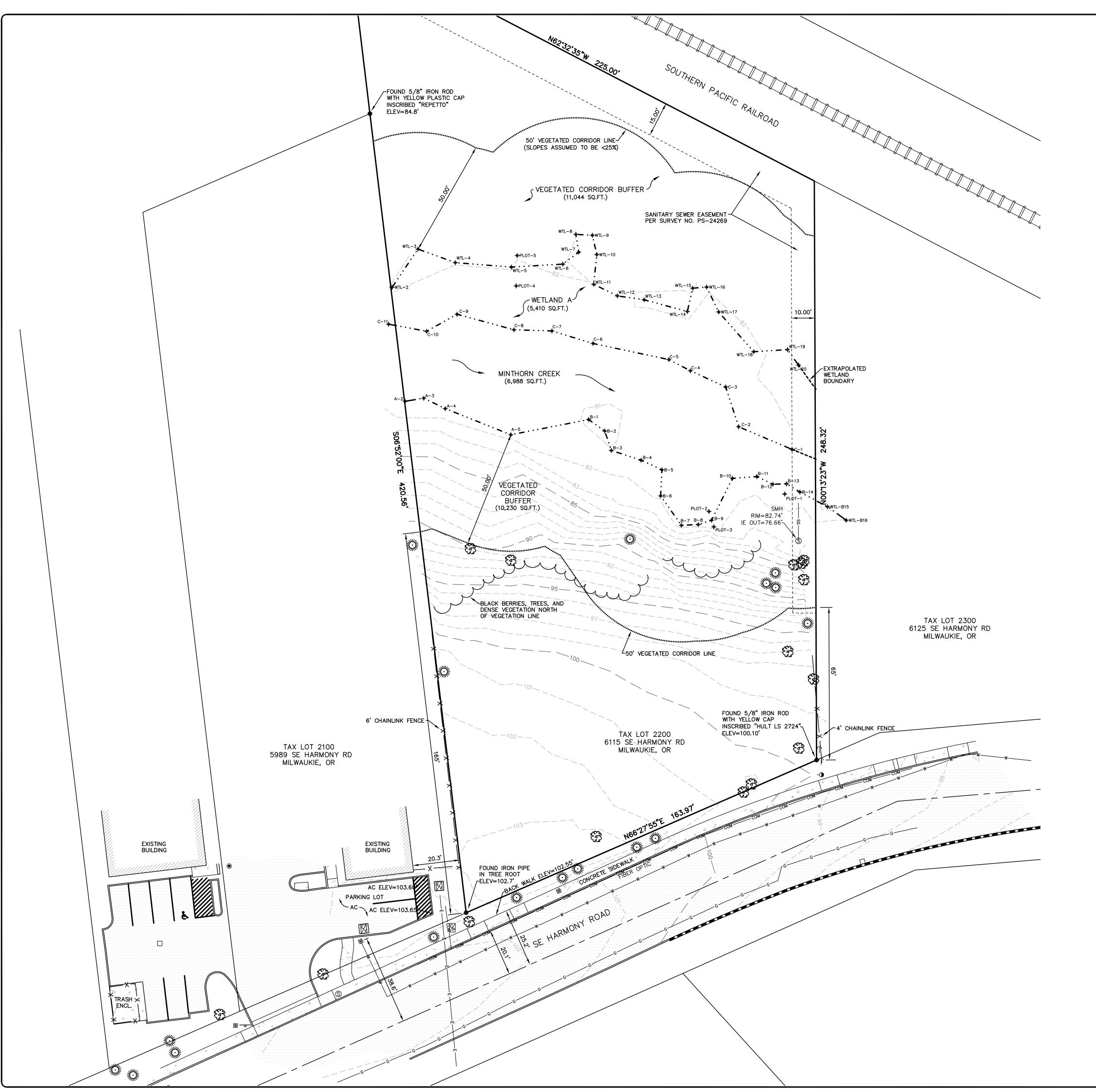
3. THE PURPOSE OF THIS SURVEY WAS TO PROVIDE A TOPOGRAPHIC BASE MAP OF TAX LOT 2200 TAX MAP 1S 2E 31D SHOWING EXISTING CONDITIONS ALONG WITH THE WETLAND DELINEATION AND MARKERS. THE AREA NORTH OF THE HEAVY VEGETATION DEMARKATION HAS NOT BEEN ACCURATELY SURVEYED, OTHER THAN THE WETLAND MARKERS DEPICTED HEREON.

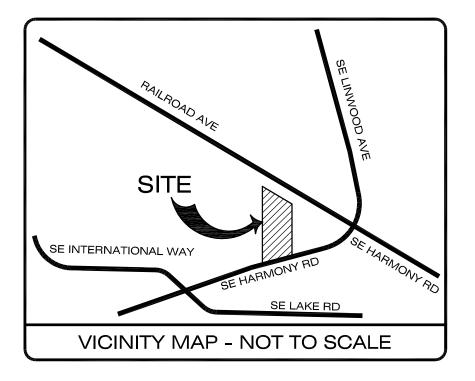
4. AS OF THE DATE OF THIS MAPPING, THERE WERE NO UNDERGROUND UTILITY PAINT MARKINGS TO MAP THE SUBSURFACE UTILIZES.

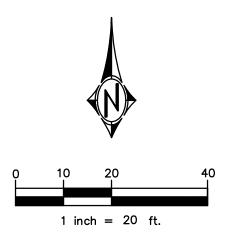
5. MANHOLES SHOWN HEREON ARE TO CENTER OF MANHOLE LID, NOT CENTER OF STRUCTURE.

6. THE WETLAND, WATER BOUNDARIES AND SAMPLE PLOT LOCATIONS, DELINEATED WITH EITHER FLAGS IN SOIL OR FLAGGING TIED TO BRANCHES, HAVE A HORIZONTAL MAPPING ACCURACY OF ± 1 '.

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SUMMIT JOB NAME: SE HARNONY RD TOF PREPARED FOR: PREPARED FOR: ED WILLIAMS MODIFIED: 10/05/16 - CLM - ADDED WETLAND BUFF MODIFIED: 12/08/17 - CLM - ADDED ADN'L TOPO IN MODIFIED: 02/28/18 - CLM - MODIFIED SENSITIVE A	TOPOGRAPHIC SURVEY SUMMT JOB NAME: TOPOGRAPHIC SURVEY SUMMT JOB NAME: EXISTING CONDITIONS PREPARE FOR: TAX LOT 2200 TAX LOT 2200 TAX MAP 1S 2E 31D MOIFE: CLACKAMAS COUNTY, OREGON MOIFE: ORIED: MOIFE: MOIFE: MOIFE: ORIED: MOIFE: MOIFE: MOIFE: MOIFE: MOIFE: MOIFE: MOIFE:
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	12950 SW PACIFIC HIGHWAY, SUITE 255 TIGARD, OR 97223 PHONE & FAX: 503.928.5589 www.summitlandsurveyors.com







<u></u>	CONCRETE WALL
	RAIL ROAD
X X	FENCE
99	MINOR CONTOUR
100	MAJOR CONTOUR
	WETLAND DELINEATION
SSSS	SANITARY SEWER LINE
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ww	WATER LINE
W	WATER METER/SERVICE
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S	SANITARY SEWER MANHOLE
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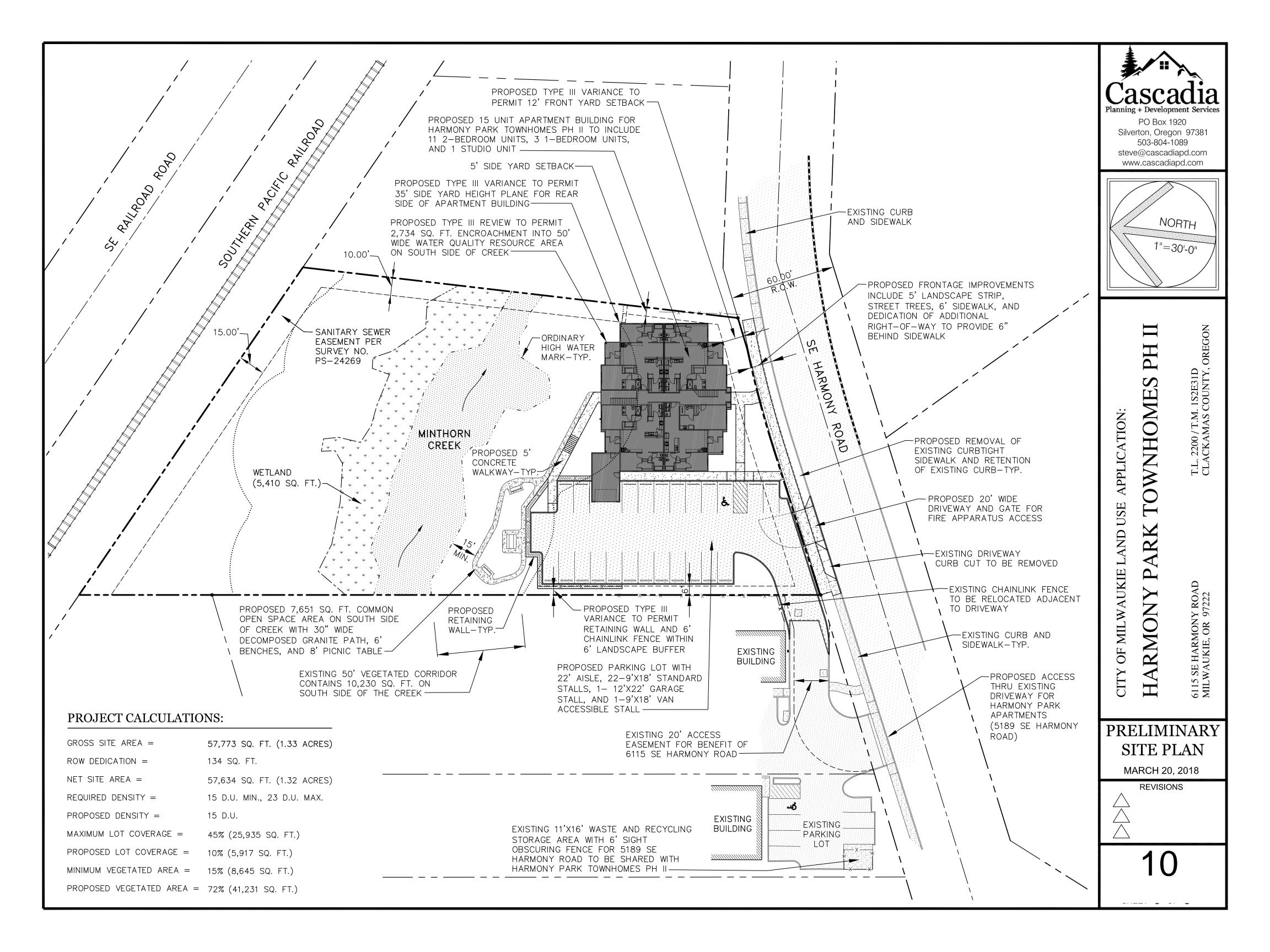
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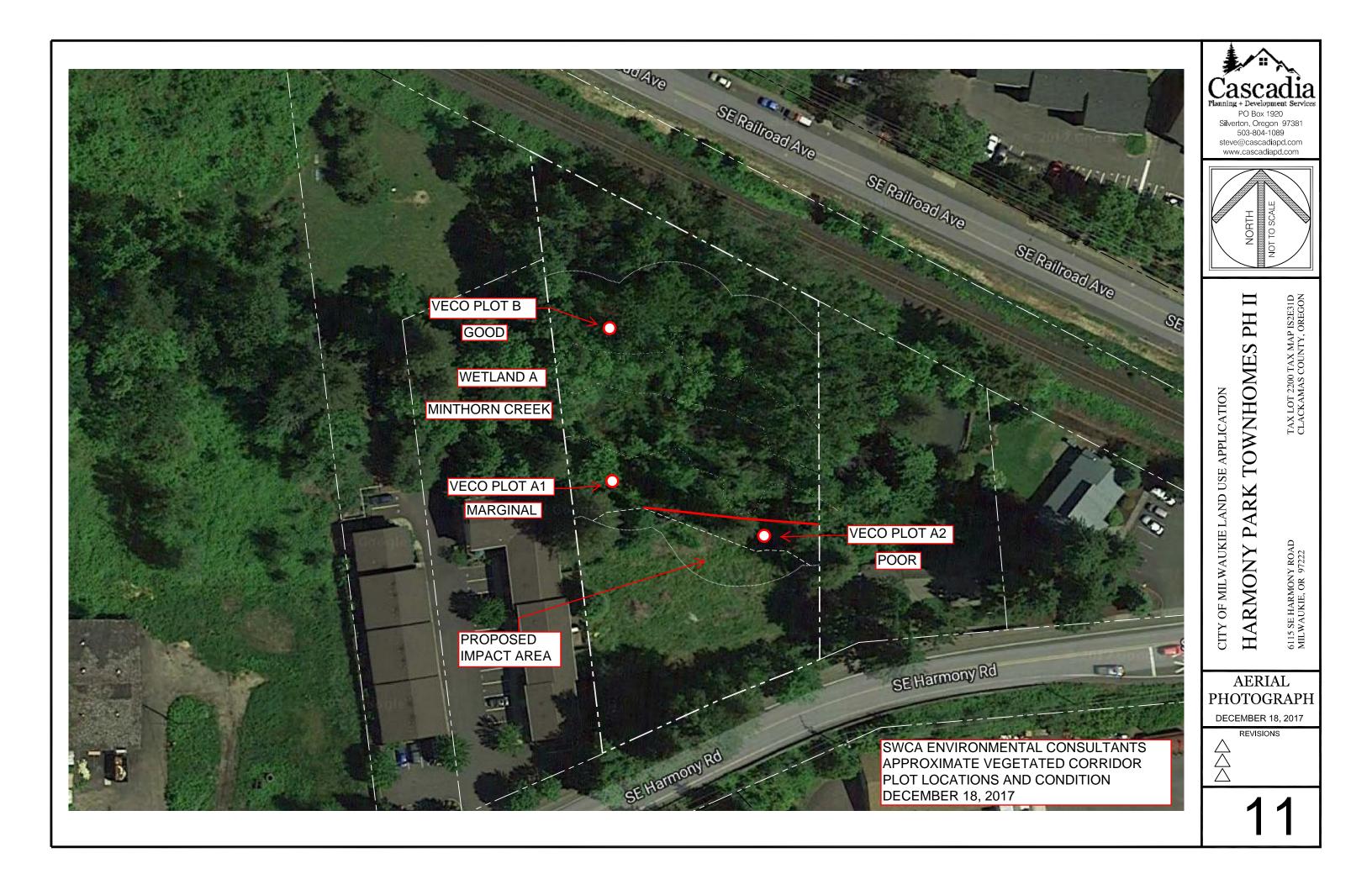
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TOPOGRAPHIC SURVEY SUMMIT JOB NAME: TOPOGRAPHIC SURVEY SUMMIT JOB NAME: SUMMIT JOB NAME: SUMMIT JOB NAME: TAX LOT 2200 MORE: TAX MAP 1S 2E 31D MORE: JOB NAME: CLACKAMAS COUNTY, OREGON MORE: CLACKAMAS COUNTY, OREGON					
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	TOPOGRAPHIC SURVEY		TAX LOT 2200	TAX MAP 1S 2E 31D	CLACKAMAS COUNTY, OREGON
	SHEET	Ç)		





ATTACHMENT A:

WETLAND DETERMINATION DATA FORMS

WETLAND DETERM	NATION DATA	FORM – West	ern Mounta	ins, Valleys and	Coast Region	
Project/Site: Harmony Road Townhomes		City/County:	- / Clackamas	S	Sampling Date:	8/25/2016
Applicant/Owner: Cascadia Planning & Dev.	Srvcs/Old Time Inv	vestments, Inc.		State: OR	Sampling Po	pint: P1
Investigator(s): C. Mirth Walker, Evan Dul	in	Section, T	ownship, Rang	e: 31D, T1S, R2E, TL	2200	
Landform (hillslope, terrace, etc.): Terrace			Local relief	(concave, convex, none):	None SI	ope (%): 1
Subregion (LRR): A, Northwest Forests and	Coast	Lat: 45.432065	 Lon	g: -122.600305	Datum:	NAD 1983
Soil Map Unit Name: Wapato silty cla	ay loam (84)		_	NWI	classification: Nor	ie
Are climatic / hydrologic conditions on the site	e typical for this time	e of year?	Ye	s X No	(If no, expla	in in Remarks)
Are Vegetation,Soil	, or Hydrology	significantly of	disturbed? A	Are "Normal Circumstar	nces" present?	Yes X No
Are Vegetation,Soil	, or Hydrology			If needed, explain any		
SUMMARY OF FINDINGS – Attach	site map show	ving sampling	point locat	ions, transects, i	mportant feat	ures, etc.
Hydrophytic Vegetation Present?	Yes X	No				
Hydric Soil Present?	Yes	No X	Is the Samp	led Area		
Wetland Hydrology Present?	Yes	No X	within a We	tland? Yes	No	<u>× </u>
Precipitation prior to fieldwork: No rainfal Remarks: VEGETATION	I 2 weeks prior, 6.41	" above normal for	r WYTD, 2.06"	below normal for CYTI	D	
	Absolute	Dominant	Indicator	Dominance Test w	orksheet.	
Tree Stratum (Plot size:30' r)	% Cover	Species?	Status	Number of Dominar		
1. Fraxinus latifolia	<u>30%</u>	Yes	FACW	That Are OBL, FAC	•	4 (A)
0	10%	Yes	FAC	That Ale OBL, TAC	w, of FAC.	(A)
2				Total Number of De	minont	
 Salix lasiandra Salix lasiandra 	10%	Yes	FACW	Total Number of Do		
···		T . 10		Species Across All	Strata:	<u>5</u> (B)
Sapling/Shrub Stratum (Plot size:10'		= Total Cover		Denvert of Denvisor		
1				Percent of Dominan		000(() (=)
	80%	Yes	FAC	That Are OBL, FAC	,	<u>80%</u> (A/B)
2. Prunus laurocerasus 3.	10%	No	NOL	Prevalence Index v Total % Cover		
4.				· · ·	<u>0 x 1 =</u>	0
5				· · · · · · · · · · · · · · · · · · ·	40 x 2 =	80
	90% =	= Total Cover		· · ·	93 x 3 =	279
<u>Herb Stratum</u> (Plot size: <u>5' r</u>)				· · · ·	95 x 4 =	380
1. <u>Hedera helix</u>	95%	Yes	FACU	· · · ·	<u>10</u> x 5 =	50
2. Ranunculus repens	3%	No	FAC		238 (A)	789 (B)
3				Prevalence Inde		<u>3.32</u>
4.				Hydrophytic Veget	ation Indicators:	
5				1 - Rapid Test f	or Hydrophytic Ve	getation
6				X 2 - Dominance	Test is >50%	
7				3 - Prevalence I	ndex is ≤3.0 ¹	
8.				4 - Morphologic	al Adaptations ¹ (P	rovide supporting
9.	<u> </u>			data in Rem	arks or on a separ	ate sheet)
10				5 - Wetland Nor	n-Vascular Plants ¹	
11.				Problematic Hy	drophytic Vegetati	on ¹ (Explain)
Woody Vine Stratum (Plot size: 10'		= Total Cover		¹ Indicators of hydric be present.	soil and wetland l	hydrology must
1						
2				Hydrophytic		
		= Total Cover		Vegetation	Yes X No	
% Bare Ground in Herb Stratum 2%				Present?		
Remarks:				Entere	ed by: <u>NED</u> QC	by: cmw

Trees are narrow diameter at breast height: Oregon ash is 10", alder 7", willow 5".

SOIL

(inches) 0-2 2-7+				Redox F	oataroo				
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
27	10YR 3/2	100					SiL		
2-1+	10YR 3/2	96	7.5YR 3/3	4	С	М	SiL	faint redox	
								_	
								_	
Type: C=Concen	tration, D=Depleti	on, RM=Red	luced Matrix CS=C	overed or Coated	d Sand Grains.	² Location:	PL=Pore Lining, M=	Matrix.	
lydric Soil Indica	ators: (Applicable	e to all LRR	s, unless otherwis	se noted.)		Indicators f	or Problematic Hyd	Iric Soils ³ :	
Histosol (A1)			Sandy Redox	(S5)		2 cm Mu	ck (A10)		
Histic Epipedo	on (A2)		Stripped Matrix	x (S6)		Red Par	ent Material (TF2)		
Black Histic (A	A3)		Loamy Mucky	Mineral (F1) (ex	cept MLRA 1)	Very Sha	allow Dark Surface (TF12)	
Hydrogen Sulf	fide (A4)	•	Loamy Gleyed	Matrix (F2)		Other (E	xplain in Remarks)		
Depleted Belo	w Dark Surface (A11)	Depleted Matri	ix (F3)					
Thick Dark Su	urface (A12)		Redox Dark S	urface (F6)		³ Indicators o	f hydrophytic vegeta	tion and	
Sandy Mucky	Mineral (S1)		Depleted Dark	Surface (F7)		wetland hydrology must be present,			
Sandy Gleyed	l Matrix (S4)		Redox Depres	sions (F8)		unless dist	urbed or problemati	с.	
Type: <u>No</u> Depth (inches): Remarks: S			loam or loamy; co	= coarse; f = fine		ydric Soil Pre + = heavy (mo	sent? Yes pre clay); - = light (le	No X ss clay)	
Type: <u>No</u> Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Wetland Hydrolog	N/A = sand; Si = silt; (7" from large burie gy Indicators:	d rock.		= coarse; f = fine		-			
Type: <u>No</u> Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Wetland Hydrolog	N/A = sand; Si = silt; (7" from large burie gy Indicators:	d rock.		= coarse; f = fine		+ = heavy (mo		ss clay)	
Type: <u>No</u> Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Vetland Hydrolog	N/A = sand; Si = silt; (" from large burie gy Indicators:	d rock.	eck all that apply)	= coarse; f = fine	e; vf = very fine;	+ = heavy (mo	ore clay); - = light (le	ss clay)	
Type: <u>No</u> Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Wetland Hydrolog Primary Indicators	N/A = sand; Si = silt; (" from large burie gy Indicators: (minimum of one r (A1)	d rock.	eck all that apply)	Leaves (B9) (ex	e; vf = very fine;	+ = heavy (mo - <u>Secondary In</u> Water-S	ore clay); - = light (le	ss clay)	
Type: <u>No</u> Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Wetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3	N/A = sand; Si = silt; (" from large burie gy Indicators: (minimum of one r (A1) able (A2) 3)	d rock.	eck all that apply)	l Leaves (B9) (ex d 4B)	e; vf = very fine;	+ = heavy (mo	ore clay); - = light (le ndicators (2 or more tained Leaves (B9) (ss clay)	
Type: <u>No</u> Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Wetland Hydrolog Primary Indicators Surface Water High Water Ta	N/A = sand; Si = silt; (" from large burie gy Indicators: (minimum of one r (A1) able (A2) 3)	d rock.	eck all that apply) Water-Stained 1, 2, 4A, an	l Leaves (B9) (ex d 4B) 1)	e; vf = very fine;	+ = heavy (mo <u>Secondary In</u> <u>Water-S</u> 4A, an <u>D</u> rainage	ndicators (2 or more tained Leaves (B9) (ss clay) <u>required)</u> (MLRA 1, 2,	
Type: No Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Vetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep	N/A = sand; Si = silt; (" from large burie gy Indicators: (minimum of one r (A1) able (A2) 3) (B1) posits (B2)	d rock.	Water-Stained Water-Stained 1, 2, 4A, an Salt Crust (B1 Aquatic Inverte Hydrogen Sulf	l Leaves (B9) (ex d 4B) 1) ebrates (B13) ide Odor (C1)	e; vf = very fine;	+ = heavy (mo	ore clay); - = light (le ndicators (2 or more tained Leaves (B9) (nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial I	ss clay) <u>required)</u> (MLRA 1, 2, 2)	
Type: <u>No</u> Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Vetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits	N/A = sand; Si = silt; (7" from large burie gy Indicators: (minimum of one r (A1) able (A2) 3) (B1) posits (B2) (B3)	d rock.	Water-Stained UWater-Stained 1, 2, 4A, an Salt Crust (B1 Aquatic Inverte Hydrogen Sulf	l Leaves (B9) (ex d 4B) 1) ebrates (B13) ide Odor (C1) pspheres along L	e; vf = very fine; ccept MLRA	+ = heavy (mo	ore clay); - = light (le ndicators (2 or more tained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2)	ss clay) <u>required)</u> (MLRA 1, 2, 2)	
Type: No Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Vetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C	N/A = sand; Si = silt; (7" from large burie gy Indicators: (minimum of one r (A1) able (A2) 3) (B1) boosits (B2) (B3) Crust (B4)	d rock.	Water-Stained UWater-Stained 1, 2, 4A, an Salt Crust (B1 Aquatic Inverte Hydrogen Sulf Oxidized Rhize Presence of R	l Leaves (B9) (ex d 4B) 1) ebrates (B13) ide Odor (C1) ospheres along L educed Iron (C4)	e; vf = very fine; ccept MLRA _iving Roots (C3	+ = heavy (mo	ore clay); - = light (le ndicators (2 or more tained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I ohic Position (D2) Aquitard (D3)	<u>required)</u> (MLRA 1, 2,	
Type: No Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Wetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits	N/A = sand; Si = silt; (7" from large burie gy Indicators: (minimum of one r (A1) able (A2) 3) (B1) posits (B2) (B3) Crust (B4) (B5)	d rock.	Water-Stained 1, 2, 4A, an Salt Crust (B1 Aquatic Inverte Hydrogen Sulf Oxidized Rhize Presence of R Recent Iron Re	l Leaves (B9) (ex d 4B) 1) ebrates (B13) ide Odor (C1) ospheres along L educed Iron (C4) eduction in Tilled	e; vf = very fine; ccept MLRA	+ = heavy (mo	ore clay); - = light (le ndicators (2 or more tained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I ohic Position (D2) Aquitard (D3) utral Test (D5)	ss clay) <u>required)</u> (MLRA 1, 2, 2) magery (C9)	
Type: <u>No</u> Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Wetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits	N/A = sand; Si = silt; (7" from large burie gy Indicators: (minimum of one r (A1) able (A2) 3) (B1) boosits (B2) (B3) Crust (B4) (B5) Cracks (B6)	d rock.	Water-Stained 1, 2, 4A, an Salt Crust (B1 Aquatic Inverte Hydrogen Sulf Oxidized Rhize Presence of R Recent Iron Re	l Leaves (B9) (ex d 4B) 1) ebrates (B13) ide Odor (C1) ospheres along L educed Iron (C4)	e; vf = very fine; ccept MLRA	+ = heavy (mo	ore clay); - = light (le ndicators (2 or more tained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I ohic Position (D2) Aquitard (D3)	ss clay) <u>required)</u> (MLRA 1, 2, 2) magery (C9)	
Type: No Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Vetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Surface Soil C Surface Soil C Inundation Vis	N/A = sand; Si = silt; (7" from large burie gy Indicators: (minimum of one r (A1) able (A2) 3) (B1) bosits (B2) (B3) Crust (B4) (B5) Cracks (B6) sible on Aerial Ima	d rock.	Water-Stained 1, 2, 4A, an Salt Crust (B1 Aquatic Inverte Hydrogen Sulf Oxidized Rhize Presence of R Recent Iron Re	l Leaves (B9) (ex d 4B) 1) ebrates (B13) ide Odor (C1) ospheres along L educed Iron (C4) eduction in Tilled essed Plants (D1	e; vf = very fine; ccept MLRA	+ = heavy (mo - <u>Secondary II</u> - Water-S 4A, ar Drainage Dry-Sea Saturatio B) Geomor Shallow FAC-Nei Raised A	ore clay); - = light (le ndicators (2 or more tained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I ohic Position (D2) Aquitard (D3) utral Test (D5)	ss clay) <u>required)</u> (MLRA 1, 2, 2) magery (C9)	
Type: No Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Vetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Surface Soil C Surface Soil C Inundation Vis	N/A = sand; Si = silt; (7" from large burie gy Indicators: (minimum of one r (A1) able (A2) 3) (B1) boosits (B2) (B3) Crust (B4) (B5) Cracks (B6)	d rock.	Water-Stained 1, 2, 4A, an Salt Crust (B1 Aquatic Inverte Hydrogen Sulf Oxidized Rhize Presence of R Recent Iron Re Stunted or Stre	l Leaves (B9) (ex d 4B) 1) ebrates (B13) ide Odor (C1) ospheres along L educed Iron (C4) eduction in Tilled essed Plants (D1	e; vf = very fine; ccept MLRA	+ = heavy (mo - <u>Secondary II</u> - Water-S 4A, ar Drainage Dry-Sea Saturatio B) Geomor Shallow FAC-Nei Raised A	ore clay); - = light (le ndicators (2 or more tained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LF	ss clay) <u>required)</u> (MLRA 1, 2, 2) magery (C9)	
Type: No Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Vetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Surface Soil C Inundation Vis Sparsely Vege	N/A = sand; Si = silt; (" from large burie gy Indicators: (minimum of one r (A1) able (A2) 3) (B1) bosits (B2) (B3) Crust (B4) (B5) Cracks (B6) sible on Aerial Ima etated Concave S	d rock.	Water-Stained 1, 2, 4A, an Salt Crust (B1 Aquatic Inverte Hydrogen Sulf Oxidized Rhize Presence of R Recent Iron Re Stunted or Stre	l Leaves (B9) (ex d 4B) 1) ebrates (B13) ide Odor (C1) ospheres along L educed Iron (C4) eduction in Tilled essed Plants (D1	e; vf = very fine; ccept MLRA	+ = heavy (mo - <u>Secondary II</u> - Water-S 4A, ar Drainage Dry-Sea Saturatio B) Geomor Shallow FAC-Nei Raised A	ore clay); - = light (le ndicators (2 or more tained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LF	ss clay) <u>required)</u> (MLRA 1, 2, 2) magery (C9)	
Type: No Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Vetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Surface Soil C Surface Soil C Surface Soil C Sparsely Vege	N/A = sand; Si = silt; (" from large burie gy Indicators: (minimum of one r (A1) able (A2) 3) (B1) bosits (B2) (B3) Crust (B4) (B5) Cracks (B6) sible on Aerial Ima etated Concave S ns:	d rock.	Water-Stained 1, 2, 4A, an Salt Crust (B1 Aquatic Inverte Hydrogen Sulf Oxidized Rhize Presence of R Recent Iron Re Stunted or Stre	l Leaves (B9) (ex d 4B) 1) ebrates (B13) ide Odor (C1) ospheres along L educed Iron (C4) eduction in Tilled essed Plants (D1	e; vf = very fine; ccept MLRA Living Roots (C3) d Soils (C6) 1) (LRR A)	+ = heavy (mo - <u>Secondary II</u> - Water-S 4A, ar Drainage Dry-Sea Saturatio B) Geomor Shallow FAC-Nei Raised A	ore clay); - = light (le ndicators (2 or more tained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LF	ss clay) <u>required)</u> (MLRA 1, 2, 2) magery (C9)	
Type: No Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Vetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Surface Soil C Inundation Vis Sparsely Vege	N/A = sand; Si = silt; (" from large burie gy Indicators: (minimum of one r (A1) able (A2) 3) (B1) bosits (B2) (B3) Crust (B4) (B5) Crust (B4) (B5) Cracks (B6) sible on Aerial Ima etated Concave S ns: esent? Yes	d rock.	Water-Stained 1, 2, 4A, an Salt Crust (B1 Aquatic Inverte Hydrogen Sulf Oxidized Rhize Presence of R Recent Iron Re Stunted or Stre Other (Explain	Leaves (B9) (ex d 4B) 1) ebrates (B13) ide Odor (C1) ospheres along L educed Iron (C4) eduction in Tilled essed Plants (D1 in Remarks)	e; vf = very fine; ccept MLRA iving Roots (C3) d Soils (C6) 1) (LRR A)	+ = heavy (mo	ore clay); - = light (le ndicators (2 or more tained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LF	ss clay) required) (MLRA 1, 2, 2) magery (C9) RR A) 7)	
Depth (inches): Remarks: S Shovel refusal at 7 HYDROLOGY Wetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Surface Soil C Inundation Vis	N/A = sand; Si = silt; (" from large burie gy Indicators: (minimum of one r (A1) able (A2) 3) (B1) bosits (B2) (B3) Crust (B4) (B5) Cracks (B6) sible on Aerial Ima etated Concave S ns: esent? Yes ent? Yes	d rock.	Water-Stained 1, 2, 4A, an Salt Crust (B1 Aquatic Inverte Hydrogen Sulf Oxidized Rhize Presence of R Recent Iron Re Stunted or Stre Other (Explain No X	Leaves (B9) (ex d 4B) 1) ebrates (B13) ide Odor (C1) ospheres along L educed Iron (C4) eduction in Tilled essed Plants (D1 in Remarks) Depth (inches):	e; vf = very fine; ccept MLRA Living Roots (C3) d Soils (C6) 1) (LRR A) N/A 	+ = heavy (mo	ore clay); - = light (le ndicators (2 or more tained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I ohic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LF eave Hummocks (D7	ss clay) required) (MLRA 1, 2, 2) magery (C9) RR A) 7)	

WETLAND DETERMINATION DATA FORM - Western Mountains, Valleys and Coast Region

Landform (nilsiops terrace, etc.): Stream floodplain Local reliaf (concave, convex, none): Concave Slope (%): -<2 Subregion (LRR): A. Northwest Forests and Coast Latt 45,432050 Long: -122.600420 Datum: NAD 1983 Solid Ap Unit Name: Wappation (A) NW classification: None Anor None Anor Nucl Cassification: None Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks) SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophydic Vegetation Present? Yes No X Hydrophydic Vegetation present? Yes No X Is the Sampled Area water within a Wetland? Water within a Wetland? No X Precipitation prior to fieldwork: No rainfall 2 weeks prior, 6.11' above normal for WYTD, 2.05' below normal area No X Sample plot was taken below the OHWM of Minhorn Creek. Area is considered a water and not a wetland. Wetland X Yes No X Tese Stratum (Plot size: _30' f.) %s Cover Species? Status No. Concave Status 1. 0. Sc Cover Species?	Project/Site:	Harmony Road Townhomes	6	City/County:	- / Clackamas	3	Sampling Dat	e: 8/25/20	16
Landform (LRR): A, Northwest Foreast and Cocast Lat: 46.420260 Long: 122.000420 Datum: NAD 1883 Subregion (LRR): A, Northwest Foreast and Cocast Lat: 46.420260 Long: 122.000420 Datum: NAD 1883 Subregion (LRR): A, Northwest Foreast and Cocast Lat: 46.420260 Long: 122.000420 NUT classification: NAD 1883 Are Ungestation Sail . or Hydrology significantly disturbed? Yes X No	Applicant/Owner	: Cascadia Planning & De	v. Srvcs/Old Time In	vestments, Inc.		State: OR	Sampling) Point:	P2
Subregion (LRR): A. Northwest Foreasts and Coast Lat: 46.432060 Long: -122.600420 Datum: NAD 1983 Soli Map Uni Name: Wapato siting day loam (A) NVI classification: Mone Are Vogetation	Investigator(s):	C. Mirth Walker, Evan D	ulin	Section, To	ownship, Rang	e: 31D, T1S, R2E, TL	2200		
Soli Map Unit Name: Wagesto sity displayed mit (A) NWI description: Name Are climatic / hydrology conditions on the site bycleal for this time of year Yes X No (If no. explain in Remarks) Are solution	Landform (hillslop	e, terrace, etc.): Stream	floodplain		Local relief	(concave, convex, none):	Concave	Slope (%)): <2
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (ff no, explain in Remarks). Are VagetationSoil, or Hydrologyinfuncting point locations, transacets, important features, etc. Hydrologic Cooperation Present? YesNo Is the Sampled Areawaterwithin a Wetland? YesNo Hydrologic Cooperation Present? YesNo Is the Sampled Areawaterwithin a Wetland? YesNo Hydrologic Cooperation Present? YesNo Is the Sampled Areawaterwithin a Wetland? YesNo Hydrologic Cooperation Present? YesNo Is the Sampled AreawaterNo Exercipiation prior to fieldwork. No rainfall 2 weeks prior. 641* above normal for WYTD. 260° balow normal for CYTD. Remarks: Sample plot was taken below the OHWM of Minthom Creek. Area is considered a water and not a wetland. VECETATION Tele Stratum (Plot size:30'r) <u>% Cover</u> Species? Status 1	Subregion (LRR)	A, Northwest Forests and	d Coast	Lat: 45.432050	Lon	g: <u>-122.600420</u>	Datur	n: NAD 19	183
Are Vegetation Soil or Hydrology signilicantly disturbed? Are Normal Concentrations present? Yes X No Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks.) Are Vegetation Present? Yes No X Is the Sampled Area writhin a Wetland? Yes No X Hydrologity Present? Yes No X Is the Sampled Area writhin a Wetland? Yes No X Precipitation prior to fieldwork. No rainfall 2 weeks prior, 6.41" above normal for CYTD. 2.66" balow normal for CYTD. Remarks: Sample plot was taken below the OHWM of Mintham Creek. Area is considered a water and not a wetland. VECETATION VEGETATION About the Ominant Indicator Dominanet Test worksheet: 1.	Soil Map Unit Na	ame: Wapato silty o	lay loam (84)			NWI	classification:	None	
Are Vegetation Soil	Are climatic / hyd	drologic conditions on the si	ite typical for this tim	e of year?	Ye	s X No	(If no, ex	plain in Re	marks)
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophylic Vegetation Present? Yes No X Is the Sampled Area within a Wetland? Water within a Wetland? No X Precipitation prior to fieldwork: No rainfall 2 weeks prior, 64.1° above normal for WYTD, 2.06° below normal for CYTD. No X Sample plot was taken below the OHWM of Minhorn Creek. Area is considered a water and not a wetland. Dominant Species No X Tree Stratum (Plot size: 30° r.) Absolute Dominant Species Number of Dominant Species No Attach cover 1.	Are Vegetation		, or Hydrology	significantly of	disturbed? A	re "Normal Circumstar	nces" present?	Yes X	No
Hydrophytic Vegetatation Present? Yes No X Is the Sampled Area within a Wetland? Water within a Wetland? No X Hydrophytic Vegetation Present? Yes No No X No X Precipitation prior to fieldwork: No rainfall 2 weeks prior, 6.41° above normal for WYTD, 2.06° below normal for CYTD. No X Precipitation prior to fieldwork: No rainfall 2 weeks prior, 6.41° above normal for WYTD, 2.06° below normal for CYTD. No X Precipitation prior to fieldwork: No and the Mithtom Creek. Area is considered a water and not a wetland. Dominant Species No X YEEE Absolute Dominant Species 2 Ominant Species Ominant Species 1.	Are Vegetation								
Hydric Soil Present? Yes No X Wetland Hydrology Present? Yes X No X Wetland Hydrology Present? Yes X Remarks: Sample pick was taken below the OHWM of Minthom Creek. Area is considered a water and not a wetland. VEEETATION Tree Stratum (Plot size: _30' _) Absolute Dominant Sample pick was taken below the OHWM of Minthom Creek. Area is considered a water and not a wetland. VEEETATION Tree Stratum (Plot size: _30' _) Absolute Dominant Indicator Species Sample pick was taken below the OHWM of Minthom Creek. Area is considered a water and not a wetland. VEEETATION Tree Stratum (Plot size: _30' _) Absolute Dominant Indicator Species Sample pick was taken below the OHWM of Minthom Creek. Area is considered a water and not a wetland. Veter Table Area OBL, FACW, or FAC:				- · · ·	point locat	ions, transects, i	mportant fe	atures,	etc.
No. within a Wetland? Yes No X No within a Wetland? Yes No X Precipitation prior to fieldwork: No rainfall 2 weeks prior, 6.41° above normal for WYTD, 2.06° below normal for CYTD. Remarks: Sample plot was taken below the OHWM of Minthom Creek. Area is considered a water and not a wetland. VEGETATION Table Stratum (Plot size: 30 r.) Absolute Dominant Indicator Number of Dominant Species 1. Species Across All Stratu: (Plot size: 10 r.) O% = Total Cover Total Number of Dominant Species 2.		-	Yes		la tha Camp				
Transmith Tydoragy Flassmith Test No No Procipitation price foldwork: No rainfal 2 weeks prior, 6.41° above normal for WYTD, 2.06° below normal for CYTD. Remarks: Sample pick was taken below the OHWM of Minthom Creek. Area is considered a water and not a wetland. Dominance Test worksheet: YEGETATION Absolute Dominant Indicator 1. Absolute Dominant Status 2.	-			No X					
Remarks: Sample plot was taken below the OHWM of Minthom Creek. Area is considered a water and not a wetland. VEGETATION Dominant Species: The Stratum (Plot size:	-					165		<u> </u>	
Absolute Dominant Indicator Dominance Test worksheet: Tree Stratum (Plot size: _30' r_) % Cover Status Number of Dominant Species 1.	Remarks:).		
Tree Stratum (Plot size: _30' r_) ½ Cover Species? Status Number of Dominant Species 1.	VEGETATIO	N							
1.			Absolute	Dominant	Indicator	Dominance Test w	orksheet:		
2.		(Plot size: <u>30' r</u>)	<u>% Cover</u>	Species?	Status	Number of Dominar	nt Species		
3.	1.					That Are OBL, FAC	W, or FAC:	0	(A)
4.									
0% = Total Cover 95% Yes 1. Prunus laurocerasus 2. Rubus armeniacus 3. 3% No FAC Total % Cover of: Multiply by: OBL species 0 Yes NOL Prevalence Index worksheet: Total % Cover of: Total % Cover of: Multiply by: OBL species 0 Yes NOL FAC Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species 0 x 2 = 0 FAC species 3 x 3 = 9 FACU species 98 (A) 4484 (B) Prevalence Index = B/A = 4.94 44 Hydrophytic Vegetation Indicators: 1 Rapid Test for Hydrophytic Vegetation 2. O% = Total Cover - Aspad Test for Hydrophytic Vegetation 4.	3.					Total Number of Do	minant		
Sapling/Shrub Stratum (Plot size: _10' r _) Percent of Dominant Species 1. Prunus laurocerasus 95% Yes NOL That Are OBL, FACW, or FAC: 0% (A/B) 2. Rubus armeniacus 3% No FAC Total % Cover of: Multiply by: 4.	4.					Species Across All	Strata:	1	(B)
1. Prunus laurocerasus 95% Yes NOL That Are OBL, FACW, or FAC: 0% (A/B) 2. Rubus armeniacus 3% No FAC Trata Are OBL, FACW, or FAC: 0% (A/B) 3.			0%	= Total Cover					
2. Rubus armeniacus 3% No FAC Prevalence Index worksheet: Total % Cover of: Multiply by: 4.	Sapling/Shrub St	tratum (Plot size: 1	<u>0' r</u>)			Percent of Dominan	it Species		
3. 0.0 10 100	1. Prunus lauro	ocerasus	95%	Yes	NOL	That Are OBL, FAC	W, or FAC:	<u>0%</u>	(A/B)
4.	2. Rubus arme	eniacus	3%	No	FAC	Prevalence Index v	worksheet:		
5.	3.					Total % Cover	of: Multiply I	<u>oy:</u>	
Herb Stratum(Plot size: $5'r$)98%= Total CoverFAC species $3 \times 3 =$ 91 <td>4.</td> <td></td> <td></td> <td></td> <td></td> <td>OBL species</td> <td>0 x 1 =</td> <td>0</td> <td></td>	4.					OBL species	0 x 1 =	0	
Herb Stratum (Plot size: _5'r) 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 4. 5. 6. 7. 8. 9. 10. 11. 12. 0% = Total Cover 14. Hydrophytic 12. 0% = Total Cover 14. Hydrophytic 12. 0% = Total Cover 12. 13. 14. 15. 16. </td <td>5.</td> <td></td> <td></td> <td></td> <td></td> <td>FACW species</td> <td>0 x 2 =</td> <td>0</td> <td></td>	5.					FACW species	0 x 2 =	0	
1. UPL species 95 x 5 = 475 2. Olumn Totals: 98 (A) 484 (B) 3. Hydrophytic Vegetation Indicators: 1 Rapid Test for Hydrophytic Vegetation 5. Image: Species in the species is			98%	= Total Cover		FAC species	3 x 3 =	9	
2. Column Totals: 98 (A) 484 (B) 3. Prevalence Index = B/A = 4.94 4. Hydrophytic Vegetation Indicators: 5. 1 - Rapid Test for Hydrophytic Vegetation 6. 2 - Dominance Test is >50% 7. 3 - Prevalence Index is ≤3.0 ¹ 8. 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 10. 5 - Wetland Non-Vascular Plants ¹ 11. O% = Total Cover Woody Vine Stratum 10% 1. O% = Total Cover Wgetation Yes No Yegetation Yegetation	<u>Herb Stratum</u>	(Plot size: <u>5' r</u>)				FACU species	0 x 4 =	0	
3. Prevalence Index = B/A = 4.94 4. Hydrophytic Vegetation Indicators: 5. 1 - Rapid Test for Hydrophytic Vegetation 6. 2 - Dominance Test is >50% 7. 3 - Prevalence Index is <3.0 ¹ 8. 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 10. 5 - Wetland Non-Vascular Plants ¹ 11. Problematic Hydrophytic Vegetation ¹ (Explain) 11. 0% = Total Cover Woody Vine Stratum 100% 12. 0% = Total Cover Wgrophytic Yes No X Present? No X	1.					UPL species	95 x 5 =	475	5
4.	2.					Column Totals:	98 (A)	484	4 (B)
5.	3.					Prevalence Inde	x = B/A =	4.94	
6.	4.					Hydrophytic Veget	ation Indicato	rs:	
7. 3 - Prevalence Index is ≤3.0 ¹ 8. 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 9. 5 - Wetland Non-Vascular Plants ¹ 10.	5.					1 - Rapid Test f	or Hydrophytic	Vegetation	1
8.	6.					2 - Dominance	Test is >50%		
9	7.					3 - Prevalence I	ndex is ≤3.0 ¹		
10.	8.					4 - Morphologic	al Adaptations ¹	(Provide s	supporting
11.	9.					data in Rem	arks or on a se	parate she	et)
Woody Vine Stratum (Plot size: 10' r) 1.	10.					5 - Wetland Nor	n-Vascular Plar	nts ¹	
Woody Vine Stratum (Plot size: 10' r) 1.	11.					Problematic Hy	drophytic Vege	tation ¹ (Ex	plain)
2. Hydrophytic 0% = Total Cover Vegetation Yes No X % Bare Ground in Herb Stratum 100% Present? Present?	Woody Vine Stra	atum (Plot size: <u>1</u>		= Total Cover			soil and wetla	nd hydrolog	gy must
0% = Total Cover Vegetation Yes No X % Bare Ground in Herb Stratum 100% Present?						م نام مرمو المربية الم			
% Bare Ground in Herb Stratum 100% Present?	Z			- Total Cover			Ves 1		
<u> </u>		in Llash Otratura 101		= Total Cover		-	169 [<u> </u>	-
		in mero Stratum 100	U70					<u></u>	

Entered by

Prunus laurocerasus is rooted upslope of floodplain area but shades the floodplain area. Rubus armeniacus is rooted at the OHWM boundary.

SOIL							Sampling Po	oint: P2
Profile Descrip	otion: (Describe	to the depth r	needed to document	the indicato	r or confirm th	e absence of in	dicators.)	
Depth	Mat	rix		Redox I	eatures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-9	10YR 3/1	100					SiL	pebbly
9-15+	10YR 3/1	67	7.5YR 4/4	3	С	М	SiL	pebbly, ~mucky
			10YR 3/2	30	С	M	SiL	pebbly, faint redox
@25	2.5Y 3/1	90	10YR 3/2	10	С	M	SiL	faint redox
			luced Matrix CS=Cov		ed Sand Grains	. ² Location: P	L=Pore Lining, M=I	Matrix.
Hydric Soil Indi	icators: (Applicat	ole to all LRR	s, unless otherwise	noted.)		Indicators fo	r Problematic Hyd	lric Soils ³ :
Histosol (A1)		Sandy Redox (S	5)		2 cm Muc	k (A10)	
Histic Epipe	don (A2)		Stripped Matrix (S6)		Red Pare	nt Material (TF2)	
Black Histic	(A3)		Loamy Mucky M	ineral (F1) (ex	(cept MLRA 1		low Dark Surface (TF12)
Hydrogen S	ulfide (A4)		Loamy Gleyed M	latrix (F2)		Other (Ex	plain in Remarks)	
Depleted Be	elow Dark Surface	(A11)	Depleted Matrix	(F3)		2		
Thick Dark	Surface (A12)		Redox Dark Surf	ace (F6)		³ Indicators of	hydrophytic vegeta	tion and
	ky Mineral (S1)		Depleted Dark S	urface (F7)		wetland hyd	Irology must be pre	sent,
Sandy Gley	ed Matrix (S4)		Redox Depression	ons (F8)		unless distu	irbed or problemation	с.
Restrictive Lay	er (if present):							
Type:	None							
Depth (inches)): N/A				1	Hydric Soil Pres	ent? Yes	No X
HYDROLOG			h organics in soil pro			elow 15 inches.		
-		ne required: ch	eck all that apply)			Secondary In	dicators (2 or more	required)
Surface Wa			Water-Stained L	eaves (B0) (e	vcont MI PA		ained Leaves (B9) (
								WILKA 1, 2,
High Water Saturation (. ,		1, 2, 4A, and	40)		4A, and	-	
Water Mark	,		Salt Crust (B11) Aquatic Invertebrates (B13)			Drainage Patterns (B10) Dry-Season Water Table (C2)		
	eposits (B2)		Hydrogen Sulfide Odor (C1)			Saturation Visible on Aerial Imagery (C9)		
X Drift Deposi			Oxidized Rhizospheres along Living Roots (C					
Algal Mat or			Presence of Reduced Iron (C4)			Shallow Aquitard (D3)		
Iron Deposit			Recent Iron Reduction in Tilled Soils (C6)			FAC-Neutral Test (D5)		
	l Cracks (B6)		Stunted or Stressed Plants (D1) (LRR A)			Raised Ant Mounds (D6) (LRR A)		
	∕isible on Aerial In	nagery (B7)	Other (Explain in		.) (,		ave Hummocks (D7	,
	egetated Concave	0,,,,,		(internet)				/
Field Observati	•	04.1400 (20)						
Surface Water				Pepth (inches)				10
Water Table Pro			· · · · · · · · · · · · · · · · · · ·	Pepth (inches)		wetland	Hydrology Presen	
Saturation Pres (includes capilla		s <u>X</u>	No D	epth (inches)	: 25		Yes X	No
Describe Recor	ded Data (stream	gauge, monito	oring well, aerial photo	os, previous ir	nspections), if a	vailable:		
Remarks:							Entered by: NED	QC by: cmw
	res along OHWM I	boundary.						GO Dy. on W
	-	-						

	WETLAND DETERMIN	NATION DATA	FORM – West	ern Mountai	ins, Valleys and (Coast Region	
Project/Site: Ha	armony Road Townhomes		City/County:	- / Clackamas	i	Sampling Date: 8/25/20	16
Applicant/Owner:	Cascadia Planning & Dev. S	Srvcs/Old Time Inv	vestments, Inc.		State: OR	Sampling Point:	P3
Investigator(s):	C. Mirth Walker, Evan Dulir	1	Section, To	ownship, Range	e: 31D, T1S, R2E, TL	2200	
Landform (hillslope,	, terrace, etc.): Toeslope			Local relief (concave, convex, none):	Convex Slope (%)): 3
Subregion (LRR):	A, Northwest Forests and C	coast	Lat: 45.432019	- Long	- g: -122.600394	Datum: NAD 19	
Soil Map Unit Nam	ne: Wapato silty clay	/ loam (84)		-	NWI d	classification: None	
Are climatic / hydro	ologic conditions on the site	typical for this time	e of year?	Yes	s X No	(If no, explain in Re	emarks)
Are Vegetation	,Soil	, or Hydrology	significantly d	listurbed? Ar	re "Normal Circumstar	nces" present? Yes X	No
Are Vegetation	,Soil	, or Hydrology	naturally prob	lematic? (If	f needed, explain any a	answers in Remarks.)	
SUMMARY OF	F FINDINGS – Attach	site map show	ving sampling	point locati	ions, transects, i	mportant features,	etc.
Hydrophytic Vege	etation Present?	Yes	No X				
Hydric Soil Preser	nt?	Yes	No X	Is the Sample	ed Area		
Wetland Hydrolog	gy Present?	Yes	No X	within a Wet	land? Yes	<u>No X</u>	
	ed about 8' SE of P2.	2 weeks prior, 6.4	1" above normal for	WYTD, 2.06" b	below normal for CYTE).	
VEGETATION							
The Olivertune		Absolute	Dominant	Indicator	Dominance Test w		
Tree Stratum	(Plot size: <u>30' r</u>)	<u>% Cover</u>	Species?	<u>Status</u>	Number of Dominan	it Species	
1					That Are OBL, FAC	W, or FAC: 0	(A)
2.							
3.					Total Number of Do	minant	
4.					Species Across All S	Strata: 1	(B)
		0%	= Total Cover				
Sapling/Shrub Stra	atum (Plot size: <u>10' r</u>)			Percent of Dominan	t Species	
1. Prunus lauroc	cerasus	95%	Yes	NOL	That Are OBL, FAC	W, or FAC: <u>0%</u>	(A/B)
2. Rubus armen	iacus	5%	No	FAC	Prevalence Index w	vorksheet:	
3.					Total % Cover	of: Multiply by:	
4.					OBL species	0 x 1 = 0	
5.					FACW species	0 x 2 = 0	
		100%	= Total Cover		FAC species	5 x 3 = 15	5
Herb Stratum	(Plot size: <u>5' r</u>)				FACU species	0 x 4 = 0	
1.					UPL species	95 x 5 = 47	5
2.					Column Totals: 1	00 (A) 490	0 (B)
3.					Prevalence Index	x = B/A = 4.90	
4.					Hydrophytic Veget	ation Indicators:	
5.					1 - Rapid Test fo	or Hydrophytic Vegetatior	า
6.					2 - Dominance	Fest is >50%	
7.					3 - Prevalence I	ndex is ≤3.0 ¹	
8.					4 - Morphologica	al Adaptations ¹ (Provide s	supporting
9.					data in Rema	arks or on a separate she	et)
10.					5 - Wetland Nor	n-Vascular Plants ¹	
11.					Problematic Hyd	drophytic Vegetation ¹ (Ex	plain)
		0%	= Total Cover			soil and wetland hydrolo	
Woody Vine Stratu	um (Plot size: <u>10' r</u>				be present.	. ,	
1							
2					Hydrophytic	.	
			= Total Cover		Vegetation	Yes No X	_
% Bare Ground in	Herb Stratum 100%				Present?		
Remarks:					Entere	d by: <u>NED</u> QC by: cm	IW

SOIL

Depth	Matrix	<u> </u>		Redox Fe	atures			
(inches) Co	lor (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remark
0-10+ 1	0YR 3/2	100					SiL	
			·					· · · · · · · · · · · · · · · · · · ·
			·					· · · · · · · · · · · · · · · · · · ·
								·
	an D Danlatia				Canal Crains	² 1 a setion 1		1 - trive
Type: C=Concentrati					Sand Grains.		PL=Pore Lining, M=N	
ydric Soil Indicator	s. (Applicable			-			or Problematic Hyd	ric Solis :
Histosol (A1)			Sandy Redo	. ,		2 cm Mu	. ,	
Histic Epipedon (A	42)		Stripped Mat				ent Material (TF2)	
Black Histic (A3)				y Mineral (F1) (exc	ept MLRA 1)	Very Sha	allow Dark Surface (1	「F12)
Hydrogen Sulfide	(A4)		Loamy Gleye	d Matrix (F2)		Other (E	xplain in Remarks)	
Depleted Below D	ark Surface (A	\11)	Depleted Ma	trix (F3)				
Thick Dark Surfac	ce (A12)		Redox Dark \$	Surface (F6)		³ Indicators o	f hydrophytic vegetat	ion and
Sandy Mucky Min	eral (S1)		Depleted Dar	k Surface (F7)		wetland hy	drology must be pres	sent,
Sandy Gleyed Ma	trix (S4)		Redox Depre	ssions (F8)		unless dist	urbed or problematic	
Type: <u>None</u> Depth (inches): Remarks: S = sa shovel refusal at 10" f		-	loam or loamy; c	o = coarse; f = fine;		Hydric Soil Pres	sent? Yes	No X
Depth (inches):	and; Si = silt; C rom buried roc	-	loam or loamy; c	o = coarse; f = fine;		•		_
Depth (inches):	and; Si = silt; C rom buried roo ndicators:	ks.				;; + = heavy (mo		ss clay)
Depth (inches): temarks: S = sa shovel refusal at 10" f IYDROLOGY Vetland Hydrology I	and; Si = silt; C rom buried roc ndicators: nimum of one	ks.	neck all that apply		; vf = very fine	;; + = heavy (mo	ore clay); - = light (les	ss clay)
Depth (inches): Remarks: S = sa shovel refusal at 10" f HYDROLOGY Vetland Hydrology In trimary Indicators (mi	and; Si = silt; C rom buried roc ndicators: nimum of one 1)	ks.	neck all that apply	d Leaves (B9) (exc	; vf = very fine	; + = heavy (mo	ore clay); - = light (les	ss clay)
Depth (inches): temarks: S = sa shovel refusal at 10" f HYDROLOGY Vetland Hydrology In trimary Indicators (mi Surface Water (A)	and; Si = silt; C rom buried roc ndicators: nimum of one 1)	ks.	neck all that apply	d Leaves (B9) (exc nd 4B)	; vf = very fine	;; + = heavy (mo <u>Secondary Ir</u> Water-S Water-S	ore clay); - = light (les ndicators (2 or more tained Leaves (B9) (I	ss clay)
Depth (inches): temarks: S = sa thovel refusal at 10" f IYDROLOGY Vetland Hydrology In trimary Indicators (mi Surface Water (A High Water Table	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2)	ks.	heck all that apply Water-Staine 1, 2, 4A, a Salt Crust (B	d Leaves (B9) (exc nd 4B)	; vf = very fine	;; + = heavy (mo 	ore clay); - = light (les ndicators (2 or more tained Leaves (B9) (I nd 4B)	required) MLRA 1, 2,
Depth (inches): temarks: S = sa thovel refusal at 10" f IYDROLOGY Vetland Hydrology In trimary Indicators (ming) Surface Water (A' High Water Table Saturation (A3)	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2)	ks.	water-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver	d Leaves (B9) (exc nd 4B) 11)	; vf = very fine	; + = heavy (mo <u>Secondary II</u> <u>Water-S</u> 4A, ar <u>Drainage</u> Dry-Sea	ore clay); - = light (les ndicators (2 or more tained Leaves (B9) (l nd 4B) e Patterns (B10)	<u>required)</u> MLRA 1, 2,
Depth (inches): temarks: S = sa shovel refusal at 10" f HYDROLOGY Vetland Hydrology In trimary Indicators (mini- Surface Water (A High Water Table Saturation (A3) Water Marks (B1)	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2) ts (B2)	ks.	water-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su	d Leaves (B9) (exc nd 4B) 11) tebrates (B13)	; vf = very fine		ore clay); - = light (les <u>indicators (2 or more</u> tained Leaves (B9) (I ind 4B) e Patterns (B10) son Water Table (C2	<u>required)</u> MLRA 1, 2,
Depth (inches): Temarks: S = sa hovel refusal at 10" f HYDROLOGY Vetland Hydrology In trimary Indicators (mi Surface Water (A' High Water Table Saturation (A3) Water Marks (B1) Sediment Deposit	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2) is (B2)	ks.	heck all that apply Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su Oxidized Rhi	d Leaves (B9) (exc nd 4B) 11) tebrates (B13) Ifide Odor (C1)	; vf = very fine	; + = heavy (mo <u>Secondary In</u> Water-S 4A, ar Drainage Dry-Seas Saturatio 3) Geomore	ore clay); - = light (les ndicators (2 or more tained Leaves (B9) (I nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial Ir	<u>required)</u> MLRA 1, 2,
Depth (inches): Temarks: S = sa shovel refusal at 10" f IYDROLOGY Vetland Hydrology In trimary Indicators (mini- Surface Water (Ari- High Water Table Saturation (A3) Water Marks (B1) Sediment Deposits Drift Deposits (B3)	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2) is (B2)) t (B4)	ks.	water-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su Oxidized Rhi Presence of	d Leaves (B9) (exc nd 4B) 11) tebrates (B13) Ifide Odor (C1) zospheres along Liv	ving Roots (C	 Secondary In Secondary In Water-S 4A, ar Drainage Dry-Seas Saturatio Geomory Shallow 	ore clay); - = light (les <u>indicators (2 or more</u> tained Leaves (B9) (I ind 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial Ir phic Position (D2)	<u>required)</u> MLRA 1, 2,
Depth (inches): Remarks: S = sa shovel refusal at 10" f HYDROLOGY Vetland Hydrology In Trimary Indicators (mi Surface Water (A' High Water Table Saturation (A3) Water Marks (B1) Sediment Deposits Drift Deposits (B3) Algal Mat or Crust Iron Deposits (B5)	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2) ts (B2) t (B4))	ks.	Mater-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su Oxidized Rhi Presence of Recent Iron F	d Leaves (B9) (exc nd 4B) 11) tebrates (B13) lfide Odor (C1) zospheres along Lir Reduced Iron (C4)	; vf = very fine cept MLRA ving Roots (C Soils (C6)	 Secondary In <u>Secondary In</u> Water-S 4A, ar Drainage Dry-Seas Saturatic Geomorg Shallow FAC-Net 	ore clay); - = light (les <u>ndicators (2 or more</u> tained Leaves (B9) (I nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial Ir phic Position (D2) Aquitard (D3) utral Test (D5)	required) MLRA 1, 2,) nagery (C9)
Depth (inches): Temarks: S = sa shovel refusal at 10" f TYDROLOGY Vetland Hydrology In Trimary Indicators (mi Surface Water (A' High Water Table Saturation (A3) Water Marks (B1) Sediment Deposit Drift Deposits (B3 Algal Mat or Crust Iron Deposits (B5) Surface Soil Crac	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2) ts (B2) t (B4)) ks (B6)	required; ch	Mater-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su Oxidized Rhi Presence of Recent Iron F Stunted or St	d Leaves (B9) (exc nd 4B) 11) tebrates (B13) lfide Odor (C1) zospheres along Li Reduced Iron (C4) Reduction in Tilled 3 rressed Plants (D1)	; vf = very fine cept MLRA ving Roots (C Soils (C6)		ore clay); - = light (les <u>indicators (2 or more</u> tained Leaves (B9) (I ind 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial Ir phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LR	required) MLRA 1, 2,) nagery (C9) R A)
Depth (inches): emarks: S = sa hovel refusal at 10" f IYDROLOGY /etland Hydrology II rimary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1) Sediment Deposit Drift Deposits (B3 Algal Mat or Crusi Iron Deposits (B5) Surface Soil Crac Inundation Visible	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2) (A2) (s (B2)) t (B4)) ks (B6) e on Aerial Ima	required; ch	Mater-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su Oxidized Rhi Presence of Recent Iron F Stunted or St	d Leaves (B9) (exc nd 4B) 11) tebrates (B13) lfide Odor (C1) zospheres along Lir Reduced Iron (C4) Reduction in Tilled	; vf = very fine cept MLRA ving Roots (C Soils (C6)		ore clay); - = light (les <u>ndicators (2 or more</u> tained Leaves (B9) (I nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial Ir phic Position (D2) Aquitard (D3) utral Test (D5)	required) MLRA 1, 2,) nagery (C9) R A)
Depth (inches): Temarks: S = sa shovel refusal at 10" f IYDROLOGY Vetland Hydrology In Primary Indicators (mines) Surface Water (Ar High Water Table Saturation (A3) Water Marks (B1) Sediment Deposits Drift Deposits (B3) Algal Mat or Crust Iron Deposits (B5) Surface Soil Cract Inundation Visible Sparsely Vegetate	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2) (A2) (s (B2)) t (B4)) ks (B6) e on Aerial Ima	required; ch	Mater-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su Oxidized Rhi Presence of Recent Iron F Stunted or St	d Leaves (B9) (exc nd 4B) 11) tebrates (B13) lfide Odor (C1) zospheres along Li Reduced Iron (C4) Reduction in Tilled 3 rressed Plants (D1)	; vf = very fine cept MLRA ving Roots (C Soils (C6)		ore clay); - = light (les <u>indicators (2 or more</u> tained Leaves (B9) (I ind 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial Ir phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LR	required) MLRA 1, 2,) nagery (C9) R A)
Depth (inches): Temarks: S = sa hovel refusal at 10" f IYDROLOGY Vetland Hydrology II rimary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1) Sediment Deposits Drift Deposits (B3) Algal Mat or Crust Iron Deposits (B5) Surface Soil Cract Inundation Visible Sparsely Vegetate ield Observations:	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2) (A2) (A2) (A2) (A2) (A2) (A2) (A2	required; ch	Meck all that apply Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su Oxidized Rhi Presence of Recent Iron F Stunted or St Other (Explai	d Leaves (B9) (exc nd 4B) 11) tebrates (B13) lfide Odor (C1) zospheres along Lir Reduced Iron (C4) Reduction in Tilled S rressed Plants (D1) n in Remarks)	ving Roots (C Soils (C6) (LRR A)		ore clay); - = light (les <u>indicators (2 or more</u> tained Leaves (B9) (I ind 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial Ir phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LR	required) MLRA 1, 2,) nagery (C9) R A)
Depth (inches): Temarks: S = sa shovel refusal at 10" f TYDROLOGY Vetland Hydrology In rimary Indicators (mi Surface Water (A' High Water Table Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust Iron Deposits (B3) Surface Soil Cract Inundation Visible Sparsely Vegetate Surface Water Presen	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2) ts (B2) t (B4)) ts (B6) e on Aerial Ima ed Concave Su nt? Yes	required; ch	No X	d Leaves (B9) (exc nd 4B) 11) tebrates (B13) lfide Odor (C1) zospheres along Li Reduced Iron (C4) Reduction in Tilled S ressed Plants (D1) n in Remarks) Depth (inches):	; vf = very fine cept MLRA ving Roots (C Soils (C6) (LRR A) N/A	:; + = heavy (mo :; + = heavy (mo 	andicators (2 or more tained Leaves (B9) (I and 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial Ir phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LR eave Hummocks (D7)	required) MLRA 1, 2,) magery (C9) R A)
Depth (inches): Temarks: S = sa shovel refusal at 10" f TYDROLOGY Vetland Hydrology In Trimary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust Iron Deposits (B5) Surface Soil Crac Inundation Visible Sparsely Vegetate Sparsely Vegetate Surface Water Present	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2) t (B4)) t (B4)) ks (B6) e on Aerial Ima ed Concave Su nt? Yes ? Yes	required; ch	No X No X No X No X No X No X No X	d Leaves (B9) (exc nd 4B) 11) tebrates (B13) lfide Odor (C1) zospheres along Lir Reduced Iron (C4) Reduced Iron (C4) Reduction in Tilled S tressed Plants (D1) n in Remarks) Depth (inches): Depth (inches):	ving Roots (C Soils (C6) (LRR A)	:; + = heavy (mo :; + = heavy (mo 	pre clay); - = light (les <u>indicators (2 or more</u> tained Leaves (B9) (I ind 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial Ir phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LR eave Hummocks (D7) I Hydrology Present	required) MLRA 1, 2,) nagery (C9) R A)
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Depth (inches): Temarks: S = sa shovel refusal at 10" f TYDROLOGY Vetland Hydrology In Trimary Indicators (mi Surface Water (A' High Water Table Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust Iron Deposits (B5) Surface Soil Cract Inundation Visible Sparsely Vegetate Sparsely Vegetate Surface Water Present Surface Water Present Saturation Present? Saturation Present? Saturation Present? Saturation Present?	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2) (A2) (A2) (A2) (A2) (A2) (A2) (A2	gery (B7)	No X No X No X No X No X	d Leaves (B9) (exc nd 4B) 11) tebrates (B13) lfide Odor (C1) zospheres along Lir Reduced Iron (C4) Reduction in Tilled S ressed Plants (D1) n in Remarks) Depth (inches): Depth (inches):	xing Roots (C Soils (C6) (LRR A) N/A >10 >10	Secondary Ir Secondary Ir Water-S 4A, ar Drainage Dry-Seas Saturatic 3) Geomory FAC-Nei FAC-Nei Frost-He Wetland	pre clay); - = light (les <u>indicators (2 or more</u> tained Leaves (B9) (I ind 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial Ir phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LR eave Hummocks (D7) I Hydrology Present	required) MLRA 1, 2,) nagery (C9) R A)
Depth (inches): emarks: S = sa hovel refusal at 10" f IYDROLOGY /etland Hydrology In rimary Indicators (mi Surface Water (A High Water Table Saturation (A3) Water Marks (B1) Sediment Deposits Drift Deposits (B3 Algal Mat or Crust Iron Deposits (B5) Surface Soil Cract Inundation Visible Sparsely Vegetate ield Observations: Surface Water Present Saturation Present?	and; Si = silt; C rom buried roc ndicators: nimum of one 1) (A2) (A2) (A2) (A2) (A2) (A2) (A2) (A2	gery (B7)	No X No X No X No X No X	d Leaves (B9) (exc nd 4B) 11) tebrates (B13) lfide Odor (C1) zospheres along Lir Reduced Iron (C4) Reduction in Tilled S ressed Plants (D1) n in Remarks) Depth (inches): Depth (inches):	xing Roots (C Soils (C6) (LRR A) N/A >10 >10	Secondary Ir Secondary Ir Water-S 4A, ar Drainage Dry-Seas Saturatic 3) Geomory FAC-Nei FAC-Nei Frost-He Wetland	pre clay); - = light (les <u>indicators (2 or more</u> tained Leaves (B9) (I ind 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial Ir phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LR eave Hummocks (D7) I Hydrology Present	required) MLRA 1, 2,) nagery (C9) R A)

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Harmony Road Townhomes		City/County:	- / Clackama	S	Sampling Date: 8/25/	/2016
Applicant/Owner: Cascadia Planning & Dev. 5	Srvcs/Old Time In	vestments, Inc.		State: OR	Sampling Point:	P4
Investigator(s): C. Mirth Walker, Evan Dulin	l	Section, T	ownship, Rang	e: 31D, T1S, R2E, TL	2200	
Landform (hillslope, terrace, etc.): Terrace			Local relief	(concave, convex, none):	Concave Slope	(%): <2
Subregion (LRR): A, Northwest Forests and C	oast	Lat: 45.432292	Lon		Datum: NAD	1983
Soil Map Unit Name: Wapato silty clay			_		classification: None	
Are climatic / hydrologic conditions on the site	, ,	e of year?	Ye		(If no, explain in	Remarks)
Are Vegetation ,Soil	, or Hydrology	significantly	disturbed? A	Are "Normal Circumstar		
Are Vegetation ,Soil	, or Hydrology	naturally prol	blematic? (If needed, explain any	answers in Remarks.)	
SUMMARY OF FINDINGS - Attach	site map sho ^v	wing sampling	point locat	tions, transects, i	mportant feature	s, etc.
Hydrophytic Vegetation Present?	Yes X	No				
Hydric Soil Present?	Yes X	No	Is the Samp	led Area		
Wetland Hydrology Present?	Yes X	No	within a We	etland? Yes	X No	
	2 weeks prior, 6.4	1" above normal fo	r WYTD, 2.06"	below normal for CYT	 D.	
Remarks: Sample plot located on north side of stream.						
Sample plot located on north side of stream.						
VEGETATION						
	Absolute	Dominant	Indicator	Dominance Test w	/orksheet:	
<u>Tree Stratum</u> (Plot size: <u>30' r</u>)	<u>% Cover</u>	Species?	Status	Number of Dominar	nt Species	
1. Fraxinus latifolia	70%	Yes	FACW	That Are OBL, FAC	W, or FAC: 5	(A)
2.						
3.	_			Total Number of Do	ominant	
4.				Species Across All	Strata: 5	(B)
	70%	= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10' r</u>)			Percent of Dominan	nt Species	
1. Fraxinus latifolia	10%	Yes	FACW	That Are OBL, FAC	W, or FAC: <u>100%</u>	∕ <u>∕</u> (A/B)
2. Cornus alba	10%	Yes	FACW	Prevalence Index v	worksheet:	
3. Crataegus monogyna	5%	No	FAC	Total % Cover	of: Multiply by:	
4. Rubus armeniacus	5%	No	FAC	OBL species	0 x 1 =	0
5.				FACW species 1	103 x 2 =	206
	30%	= Total Cover		FAC species	90 x 3 =	270
<u>Herb Stratum</u> (Plot size: <u>5' r</u>)				FACU species	3 x 4 =	12
1. Agrostis capillaris	50%	Yes	FAC	UPL species	0 x 5 =	0
2. Carex leptopoda	20%	Yes	FAC	Column Totals: 1	196 (A)	488 (B)
3. Equisetum arvense	10%	No	FAC	Prevalence Inde	ex = B/A = 2.4	49
4. Mentha arvensis	10%	No	FACW	Hydrophytic Veget	tation Indicators:	
5. Bidens frondosa	3%	No	FACW	1 - Rapid Test f	for Hydrophytic Vegeta	tion
6.				X 2 - Dominance	Test is >50%	
7.				3 - Prevalence I	Index is ≤3.0 ¹	
8.					al Adaptations ¹ (Provid	de supporting
9.				· · ·	arks or on a separate s	
10.					n-Vascular Plants ¹	
11.				Problematic Hv	drophytic Vegetation ¹ ((Explain)
·	93%	= Total Cover			c soil and wetland hydro	
Woody Vine Stratum (Plot size: <u>10' r</u>				be present.		- 3,
1. Rubus leucodermis	3%	No	FACU			
2.				Hydrophytic		
	3%	= Total Cover		Vegetation	Yes X No	
% Bare Ground in Herb Stratum 7%				Present?		
Remarks:				Entere	ed by: <u>NED</u> QC by:	cmw

Lysichiton americanus and Iris pseudacorus (both OBL) also occur nearby in the wetland area.

SOIL

Depth	Matrix			Redox F	ealures			
(inches) Color (r	noist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-4 10YR	2/2	100					SiL	
4-12 10YR	3/1	90	5YR 3/4	10	С	M, PL	SiL	
			-					
Type: C=Concentration, [D=Depletio	n, RM=Red	duced Matrix CS=	Covered or Coate	d Sand Grains.	² Location:	PL=Pore Lining, M=N	latrix.
ydric Soil Indicators: (A	pplicable	to all LRR	s, unless otherw	vise noted.)		Indicators f	or Problematic Hydi	ric Soils ³ :
Histosol (A1)			Sandy Redox	x (S5)		2 cm Mu	ick (A10)	
Histic Epipedon (A2)			Stripped Mat	rix (S6)			ent Material (TF2)	
Black Histic (A3)				y Mineral (F1) (ex	cept MLRA 1)		allow Dark Surface (T	F12)
Hydrogen Sulfide (A4)				ed Matrix (F2)	. ,		xplain in Remarks)	-
Depleted Below Dark	Surface (A	11)	Depleted Ma					
Thick Dark Surface (A		,	X Redox Dark			³ Indicators o	f hydrophytic vegetat	ion and
Sandy Mucky Mineral				rk Surface (F7)			drology must be pres	
Sandy Gleyed Matrix (. ,		Redox Depre			-	turbed or problematic	
Type: <u>None</u> Depth (inches): <u>N</u> Remarks: S = sand;	/A Si = silt; C	-	loam or loamy; c	o = coarse; f = fine		ydric Soil Pre + = heavy (mo	sent? Yes X pre clay); - = light (les	No s clay)
Type: <u>None</u> Depth (inches): <u>N</u> Remarks: S = sand; Shovel refusal at 12" from	/A Si = silt; C large living	-	loam or loamy; c	o = coarse; f = fine		•		
Type: None Depth (inches): N Remarks: S = sand; shovel refusal at 12" from HYDROLOGY Vetland Hydrology Indication	/A Si = silt; C large living	roots.				+ = heavy (mo		s clay)
Type: None Depth (inches): N emarks: S = sand; hovel refusal at 12" from HYDROLOGY Vetland Hydrology Indice	/A Si = silt; C large living	roots.	neck all that apply		e; vf = very fine;	+ = heavy (mo	pre clay); - = light (les	required)
Type: None Depth (inches): N Remarks: S = sand; Shovel refusal at 12" from HYDROLOGY Vetland Hydrology Indicators (minimuted)	/A Si = silt; C large living ators: m of one r	roots.	neck all that apply) ed Leaves (B9) (e)	e; vf = very fine;	+ = heavy (mo - <u>Secondary I</u>	ore clay); - = light (les	required)
Type: None Depth (inches): N Remarks: S = sand; shovel refusal at 12" from HYDROLOGY Vetland Hydrology Indicators (minimu Surface Water (A1)	/A Si = silt; C large living ators: m of one r	roots.	neck all that apply) ed Leaves (B9) (e) in d 4B)	e; vf = very fine;	+ = heavy (mo	ore clay); - = light (les ndicators (2 or more t tained Leaves (B9) (l	required)
Type: None Depth (inches): N temarks: S = sand; shovel refusal at 12" from HYDROLOGY Vetland Hydrology Indicators (minimu Surface Water (A1) High Water Table (A2)	/A Si = silt; C large living ators: m of one r	roots.	neck all that apply Water-Staine 1, 2, 4A, a Salt Crust (B) ed Leaves (B9) (e) in d 4B)	e; vf = very fine;	+ = heavy (mo <u>Secondary In</u> <u>Water-S</u> 4A, ar <u>Drainage</u>	ndicators (2 or more tained Leaves (B9) (Ind 4B)	required) MLRA 1, 2,
Type: None Depth (inches): N Depth (inches): N Remarks: S = sand; Shovel refusal at 12" from HYDROLOGY Vetland Hydrology Indicators (minimulation) Surface Water (A1) High Water Table (A2) Saturation (A3)	/A Si = silt; C large living ators: m of one r	roots.	water-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver) ed Leaves (B9) (e) I nd 4B) 111)	e; vf = very fine;	+ = heavy (mo	ndicators (2 or more r tained Leaves (B9) (I nd 4B) e Patterns (B10)	required) MLRA 1, 2,
Type: None Depth (inches): N Remarks: S = sand; Shovel refusal at 12" from TYDROLOGY Vetland Hydrology Indicators Crimary Indicators (minimu Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	/A Si = silt; C large living ators: m of one r	roots.	neck all that apply Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su) ed Leaves (B9) (e) In d 4B) I11) rtebrates (B13)	e; vf = very fine;	+ = heavy (mo	ndicators (2 or more t tained Leaves (B9) (f nd 4B) e Patterns (B10) son Water Table (C2	required) MLRA 1, 2,
Type: None Depth (inches): N Remarks: S = sand; Shovel refusal at 12" from HYDROLOGY Vetland Hydrology Indicators (minimulation of the second of the	/A Si = silt; C large living ators: m of one r	roots.	Mater-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su X Oxidized Rhi) ed Leaves (B9) (e) i nd 4B) i11) rtebrates (B13) ilfide Odor (C1)	e; vf = very fine; xcept MLRA	+ = heavy (mo	ndicators (2 or more t tained Leaves (B9) (1 nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial Ir	required) MLRA 1, 2,
Type: None Depth (inches): N Remarks: S = sand; Shovel refusal at 12" from HYDROLOGY Vetland Hydrology Indicators (minimu Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3)	/A Si = silt; C large living ators: m of one r	roots.	Meck all that apply Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Invel Hydrogen Su X Oxidized Rhi Presence of) ed Leaves (B9) (e) a nd 4B) a11) rtebrates (B13) alfide Odor (C1) zospheres along L	e; vf = very fine; xcept MLRA _iving Roots (C3)	+ = heavy (mo	pre clay); - = light (les ndicators (2 or more i tained Leaves (B9) (I nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial In phic Position (D2)	required) MLRA 1, 2,
Type: None Depth (inches): N Remarks: S = sand; Shovel refusal at 12" from HYDROLOGY Vetland Hydrology Indicators (minimulation of the second of the	/A Si = silt; C large living ators: m of one r	roots.	Mater-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su X Oxidized Rhi Presence of Recent Iron I) ed Leaves (B9) (e) an d 4B) a11) rtebrates (B13) ilfide Odor (C1) zospheres along L Reduced Iron (C4	e; vf = very fine; kcept MLRA	+ = heavy (mo	pre clay); - = light (les <u>ndicators (2 or more r</u> tained Leaves (B9) (f nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial In phic Position (D2) Aquitard (D3)	required) MLRA 1, 2,
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Type: None Depth (inches): N Depth (inches): N Depth (inches): N Depth (inches): N Depth (inches): S = sand; Semarks: S = sand; HYDROLOGY Vetland Hydrology Indica Trimary Indicators (minimu Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4 Iron Deposits (B5)	/A Si = silt; C large living ators: m of one r 2) 2) 2) 2)	equired; ch	Mater-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su X Oxidized Rhi Presence of Recent Iron I Stunted or S) ed Leaves (B9) (e) and 4B) att) rtebrates (B13) alfide Odor (C1) zospheres along L Reduced Iron (C4 Reduction in Tilled tressed Plants (D1	e; vf = very fine; kcept MLRA	+ = heavy (mo - <u>Secondary II</u> - <u>Water-S</u> 4A, ar Drainage Dry-Sea Saturatio) Geomor Shallow FAC-Nei Raised A	pre clay); - = light (les ndicators (2 or more to tained Leaves (B9) (I nd 4B) e Patterns (B10) son Water Table (C2) on Visible on Aerial In phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LR	required) MLRA 1, 2,) nagery (C9) R A)
Type: None Depth (inches): N Remarks: S = sand; Shovel refusal at 12" from HYDROLOGY Vetland Hydrology Indicators (minimulation (Magnetic field) Primary Indicators (minimulation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Surface Soil Cracks (E) Inundation Visible on A Sparsely Vegetated Communication	/A Si = silt; C large living ators: m of one r 2) 2) 2) 2)	equired; ch	Mater-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su X Oxidized Rhi Presence of Recent Iron I Stunted or S) ed Leaves (B9) (e) and 4B) att) rtebrates (B13) alfide Odor (C1) zospheres along L Reduced Iron (C4 Reduction in Tilled tressed Plants (D1	e; vf = very fine; kcept MLRA	+ = heavy (mo - <u>Secondary II</u> - <u>Water-S</u> 4A, ar Drainage Dry-Sea Saturatio) Geomor Shallow FAC-Nei Raised A	pre clay); - = light (les ndicators (2 or more to tained Leaves (B9) (I nd 4B) e Patterns (B10) son Water Table (C2) on Visible on Aerial In phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LR	required) MLRA 1, 2,) nagery (C9) R A)
Type: None Depth (inches): N Remarks: S = sand; Shovel refusal at 12" from HYDROLOGY Vetland Hydrology Indicators (minimulators) Primary Indicators (minimulators) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Surface Soil Cracks (E Inundation Visible on A Sparsely Vegetated Comparisons:	/A Si = silt; C large living ators: m of one r 2) 2) 36) Aerial Imag oncave Su	equired; ch gery (B7) rface (B8)	Water-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su X Oxidized Rhi Presence of Recent Iron I Stunted or S Other (Expla) ed Leaves (B9) (e) and 4B) a11) rtebrates (B13) ulfide Odor (C1) zospheres along L Reduced Iron (C4 Reduced Iron (C4 Reduction in Tilled tressed Plants (D1 in in Remarks)	e; vf = very fine; kcept MLRA Living Roots (C3) d Soils (C6) 1) (LRR A)	+ = heavy (mo - <u>Secondary II</u> - <u>Water-S</u> 4A, ar Drainage Dry-Sea Saturatio) Geomor Shallow FAC-Nei Raised A	pre clay); - = light (les ndicators (2 or more to tained Leaves (B9) (I nd 4B) e Patterns (B10) son Water Table (C2) on Visible on Aerial In phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LR	<u>required)</u> MLRA 1, 2,) nagery (C9)
Type: None Depth (inches): N Remarks: S = sand; Shovel refusal at 12" from HYDROLOGY Vetland Hydrology Indicators (minimulators) Primary Indicators (minimulators) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Surface Soil Cracks (E) Inundation Visible on A Sparsely Vegetated Co Field Observations: Surface Water Present?	/A Si = silt; C large living ators: m of one r 2) 2) 26) Aerial Imag oncave Su Yes	equired; ch gery (B7) rface (B8)	Water-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su X Oxidized Rhi Presence of Recent Iron I Stunted or S Other (Expla) ed Leaves (B9) (e) and 4B) aft1) rtebrates (B13) ulfide Odor (C1) zospheres along L Reduced Iron (C4 Reduction in Tilled tressed Plants (D1 in in Remarks) Depth (inches):	e; vf = very fine; kcept MLRA iving Roots (C3) d Soils (C6) 1) (LRR A)	+ = heavy (mo	ndicators (2 or more 1 tained Leaves (B9) (I nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial In phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LR eave Hummocks (D7)	required) MLRA 1, 2,) nagery (C9)
Type: None Depth (inches): N Remarks: S = sand; Shovel refusal at 12" from HYDROLOGY Vetland Hydrology Indicators (minimu Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Surface Soil Cracks (E Inundation Visible on A Sparsely Vegetated Co Field Observations: Surface Water Present?	/A Si = silt; C large living ators: m of one r 2) 2) 36) Aerial Imag pincave Su Yes Yes	equired; ch gery (B7) rface (B8)	No X No X No X No X No X No X No X No X) ed Leaves (B9) (e) and 4B) and 4B) and 4B) and 4B) and 4B and	e; vf = very fine; kcept MLRA iving Roots (C3) d Soils (C6) 1) (LRR A) X X >12	+ = heavy (mo	pre clay); - = light (les ndicators (2 or more in tained Leaves (B9) (I nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial In phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LR pave Hummocks (D7) I Hydrology Present	required) MLRA 1, 2,) nagery (C9) R A)
Depth (inches): N Remarks: S = sand; Shovel refusal at 12" from HYDROLOGY Wetland Hydrology Indica Primary Indicators (minimu Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4 Iron Deposits (B5) Surface Soil Cracks (E Inundation Visible on A	/A Si = silt; C large living ators: m of one r 2) 2) 26) Aerial Imag oncave Su Yes	equired; ch gery (B7) rface (B8)	Water-Staine Water-Staine 1, 2, 4A, a Salt Crust (B Aquatic Inver Hydrogen Su X Oxidized Rhi Presence of Recent Iron I Stunted or S Other (Expla) ed Leaves (B9) (e) and 4B) aft1) rtebrates (B13) ulfide Odor (C1) zospheres along L Reduced Iron (C4 Reduction in Tilled tressed Plants (D1 in in Remarks) Depth (inches):	e; vf = very fine; kcept MLRA iving Roots (C3) d Soils (C6) 1) (LRR A) X X >12	+ = heavy (mo	ndicators (2 or more 1 tained Leaves (B9) (I nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial In phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LR eave Hummocks (D7)	required) MLRA 1, 2,) nagery (C9)

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Harmony Road Townhomes		City/County:	- / Clackama	s Sampling Date: 8/25/2016
Applicant/Owner: Cascadia Planning & Dev.	Srvcs/Old Time Ir	vestments, Inc.		State: OR Sampling Point: P5
Investigator(s): C. Mirth Walker, Evan Duli	ı	Section, T	ownship, Rang	ge: 31D, T1S, R2E, TL 2200
Landform (hillslope, terrace, etc.): Terrace			Local relief	(concave, convex, none): Convex Slope (%): <2
Subregion (LRR): A, Northwest Forests and C	Coast	Lat: 45.432317	Lon	ng: -122.600797 Datum: NAD 1983
Soil Map Unit Name: Wapato silty cla			_	NWI classification: None
Are climatic / hydrologic conditions on the site	typical for this tim	e of year?	Ye	es X No (If no, explain in Remarks)
Are Vegetation,Soil	, or Hydrology	significantly	disturbed? A	Are "Normal Circumstances" present? Yes X No
Are Vegetation ,Soil	, or Hydrology	naturally pro	blematic? ((If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach	site map sho	wing sampling	point locat	tions, transects, important features, etc.
Hydrophytic Vegetation Present?	Yes	No X		
Hydric Soil Present?	Yes	No X	Is the Samp	oled Area
Wetland Hydrology Present?	Yes	No X	within a We	etland? Yes No X
Remarks:	2 weeks prior, 6.4	1" above normal fo	r WYTD, 2.06"	below normal for CYTD.
Sample plot is located about 15' North of P4. VEGETATION				
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30' r</u>)	% Cover	Species?	Status	Number of Dominant Species
1. Populus balsamifera	30%	Yes	FAC	That Are OBL, FACW, or FAC: 3 (A)
2. Thuja plicata	10%	Yes	FAC	
3. Abies grandis	5%	No	FACU	Total Number of Dominant
4. Fraxinus latifolia	5%	No	FACW	Species Across All Strata: 6 (B)
	50%	= Total Cover		(-)
Sapling/Shrub Stratum (Plot size: 10				Percent of Dominant Species
1. Crataegus monogyna	30%	Yes	FAC	That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
 Ilex aquifolium 	10%	Yes	FACU	Prevalence Index worksheet:
3. Prunus caroliniana	5%	No	FACU	Total % Cover of: Multiply by:
4.				OBL species 0 x 1 = 0
5.		· · · · · · · · · · · · · · · · · · ·		FACW species $5 \times 2 = 10$
	45%	= Total Cover		FAC species $70 \times 3 = 210$
Herb Stratum (Plot size: <u>5' r</u>)				FACU species 110 x 4 = 440
1. Hedera helix	80%	Yes	FACU	UPL species $0 \times 5 = 0$
2. Polystichum munitum	5%	No	FACU	Column Totals: 185 (A) 660 (B)
3.			17100	Prevalence Index = $B/A = \frac{3.57}{2}$
4.	_	·		Hydrophytic Vegetation Indicators:
5.				1 - Rapid Test for Hydrophytic Vegetation
6.				2 - Dominance Test is >50%
7.	_	·		3 - Prevalence Index is ≤3.01
8.				4 - Morphological Adaptations ¹ (Provide supporting
9.		·		data in Remarks or on a separate sheet)
10				5 - Wetland Non-Vascular Plants ¹
11				Problematic Hydrophytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size: 10')	,	= Total Cover	54.014	¹ Indicators of hydric soil and wetland hydrology must be present.
1. Rubus leucodermis 2.	5%	Yes	FACU	Hydrophytic
	5%	= Total Cover		Vegetation Yes No X
% Bare Ground in Herb Stratum 15%	<u> </u>			Present?
Remarks:				Entered by: <u>NED</u> QC by: <u>cmw</u>

Fraxinus latifolia is rooted at boundary overhanging the sample plot.

SOIL

	Ma			Read	x Features			
(inches)	Color (moist)	%	Color (mois	st) %	Type ¹	Loc ²	Texture	Remark
0-3	10YR 3/1	100	_				SiL	
3-9+	10YR 3/1	99	10YR 3/	2 1	С	М	SiL	faint redox
	ntration D-Denl	tion RM-Re	duced Matrix CS	-Covered or Co	ated Sand Grains		: PL=Pore Lining, M=	
	cators: (Applical						for Problematic Hy	
Histosol (A1)			Sandy Red	-			Muck (A10)	
Histic Epiped	·		Stripped M				arent Material (TF2)	
Black Histic ((except MLRA 1		Shallow Dark Surface	(TF12)
Hydrogen Su				yed Matrix (F2)			(Explain in Remarks)	
	low Dark Surface	(A11)	Depleted N					
Thick Dark S			Redox Dar	k Surface (F6)		³ Indicators	of hydrophytic veget	ation and
	y Mineral (S1)			ark Surface (F7))	wetland	hydrology must be pr	esent,
Sandy Gleye	ed Matrix (S4)		Redox Dep	pressions (F8)		unless d	isturbed or problemat	tic.
Type: <u>N</u> Depth (inches):	None N/A	 : C = clav: L :	= loam or loamv:	- co = coarse: f =		Hydric Soil P		No X
Type: <u>N</u> Depth (inches): emarks: S	None N/A S = sand; Si = sil Y	<u>-</u> ; C = clay; L :	= loam or loamy;	- co = coarse; f =		•	resent? Yes more clay); - = light (le	
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrolo	None N/A S = sand; Si = sil Y ogy Indicators:					ne; + = heavy (r	more clay); - = light (le	ess clay)
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrology rimary Indicators	None N/A S = sand; Si = sil Y ogy Indicators: rs (minimum of o		heck all that app	ly)	fine; vf = very fin	ne; + = heavy (r <u>Secondary</u>	more clay); - = light (le	ess clay) e required)
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrology rimary Indicators Surface Wate	None : N/A S = sand; Si = sil Y ogy Indicators: rs (minimum of or er (A1)		heck all that app Water-Stai	ly) ned Leaves (B9)	fine; vf = very fin	ie; + = heavy (r <u>Secondary</u> Water-	more clay); - = light (le <u>r Indicators (2 or more</u> -Stained Leaves (B9)	ess clay) e required)
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydroloc rimary Indicators Surface Wate High Water T	None N/A S = sand; Si = sil Y ogy Indicators: rs (minimum of or rer (A1) Table (A2)		heck all that app Water-Stai 1, 2, 4A,	ly) ned Leaves (B9) , and 4B)	fine; vf = very fin	ne; + = heavy (r <u>Secondary</u> Water- 4A,	more clay); - = light (le / Indicators (2 or more -Stained Leaves (B9) and 4B)	ess clay) e required)
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY Vetland Hydrolo rimary Indicators Surface Wate	None N/A S = sand; Si = sil Y ogy Indicators: rs (minimum of or er (A1) Table (A2) A3)		heck all that app Water-Stai 1, 2, 4A , Salt Crust	l <u>y)</u> ned Leaves (B9) , and 4B) (B11)	fine; vf = very fin	ne; + = heavy (r <u>Secondary</u> Water- Draina	more clay); - = light (le <u>/ Indicators (2 or more</u> -Stained Leaves (B9) and 4B) age Patterns (B10)	ess clay) <u>e required)</u> (MLRA 1, 2,
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrolo /etland Hydrolo	None N/A S = sand; Si = sil Y ogy Indicators: rs (minimum of or er (A1) Table (A2) A3) s (B1)		heck all that app Water-Stai 1, 2, 4A , Salt Crust	ly) ned Leaves (B9) , and 4B) (B11) vertebrates (B13)	fine; vf = very fin	ne; + = heavy (r <u>Secondary</u> Water- Water- 4 A , Draina Dry-Se	more clay); - = light (le / Indicators (2 or more -Stained Leaves (B9) and 4B)	ess clay) <u>e required)</u> (MLRA 1, 2,
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrolo rimary Indicators Surface Water High Water T Saturation (A	None N/A S = sand; Si = sil Y ogy Indicators: rs (minimum of or rer (A1) Table (A2) A3) s (B1) eposits (B2)		heck all that app Water-Stai 1, 2, 4A , Salt Crust Aquatic Inv Hydrogen S	ly) ned Leaves (B9) , and 4B) (B11) /ertebrates (B13) Sulfide Odor (C1	fine; vf = very fin	be; + = heavy (r <u>Secondary</u> <u>Water</u> 4A, Draina Dry-Se Satura	more clay); - = light (le <u>/ Indicators (2 or more</u> -Stained Leaves (B9) and 4B) Ige Patterns (B10) eason Water Table (C	ess clay) <u>e required)</u> (MLRA 1, 2,
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrolo rimary Indicators 	None N/A S = sand; Si = sile $Yogy Indicators:rs (minimum of or er (A1) Table (A2) A3) s (B1)eposits (B2)s (B3)$		heck all that app Water-Stai 1, 2, 4A , Salt Crust Aquatic Inv Hydrogen S Oxidized R	ly) ned Leaves (B9) , and 4B) (B11) /ertebrates (B13) Sulfide Odor (C1	fine; vf = very fin (except MLRA)) ng Living Roots (0	be; + = heavy (r <u>Secondary</u> <u>Water</u> 4A , Draina Dry-Se Satura C3) <u>Geome</u>	more clay); - = light (le <u>/ Indicators (2 or more</u> -Stained Leaves (B9) and 4B) Ige Patterns (B10) eason Water Table (C tition Visible on Aerial	ess clay) <u>e required)</u> (MLRA 1, 2,
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrolo rimary Indicators 	None N/A S = sand; Si = sil Y ogy Indicators: rs (minimum of or er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4)		heck all that app Water-Stai 1, 2, 4A , Salt Crust Aquatic Inv Hydrogen S Oxidized R Presence o	ly) ned Leaves (B9) , and 4B) (B11) /ertebrates (B13) Sulfide Odor (C1 /hizospheres alo	fine; vf = very fin (except MLRA) ng Living Roots (((C4)		more clay); - = light (le <u>v Indicators (2 or more</u> -Stained Leaves (B9) and 4B) uge Patterns (B10) eason Water Table (C tion Visible on Aerial orphic Position (D2)	ess clay) <u>e required)</u> (MLRA 1, 2,
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrold Primary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (None N/A S = sand; Si = sile $Yogy Indicators:rs (minimum of or rer (A1) Table (A2) A3) s (B1)eposits (B2)s (B3)Crust (B4)s (B5)$		heck all that app Water-Stai 1, 2, 4A , Salt Crust Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iro	ly) ned Leaves (B9) , and 4B) (B11) vertebrates (B13) Sulfide Odor (C1 hizospheres alou of Reduced Iron	fine; vf = very fin (except MLRA) ng Living Roots (((C4) Iled Soils (C6)		more clay); - = light (le <u>/ Indicators (2 or more</u> -Stained Leaves (B9) and 4B) age Patterns (B10) eason Water Table (C tion Visible on Aerial orphic Position (D2) w Aquitard (D3)	ess clay) <u>e required)</u> (MLRA 1, 2, (2) Imagery (C9)
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrology /etland Hydrology	None N/A S = sand; Si = sile $Yogy Indicators:rs (minimum of or rer (A1) Table (A2) A3) s (B1)eposits (B2)s (B3)Crust (B4)s (B5)$	ne required; c	heck all that app Water-Stai 1, 2, 4A , Salt Crust Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iron Stunted or	I <u>y)</u> ned Leaves (B9) a and 4B) (B11) vertebrates (B13) Sulfide Odor (C1 hizospheres alor of Reduced Iron of Reduced Iron	fine; vf = very fin (except MLRA (C4) (C4) Iled Soils (C6) (D1) (LRR A)		more clay); - = light (le <u>/ Indicators (2 or more</u> -Stained Leaves (B9) and 4B) uge Patterns (B10) eason Water Table (C tion Visible on Aerial orphic Position (D2) w Aquitard (D3) leutral Test (D5)	ess clay) e required) (MLRA 1, 2, C2) Imagery (C9) RR A)
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrold rimary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (Iron Deposits Surface Soil (Inundation Vi	None N/A S = sand; Si = sile $Yogy Indicators:s (minimum of or er (A1) Table (A2) A3) s (B1)eposits (B2)s (B3)Crust (B4)s (B5)Cracks (B6)$	ne required; c	heck all that app Water-Stai 1, 2, 4A , Salt Crust Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iron Stunted or	IV) ned Leaves (B9) , and 4B) (B11) /ertebrates (B13) Sulfide Odor (C1 hizospheres alou of Reduced Iron n Reduction in Ti Stressed Plants	fine; vf = very fin (except MLRA (C4) (C4) Iled Soils (C6) (D1) (LRR A)		more clay); - = light (le <u>r Indicators (2 or more</u> -Stained Leaves (B9) and 4B) age Patterns (B10) eason Water Table (C tition Visible on Aerial orphic Position (D2) w Aquitard (D3) leutral Test (D5) d Ant Mounds (D6) (L	ess clay) e required) (MLRA 1, 2, 22) Imagery (C9) RR A)
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrolo /etland Hydrolo	None N/A S = sand; Si = sile $Yogy Indicators:rs (minimum of or er (A1) Table (A2) A3) s (B1)eposits (B2)s (B3)Crust (B4)s (B5)Cracks (B6)risible on Aerial In getated Concave$	ne required; c	heck all that app Water-Stai 1, 2, 4A , Salt Crust Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iron Stunted or	IV) ned Leaves (B9) , and 4B) (B11) /ertebrates (B13) Sulfide Odor (C1 hizospheres alou of Reduced Iron n Reduction in Ti Stressed Plants	fine; vf = very fin (except MLRA (C4) (C4) Iled Soils (C6) (D1) (LRR A)		more clay); - = light (le <u>r Indicators (2 or more</u> -Stained Leaves (B9) and 4B) age Patterns (B10) eason Water Table (C tition Visible on Aerial orphic Position (D2) w Aquitard (D3) leutral Test (D5) d Ant Mounds (D6) (L	ess clay) e required) (MLRA 1, 2, 22) Imagery (C9) RR A)
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrold rimary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil Iron Deposits Surface Soil Inundation Vi Sparsely Veg	None N/A N/A S = sand; Si = sil Y ogy Indicators: rs (minimum of or er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) 'isible on Aerial In getated Concave ons:	nagery (B7) Surface (B8)	heck all that app Water-Stai 1, 2, 4A , Salt Crust Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iron Stunted or	IV) ned Leaves (B9) , and 4B) (B11) /ertebrates (B13) Sulfide Odor (C1 hizospheres alou of Reduced Iron n Reduction in Ti Stressed Plants	fine; vf = very fin (except MLRA) ng Living Roots (((C4) Iled Soils (C6) (D1) (LRR A)		more clay); - = light (le <u>r Indicators (2 or more</u> -Stained Leaves (B9) and 4B) age Patterns (B10) eason Water Table (C tition Visible on Aerial orphic Position (D2) w Aquitard (D3) leutral Test (D5) d Ant Mounds (D6) (L	ess clay) e required) (MLRA 1, 2, 22) Imagery (C9) RR A)
Depth (inches): Temarks: S S S S S S S S S S S S S S	None N/A S = sand; Si = sile $Yogy Indicators:rs (minimum of or er (A1) Table (A2) A3) s (B1)eposits (B2)s (B3)Crust (B4)s (B5)Cracks (B6)risible on Aerial Ingetated Concaveons:Present? Ye$	nagery (B7) Surface (B8)	heck all that app Water-Stai 1, 2, 4A , Salt Crust Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iron Stunted or Other (Exp	ly) ned Leaves (B9) , and 4B) (B11) vertebrates (B13) Sulfide Odor (C1 thizospheres alou of Reduced Iron of Reduced Iron n Reduction in Ti Stressed Plants lain in Remarks)	fine; vf = very fin (except MLRA) ng Living Roots (((C4) Iled Soils (C6) (D1) (LRR A) es):N/A	Be; + = heavy (r <u>Secondary</u> Water- 4A, Draina Dry-Se Satura C3) Geome FAC-N Raiseo Frost-H	more clay); - = light (le <u>r Indicators (2 or more</u> -Stained Leaves (B9) and 4B) age Patterns (B10) eason Water Table (C tition Visible on Aerial orphic Position (D2) w Aquitard (D3) leutral Test (D5) d Ant Mounds (D6) (L	ess clay) <u>e required)</u> (MLRA 1, 2, C2) Imagery (C9) RR A) 7)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrolo Vetland Hydrolo Metland Hydrolo Surface Water High Water T Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (Iron Deposits Surface Soil Inundation Vi Sparsely Veg Surface Water P	None N/A S = sand; Si = sil Y ogy Indicators: s (minimum of or er (A1) Table (A2) A3) $s (B1)eposits (B2)s (B3)Crust (B4)s (B5)Cracks (B6)fisible on Aerial Irgetated Concaveons:Present? Yeesent? Ye$	nagery (B7) Surface (B8)	heck all that app Water-Stai 1, 2, 4A , Salt Crust Aquatic Inv Hydrogen S Oxidized R Presence o Recent Iron Stunted or Other (Exp	IV) ned Leaves (B9) , and 4B) (B11) vertebrates (B13) Sulfide Odor (C1 bitizospheres alou of Reduced Iron n Reduction in Ti Stressed Plants lain in Remarks)	fine; vf = very fin (except MLRA (cc4) (C4) (D1) (LRR A) (D1) (LRR A) (D1) (2 N/A (D2)	Be; + = heavy (r <u>Secondary</u> Water- 4A, Draina Dry-Se Satura C3) Geome FAC-N Raiseo Frost-H	more clay); - = light (le <u>/ Indicators (2 or more</u> -Stained Leaves (B9) and 4B) uge Patterns (B10) eason Water Table (C tition Visible on Aerial orphic Position (D2) w Aquitard (D3) leutral Test (D5) d Ant Mounds (D6) (L Heave Hummocks (D	ess clay) <u>e required)</u> (MLRA 1, 2, C2) Imagery (C9) RR A) 7) nt?

Applicant/Owner: Cascadia Planning & Dev. Strves/Old Time Investments, Inc. State: OR Sampling Point: P6 Investigator(s): C. Mith Walker, Tom Dee Soction, Township, Range: 31D, T1S, R2E, TL 2000 Sampling Point: P6 Subregion (IRR): Anothwest Forests and Coast Lat: Local relief (conserv, conver, conver, conver, conver, social coast NWI classification: None Are clinatic / hydrologic conditions on the site typical to this time of year? Yes No No (Pi co, explain in Remarks) Are Vegetation _Soil of Hydrology significanty disturbed? Are Norma Circumstances' present? Yes X No No X SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present? Yes X No X Hydrophytic Vegetation Present? Yes X No X Is the Sampled Area Water Hydrophytic Vegetation Present? Yes X No X Yes No X Procluptiator prior to feldwork: Remarks: Below OHWM of Minthorn Creek; 2 feet downslope of P2 Yes FACW That Are OBL, FACW, or FAC: 2 (WETLAND DETERM	INATION DAT	A FORM – Wes	tern Mounta	ains, Valleys and (Coast Region	
Investigation(s): C. Mith Walker, Tom De Section, Township, Ramps: 310, 115, R2E, TL 220. Landform (hillsipe, tarsac, sc): Floodplain berch Local relife (concave, correx, none):	Project/Site: Harmony Road Townhomes		City/County:	Milwaukie / C	Jackamas	Sampling Date: 10/1	7/2017
Landform (Histops, some): Floodplain bench Local relief (soncove, convex, some):	Applicant/Owner: Cascadia Planning & Dev	. Srvcs/Old Time Ir	vestments, Inc.		State: OR	Sampling Point:	P6
Subregion (LRR): A_Nerthwest Foreats and Coast Lat: Long: Datum: Soli Map Unit Name: Wapata sily dely Joan (A) NVI classification: None Are Vogetation	Investigator(s): C. Mirth Walker, Tom Dee	9	Section, T	rownship, Rang	e: 31D, T1S, R2E, TL :	2200	
Subridgion (LRR): A_Northwest Forests and Coast Lat: Long: Datum: Soli Map Unit Name: Wagata sily day toam (84) NNI classification: Nona Are Vagetation _Soli _or Hydrology significanty disturbed? Yes X_N Are Vagetation _Soli _or Hydrology significanty disturbed? Yes X_N SUMMARY OF FINDINCS - Attach site map showing sampling point locations, transects, important features, etc. Hydrophydic Vagetation Present? Yes X_N Hydrophydic Vagetation Present? Yes X_No Is the Sampled Area water within a Wetland? Water within a Wetland? Melload Hydrology Present? Yes X_No Indicator No X Balow DHWM of Minthor Creek: 2 feet downslope of P2 Execute of the Mydrology Present? No X No Total Number of Dominant Species No X 1.	Landform (hillslope, terrace, etc.): Floodplai	n bench		Local relief	(concave, convex, none):	concave Slope	(%): 1
Soli Map Wagets slip designamided NWI classification: Name Are climatic / hydrologic conditions on the alle hybrical for this time of years No No No No Are oblighted for this time of years	Subregion (LRR): A, Northwest Forests and	Coast	Lat:	 Lon	.g:		. ,
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (ff no, explain in Remarks) Are Vegetation				_	-	lassification: None	
Are vegetation	· · · · · ·	,	e of year?	Ye			Remarks)
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegatation Present? Yes No X Is the Sampled Area within a Wetland? Water within a Wetland? Water within a Wetland? No X Precipitation prior to fieldwork: Namarks: No X No X No X Precipitation prior to fieldwork: Remarks: No X No X No X Precipitation prior to fieldwork: Remarks: Dominant Indicator Number of Dominant Species 1 1: Salt Rasiandra 10% Yes FACW That Are OBL, FACW, or FAC: 2 (A) 3: 10% Yes FACW Total Number of Dominant Species 1 (B) 1: Prevalence Index worksheet: No FAC Prevalence Index worksheet: 4 (B) 2: 10% Yes No FAC Prevalence Index worksheet: 4 (B) 3: 10% Yes No FAC Prevalence Index worksheet: 4 B) 1 1 1	Are Vegetation ,Soil	, or Hydrology	significantly	disturbed? A	Are "Normal Circumstan	ices" present? Yes	X No
Hydrohytic Vegetation Present? Yes No X Is the Sampled Area within a Wetland? Water within a Wetland? Wetland Hydroky Present? Yes X No ithin a Wetland? Yes No X Precipitation prior to fieldwork: Remarka: No X No X No X Precipitation prior to fieldwork: Remarka: Both Management Area worksheet: No X Remarka: Batter Stratum (Plot size: 30'r) & Scover Species2 Status Number of Dominant Species 1. Salu (asiandra 10% Yes FACW That Are OBL, FACW, or FAC: 2 (A) 2.	Are Vegetation ,Soil	, or Hydrology	naturally pro	blematic? (If needed, explain any a	answers in Remarks.)	,
Hydric Soll Present? Yes X No Is the Sampled Area Water Wetland Hydrology Present? Yes Xo within a Wetland? Yes No X Perceptiation prior Ko X No Mainton No X Remark: Below CHWM of Minthom Creek: 2 feet downslope of P2 Dominant Indicator Number of Dominant Species Tree Stratum (Plot size: _00'r_) 26 Cover Species? Status Number of Dominant 1. Sake Assistance 10% Yes FACW That Are OBL, FACW, or FAC: 2 (A) 3.	SUMMARY OF FINDINGS - Attack	h site map sho	wing sampling	g point locat	ions, transects, ir	nportant feature	s, etc.
No within a Wetland? Yes No X Precipitation prior to fieldwork: Remarks: Below OHVWM of Minthom Creek: 2 feet downslope of P2 Yes No X Yes Socies? Status Dominance Test worksheet: Number of Dominant Species No X 1: Saki kasiandra 10% Yes FACW That Are OBL, FACW, or FAC: 2 (A) 2: Status 10% Yes FACW That Are OBL, FACW, or FAC: 2 (A) 3:	Hydrophytic Vegetation Present?	Yes	No X				
Maskahn Hydolagy Haskahn Tes K Ks Tes Ks Ks Ks Precipitation prior file	Hydric Soil Present?	Yes X	No	Is the Samp	led Area	Water	
Remarks: Boliow OHVMM of Minthom Creek; 2 feet downslope of P2 VEGETATION Tree Stratum (Plot size:30 r) Absolute Species? Status Dominant Species 1. Salk Jasiandra 10% Yes FACW Number of Dominant Species 3. 10% Yes FACW That Are OBL, FACW, or FAC: 2 (A) 3. 10% Yes FACW That Are OBL, FACW, or FAC: 2 (A) 3. 10% Yes NOL Percent of Dominant Species 4 (B) 3. 10% Yes NOL That Are OBL, FACW, or FAC: 502% (A/B) Provale surpresensus 40% Yes NOL That Are OBL, FACW, or FAC: 502% (A/B) 2. Rubus armeniacus 5% No FAC Provalence Index worksheet: Total Number of Dominant Species 3. 4	Wetland Hydrology Present?	Yes X	No	within a We	tland? Yes	No X	
Absolute Dominant Indicator Dominance Test worksheet: Tree Stratum (Plot size: _30'r_) % Cover Species? Status Number of Dominant Species 10% Yes FACW That Are OBL, FACW, or FAC: _2(A) 2. 10% Yes FACW That Are OBL, FACW, or FAC: _2(A) 3. 10% Yes FACW Total Number of Dominant Species 4. 10% = Total Cover Percent of Dominant Species 1. 10% = Total Cover Percent of Dominant Species 7. Puruus laurocerasus 40% Yes NOL 7. Rubus armeniacus 5% No FAC 8. 5% Yes FACU Prevalence Index worksheet: 1. 6. 10 x 2 20 FAC Species 10 x 2		nslope of P2					-
Tree Stratum (Plot size: _30'r_) % Cover Species? Status Number of Dominant Species 1. Saik/ Issiandra 10% Yes FACW That Are OBL, FACW, or FAC: _2(A) 2.	VEGETATION						
1. Salix lasiandra 10% Yes FACW That Are OBL, FACW, or FAC: 2 (A) 3. 10% Yes FACW That Are OBL, FACW, or FAC: 2 (A) 3. 10% Yes FACW Total Number of Dominant Species Across All Strata: 4 (B) 3. 10% Yes NOL That Are OBL, FACW, or FAC: 50% (AP) 2. 2. 10% * Total Cover Percent of Dominant Species (P) 1. Prunus laurocenasus 40% Yes NOL That Are OBL, FACW, or FAC: 50% (AP) 2. Rubus armeniacus 5% No FAC Fracture Index worksheet: Total % Cover of: Multipb by: 0 4.	Tree Stratum (Plot size: 20'r.)			_			
2 103 163 163 160 160 2 (N) 3. 10% 163 160 160 2 (N) 3. 10% = Total Cover Percent of Dominant Species 1. Prunus laurocerasus 40% Yes NOL Percent of Dominant Species 2. Rubus armeniacus 5% No FAC Percent of Dominant Species 3. 5% No FAC Percent of Dominant Species 10% 4. 5% No FAC Percent of Dominant Species 10% 2 1. Particle Stratum (Plot size: 5'r.) 10% X = 0 0 X = 200 1. Galium aparine 5% Yes FAC Percelence Index worksheet: 30 1. Galium aparine 5% Yes FAC Perceles 10 × 2 = 200 2. Solanum dulcamara 5% Yes FAC Prevalence Index = SA = 41.5 Hydrophytic Vegetation Indicators: 1 Rapid Test for Hydrophytic Vegetation 1 2 2 Dominance Test is >5% <td>,</td> <td></td> <td></td> <td></td> <td></td> <td>•</td> <td></td>	,					•	
3.	Salix lasialiula	10%	Yes	FACW	That Are OBL, FAC	<i>N</i> , or FAC: 2	(A)
4.							
Species Actions All Stratum (Plot size:10' r_) 1. Prunus laurocerasus 40% Yes NOL That Are OBL, FACW, or FAC: 50% (A/B) 2. Rubus ameniacus 5% No FAC Total % Cover of: Multiply by: 4.							
Sapling/Shrub Stratum (Plot size: 10'r) 1. Prunus laurocerasus 40% Yes NOL That Are OBL, FACW, or FAC: 50% (A/B) 2. Rubus armeniacus 5% No FAC Prevalence Index worksheet: 3.	ч. 		·		Species Across All S	Strata: 4	(B)
1. Prunus laurocerasus 40% Yes NOL That Are OBL, FACW, or FAC: 50% (A/B) 2. Rubus armeniacus 5% No FAC Total % Cover of: Multiply by: 3.	Sanling/Shrub Stratum (Plot size: 10		= Total Cover		Demonst of Deminen		
Province factor Press No FAC Prevalence Index worksheet: Total % Cover of. Multiply by: 4.	1					-	
3.							<u>∘</u> (A/B)
4.	Rubus armeniacus	5%	No	FAC			
5.							
Herb Stratum (Plot size: _5' r_) 45% = Total Cover FAC species 10 x 3 = 30 1. Galium aparine 5% Yes FACU UPL species 40 x 5 = 200 2. Solanum dulcamara 5% Yes FAC UPL species 40 x 5 = 200 3.					· · ·	<u> </u>	
Herb Stratum (Plot size: <u>5'r</u>) FACU FACU species 5 x 4 = 20 1. Galium aparine 5% Yes FACU UPL species 40 x 5 = 200 2. Solanum dulcamara 5% Yes FAC UPL species 40 x 5 = 200 3.	5		·		-	<u> </u>	
1. Galium aparine 5% Yes FACU UPL species 40 x 5 = 200 2. Solanum dulcamara 5% Yes FAC Column Totals: 65 (A) 270 (B) 3.		45%	= Total Cover		· · · · · · · · · · · · · · · · · · ·	<u> </u>	
2. Solanum dulcamara 5% Yes FAC Column Totals: 65 (A) 270 (B) 3.							20
3. Prevalence Index = B/A = 4.15 4. Hydrophytic Vegetation Indicators: 5. 1 - Rapid Test for Hydrophytic Vegetation 6. 2 - Dominance Test is >50% 7. 3 - Prevalence Index is <3.0 ¹ 8. 4 - Morphological Adaptations ¹ (Provide supporting 9. data in Remarks or on a separate sheet) 10. 5 - Wetland Non-Vascular Plants ¹ 11. Problematic Hydrophytic Vegetation ¹ (Explain) 11. 10% = Total Cover Woody Vine Stratum (Plot size: _10' r) 1. 2. 0% = Total Cover Hydrophytic Vegetation Yes No Vegetation Yes No Yesent? No	Callant apainte	5%		FACU			
4.		5%	Yes	FAC			
5.	3						<u>.15</u>
6.							
7.	5.						ation
8.	6.				2 - Dominance T	īest is >50%	
9.	7						
10. 5 - Wetland Non-Vascular Plants ¹ 11. Problematic Hydrophytic Vegetation ¹ (Explain) 11. 10% = Total Cover Woody Vine Stratum (Plot size: 10' r) 1. 1 2. 0% = Total Cover 0% = Total Cover Hydrophytic Vegetation Yes No X Present? Present?	8						
11.	9				data in Rema	arks or on a separate	sheet)
Woody Vine Stratum (Plot size: 10' r) 1. 1. 2. 0% = Total Cover 0% = Total Cover Hydrophytic Vegetation Yes No X 90% Present?	10		<u> </u>		5 - Wetland Non	-Vascular Plants ¹	
Woody Vine Stratum (Plot size: 10' r) be present. 1.	11				Problematic Hyd	drophytic Vegetation ¹	(Explain)
2. Hydrophytic 0% = Total Cover Vegetation % Bare Ground in Herb Stratum 90% Present?	Troody Tino Otratam		= Total Cover			soil and wetland hydr	ology must
0% = Total Cover Vegetation Yes No X % Bare Ground in Herb Stratum 90% Present?			- <u> </u>		Hydrophytic		
% Bare Ground in Herb Stratum 90% Present?		0%	= Total Cover			Yes No	x
	% Bare Ground in Herb Stratum 909				-		—
					 Entere	d by: KL OC by:	cmw

SOIL

<i>(</i> , , ,)				Redox Fe	aluies			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-5	10YR 3/1	100	_				SiCL	w/ rounded grav
5-11	10YR 4/1	85	10YR 5/8	10	С	М	SiCL	w/ rounded grav
			2.5YR 4/8	5	С	М		<u> </u>
11-20	10YR 4/1	100					SiCL	w/ rounded grav
	ntration D-Deple	ation RM-Re	educed Matrix CS=Cov	vered or Costed	Sand Grains	² Location:	PL=Pore Lining, M=I	Matrix
			Rs, unless otherwise				or Problematic Hyd	
Histosol (A1)			Sandy Redox (S	-			ick (A10)	
Histic Epiped			Stripped Matrix (,			ent Material (TF2)	
Black Histic (Loamy Mucky M		ent MI RA 1)		allow Dark Surface (TF12)
Hydrogen Su			Loamy Gleyed M				xplain in Remarks)	··· · - /
	low Dark Surface	(A11)	X Depleted Matrix					
Thick Dark S		、 /	Redox Dark Surl			³ Indicators o	f hydrophytic vegeta	ition and
	y Mineral (S1)		Depleted Dark S			wetland hy	drology must be pre	esent,
Sandy Gleye			Redox Depressi			-	turbed or problemation	
1								
-								
Type: N	None				н	udric Soil Pro	sant? Vas X	No
Depth (inches):	None N/A	- ; C = clay; L :	= loam or loamy; co =	coarse; f = fine;		ydric Soil Pre + = heavy (mc		
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Netland Hydrolo	None N/A S = sand; Si = silt Cogy Indicators:			coarse; f = fine;		+ = heavy (mo	ore clay); - = light (les	ss clay)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Wetland Hydrolo Primary Indicators	None N/A S = sand; Si = silt S gy Indicators: s (minimum of on		heck all that apply)		vf = very fine;	+ = heavy (mc	ore clay); - = light (les	ss clay)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrolo Primary Indicators Surface Wate	None N/A S = sand; Si = silt S gy Indicators: s (minimum of on er (A1)		heck all that apply)	eaves (B9) (exc	vf = very fine;	+ = heavy (mo	ore clay); - = light (les ndicators (2 or more tained Leaves (B9) (ss clay)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrolo Primary Indicators Surface Wate High Water T	None N/A S = sand; Si = silt f ogy Indicators: s (minimum of on er (A1) Fable (A2)		heck all that apply) Water-Stained L 1, 2, 4A, and	eaves (B9) (exc	vf = very fine;	+ = heavy (mo - <u>Secondary I</u> Water-S 4 A, a	ndicators (2 or more tained Leaves (B9) (nd 4B)	ss clay)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrolo Primary Indicators Surface Wate High Water T X Saturation (A	None N/A S = sand; Si = silt fogy Indicators: s (minimum of on er (A1) Table (A2) V3)		heck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11)	eaves (B9) (exc 4B)	vf = very fine;	+ = heavy (mc - <u>Secondary I</u> Water-S 4A, al	ndicators (2 or more tained Leaves (B9) (nd 4B) e Patterns (B10)	ss clay) <u>required)</u> (MLRA 1, 2,
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrolo Primary Indicators Surface Wate High Water T X Saturation (A Water Marks	None N/A S = sand; Si = silt fogy Indicators: s (minimum of on er (A1) Table (A2) (A3) (B1)		heck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb	eaves (B9) (exc 4B) rates (B13)	vf = very fine;	+ = heavy (mo <u>Secondary I</u> <u>Water-S</u> 4A, an Drainago Dry-Sea	ndicators (2 or more tained Leaves (B9) (nd 4B) e Patterns (B10) son Water Table (C2	<u>required)</u> (MLRA 1, 2, 2)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrolo Primary Indicators Surface Wate High Water T X Saturation (A Water Marks Sediment De	None N/A S = sand; Si = silt (pgy Indicators: s (minimum of on er (A1) Table (A2) (A3) (B1) eposits (B2)		heck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide	eaves (B9) (exc 4B) rates (B13) e Odor (C1)	vf = very fine;	+ = heavy (mo	ndicators (2 or more tained Leaves (B9) (nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial I	<u>required)</u> (MLRA 1, 2, 2)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrold Primary Indicators Surface Water High Water T X Saturation (A Water Marks Sediment De Drift Deposits	None N/A S = sand; Si = silt fogy Indicators: s (minimum of or er (A1) Table (A2) (A3) (B1) eposits (B2) s (B3)		theck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizos	eaves (B9) (exc 4B) rates (B13) e Odor (C1) pheres along Li	vf = very fine;	+ = heavy (mo - <u>Secondary I</u> Water-S 4A, a Drainage Dry-Sea Saturation) Geomor	ndicators (2 or more tained Leaves (B9) (nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2)	<u>required)</u> (MLRA 1, 2, 2)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrold Primary Indicators Surface Wate High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (None N/A S = sand; Si = silt f bgy Indicators: s (minimum of on er (A1) Fable (A2) A3) (B1) eposits (B2) s (B3) Crust (B4)		heck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizos Presence of Rec	eaves (B9) (exc 4B) rates (B13) e Odor (C1) pheres along Li duced Iron (C4)	vf = very fine; cept MLRA	+ = heavy (mo <u>Secondary I</u> Water-S 4A, a Drainage Dry-Sea Saturatio Geomor Shallow	ndicators (2 or more tained Leaves (B9) (nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3)	<u>required)</u> (MLRA 1, 2, 2)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrolo Primary Indicators Surface Water High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (Iron Deposits	None N/A S = sand; Si = silt () () () () () () () () () ()		heck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizos Presence of Rec Recent Iron Red	eaves (B9) (exc 4B) rates (B13) e Odor (C1) pheres along Li duced Iron (C4) luction in Tilled S	cept MLRA	+ = heavy (mo - <u>Secondary I</u> Water-S 4A, a Drainage Dry-Sea Saturatio Saturatio Shallow FAC-Ne	ndicators (2 or more tained Leaves (B9) (nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5)	<u>required)</u> (MLRA 1, 2, 2) magery (C9)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrold Primary Indicators Surface Wate High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (Iron Deposits Surface Soil	None N/A S = sand; Si = silt fogy Indicators: s (minimum of or er (A1) Table (A2) (A3) (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6)	e required; c	heck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizos Presence of Rec Recent Iron Red Stunted or Stres	eaves (B9) (exc 4B) rates (B13) e Odor (C1) pheres along Li duced Iron (C4) luction in Tilled s sed Plants (D1)	cept MLRA	+ = heavy (mo - <u>Secondary I</u> Water-S 4A, a Drainage Dry-Sea Saturatio Geomor Shallow FAC-Ne Raised /	ndicators (2 or more tained Leaves (B9) (nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LF	<u>required)</u> (MLRA 1, 2, 2) magery (C9)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrold Primary Indicators Surface Wate High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (Iron Deposits Surface Soil (Inundation Vi	None N/A S = sand; Si = silt f bgy Indicators: <u>s (minimum of on</u> er (A1) Fable (A2) A3) (B1) posits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) isible on Aerial In	e required; c	heck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizos Presence of Rec Recent Iron Red Stunted or Stres Other (Explain ir	eaves (B9) (exc 4B) rates (B13) e Odor (C1) pheres along Li duced Iron (C4) luction in Tilled s sed Plants (D1)	cept MLRA	+ = heavy (mo - <u>Secondary I</u> Water-S 4A, a Drainage Dry-Sea Saturatio Geomor Shallow FAC-Ne Raised /	ndicators (2 or more tained Leaves (B9) (nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5)	<u>required)</u> (MLRA 1, 2, 2) magery (C9)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrolo Primary Indicators Surface Water High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (Iron Deposits Surface Soil Inundation Vi Sparsely Veg	None N/A S = sand; Si = silt S =	e required; c	heck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizos Presence of Rec Recent Iron Red Stunted or Stres Other (Explain ir	eaves (B9) (exc 4B) rates (B13) e Odor (C1) pheres along Li duced Iron (C4) luction in Tilled s sed Plants (D1)	cept MLRA	+ = heavy (mo - <u>Secondary I</u> Water-S 4A, a Drainage Dry-Sea Saturatio Geomor Shallow FAC-Ne Raised /	ndicators (2 or more tained Leaves (B9) (nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LF	<u>required)</u> (MLRA 1, 2, 2) magery (C9)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrold Primary Indicators Surface Wate High Water T X Saturation (A Water Marks Sediment De Drift Deposits Sufface Soil Iron Deposits Surface Soil Inundation Vi Sparsely Veg	None N/A S = sand; Si = silt S = sand; Si = silt S = silt S = sand; Si = silt S = sand; Si = silt S =	e required; c nagery (B7) Surface (B8)	heck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizos Presence of Rec Recent Iron Red Stunted or Stres Other (Explain in	eaves (B9) (exc 4B) rates (B13) e Odor (C1) pheres along Li duced Iron (C4) luction in Tilled S sed Plants (D1) n Remarks)	cept MLRA	+ = heavy (mo - <u>Secondary I</u> Water-S 4A, a Drainage Dry-Sea Saturatio Geomor Shallow FAC-Ne Raised /	ndicators (2 or more tained Leaves (B9) (nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LF	<u>required)</u> (MLRA 1, 2, 2) magery (C9)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrolo Primary Indicators Surface Water High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (Iron Deposits Surface Soil (Inundation Vi Sparsely Veg Field Observatio Surface Water P	None N/A S = sand; Si = silt S	e required; c nagery (B7) Surface (B8)	heck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizos Presence of Rec Recent Iron Red Stunted or Stres Other (Explain in	eaves (B9) (exc 4B) rates (B13) e Odor (C1) pheres along Li duced Iron (C4) luction in Tilled S sed Plants (D1) n Remarks)	cept MLRA	+ = heavy (mo - <u>Secondary I</u> Water-S 4A, ai Dry-Sea Dry-Sea Saturation Shallow FAC-Ne Raised / Frost-Heal	ndicators (2 or more tained Leaves (B9) (nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LF eave Hummocks (D7	<u>required)</u> (MLRA 1, 2, 2) magery (C9) RR A)
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Wetland Hydrold Primary Indicators Surface Wate High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (Iron Deposits Surface Soil (Inundation Vi	None N/A S = sand; Si = silt f gy Indicators: s (minimum of or $er (A1)Table (A2)A3$) (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) isible on Aerial In $getated Concaveons:resent?$ Yes ent? Yes	e required; c nagery (B7) Surface (B8)	heck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizos Presence of Rec Recent Iron Red Stunted or Stres Other (Explain in No X E	eaves (B9) (exc 4B) rates (B13) e Odor (C1) pheres along Li duced Iron (C4) luction in Tilled S sed Plants (D1) n Remarks)	cept MLRA	+ = heavy (mo - <u>Secondary I</u> Water-S 4A, ai Dry-Sea Dry-Sea Saturation Shallow FAC-Ne Raised / Frost-Heal	ndicators (2 or more tained Leaves (B9) (nd 4B) e Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5) Ant Mounds (D6) (LF	<u>required)</u> (MLRA 1, 2, 2) magery (C9) RR A)

WETLAND DETERMI	NATION DATA	A FORM – West	ern Mounta	ains, Valleys and	Coast Region	
Project/Site: Harmony Road Townhomes		City/County:	Milwaukie / C	lackamas	Sampling Date: 10	/17/2017
Applicant/Owner: Cascadia Planning & Dev.	Srvcs/Old Time In	vestments, Inc.		State: OR	Sampling Poin	it: P7
Investigator(s): C. Mirth Walker, Tom Dee		Section, T	ownship, Rang	e: 31D, T1S, R2E, TL	2200	
Landform (hillslope, terrace, etc.): Toeslope			Local relief	(concave, convex, none):	convex Slop	e (%): 2
Subregion (LRR): A, Northwest Forests and	Coast	Lat:	Lon	g:	Datum:	· · · ·
Soil Map Unit Name: Wapato silty cla			_		classification: None	
Are climatic / hydrologic conditions on the site		e of year?	Ye		(If no, explain	in Remarks)
Are Vegetation ,Soil	, or Hydrology	significantly	disturbed? A	Are "Normal Circumsta	inces" present? Ye	es X No
Are Vegetation ,Soil	, or Hydrology			If needed, explain any	answers in Remarks	6.)
SUMMARY OF FINDINGS - Attach	site map sho	wing sampling	point locat	ions, transects, i	important featur	res, etc.
Hydrophytic Vegetation Present?	Yes	No X				
Hydric Soil Present?	Yes	No X	Is the Samp	led Area W	ater	
Wetland Hydrology Present?	Yes	No X	within a We	tland? Yes	No X	
Precipitation prior to fieldwork:						
Remarks:						
Upslope of P6 to West.						
VEGETATION						
	Absolute	Dominant	Indicator	Dominance Test w	vorksheet:	
Tree Stratum (Plot size: <u>30' r</u>)	% Cover	Species?	Status	Number of Domina		
1. Alnus rubra	10%	Yes	FAC	That Are OBL, FAC		2 (A)
2.						(
3.				Total Number of Do	ominant	
4.				Species Across All		5 (B)
	10%	= Total Cover				<u> </u>
Sapling/Shrub Stratum (Plot size:10'				Percent of Dominar	nt Species	
1		Var	NO) <u>%</u> (A/B)
	40%	Yes	NOL	That Are OBL, FAC		<u>)%</u> (A/B)
 Rubus armeniacus 3. 	10%	Yes	FAC	Prevalence Index Total % Cover		
4.				OBL species		
5.				FACW species	<u> </u>	0
5.				· · _	0 x 2 =	0
Herb Stratum (Plot size:_5' r_)	50%	= Total Cover			<u>20</u> x 3 =	60
					20 x 4 =	80
1. <u>Hedera helix</u>		Yes	FACU		$40 \times 5 =$	200 (D)
2. Polystichum munitum	5%	Yes	FACU		80 (A)	340 (B)
3.		· · · · · · · · · · · · · · · · · · ·		Prevalence Inde		<u>4.25</u>
4.				Hydrophytic Vege		
5.					for Hydrophytic Vege	etation
6.				2 - Dominance		
7				3 - Prevalence		
8					cal Adaptations ¹ (Pro	
9				data in Rem	arks or on a separat	e sheet)
10				5 - Wetland No	n-Vascular Plants ¹	
11				Problematic Hy	drophytic Vegetation	¹ (Explain)
	20%	= Total Cover		¹ Indicators of hydric	c soil and wetland hy	drology must
Woody Vine Stratum (Plot size: <u>10</u>	<u>r)</u>			be present.		
1.						
2		- Total Course		Hydrophytic Vegetation	Yes No	x
0/ Para Cround in Llark Chatura		= Total Cover		Present?		<u>^</u>
% Bare Ground in Herb Stratum 80%)					
Remarks:				Entere	ed by: <u>KL</u> QC b	y: cmw

SOIL

Depth	Matrix				Redox F	eatures		-	
(inches) Color	(moist) %	<u>6</u> (Color (moi:	st)	%	Type ¹	Loc ²	Texture	Remarks
0-11 10YI	R 4/2 10	00						SiL	w/ 5" rounded
									river rock
11-18 10Y	R 5/3 10	00						SiL	
Type: C=Concentration,	D=Depletion, R	M=Reduced	Matrix CS	S=Cover	red or Coate	ed Sand Grains.	² Location:	PL=Pore Lining, M=N	latrix.
Hydric Soil Indicators: (Applicable to al	l LRRs, un	less othe	rwise no	oted.)		Indicators	for Problematic Hydr	ic Soils ³ :
Histosol (A1)		5	Sandy Rec	dox (S5))		2 cm M	uck (A10)	
Histic Epipedon (A2)			Stripped M	latrix (Se	6)		Red Pa	rent Material (TF2)	
Black Histic (A3)		l	oamy Mu	cky Min	eral (F1) (ex	(cept MLRA 1)	Very Sh	allow Dark Surface (T	F12)
Hydrogen Sulfide (A4	ł)	l	oamy Gle	eyed Ma	trix (F2)		Other (I	Explain in Remarks)	
Depleted Below Dark	Surface (A11)	[Depleted N	/latrix (F	-3)				
Thick Dark Surface (A	412)	F	Redox Dar	k Surfac	ce (F6)		³ Indicators	of hydrophytic vegetati	ion and
Sandy Mucky Minera	l (S1)	[Depleted D	Dark Sur	rface (F7)		wetland h	ydrology must be pres	ent,
Sandy Gleyed Matrix	(S4)	F	Redox Dep	pression	ns (F8)		unless dis	turbed or problematic	
	N/A ; Si = silt; C = cla	ay; L = loam	or loamy;	co = co	parse; f = fine		lydric Soil Pre ; + = heavy (m	esent? Yes ore clay); - = light (less	No X
Depth (inches): Remarks: S = sand	; Si = silt; C = cla	ay; L = loam	or loamy;	- co = co	parse; f = fine		•		
Depth (inches): Remarks: S = sand HYDROLOGY Wetland Hydrology Indi	; Si = silt; C = cla cators:	-			parse; f = fine		; + = heavy (m	ore clay); - = light (less	s clay)
Depth (inches): Remarks: S = sand	; Si = silt; C = cla cators:	ed; check a	Il that app	ly)		e; vf = very fine	; + = heavy (m <u>Secondary</u>	ore clay); - = light (less	s clay) equired)
Depth (inches): Remarks: S = sand HYDROLOGY Metland Hydrology Indi Primary Indicators (minim Surface Water (A1)	; Si = silt; C = cla cators: um of one requir	ed; check a	II that app Water-Stai	ly) ned Lea	aves (B9) (e		; + = heavy (m <u>Secondary</u> Water-S	ore clay); - = light (less Indicators (2 or more r Stained Leaves (B9) (N	s clay) equired)
Depth (inches): Remarks: S = sand HYDROLOGY Netland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2)	; Si = silt; C = cla cators: um of one requir	ed; check a	Il that app	ly) ned Lea	aves (B9) (e	e; vf = very fine	; + = heavy (m <u>Secondary</u> Water-S	ore clay); - = light (less	s clay) equired)
Depth (inches): Remarks: S = sand HYDROLOGY Wetland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2 Saturation (A3)	; Si = silt; C = cla cators: um of one requir	<u>ed; check a</u>	II that app Vater-Stai 1, 2, 4A Salt Crust	l <u>y)</u> ned Lea , and 4E (B11)	aves (B9) (e : B)	e; vf = very fine	- ; + = heavy (m <u>Secondary</u> Water-S A, a Drainag	Indicators (2 or more r Stained Leaves (B9) (N and 4B) Patterns (B10)	equired) //LRA 1, 2,
Depth (inches): Remarks: S = sand HYDROLOGY Wetland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1)	; Si = silt; C = cla cators: um of one requir 2)	<u>ed; check a</u>	II that app Water-Stai 1, 2, 4A Salt Crust Aquatic Inv	ly) ned Lea , and 4E (B11) vertebra	aves (B9) (e : B) ates (B13)	e; vf = very fine		Indicators (2 or more r Stained Leaves (B9) (N ason Water Table (C2)	equired) //LRA 1, 2,
Depth (inches): Remarks: S = sand HYDROLOGY Vetland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B	; Si = silt; C = cla cators: um of one requir 2)	ed; check a	II that app Water-Stai 1, 2, 4A Salt Crust Aquatic Inv Hydrogen	ly) ned Lea , and 4E (B11) /ertebra Sulfide (aves (B9) (e ; B) utes (B13) Odor (C1)	e; vf = very fine	- <u>Secondary</u> - <u>Secondary</u> Water-S 4A, a Drainag Dry-Sea Saturati	Indicators (2 or more r Stained Leaves (B9) (N ason Water Table (C2) on Visible on Aerial In	equired) //LRA 1, 2,
Depth (inches): Remarks: S = sand HYDROLOGY Wetland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B Drift Deposits (B3)	; Si = silt; C = cla cators: um of one requir 2) 32)	ed; check a	II that app Vater-Stai 1, 2, 4A Salt Crust Aquatic Inv Hydrogen S Dxidized R	ly) ned Lea , and 4E (B11) vertebra Sulfide (Rhizosph	aves (B9) (e : B) Ites (B13) Odor (C1) heres along l	e; vf = very fine xcept MLRA Living Roots (C	Secondary Water-S Uater-S Uater-S Uater-S Uater-S Uater-S Uater-S Uater-S Uater-S Saturation	ore clay); - = light (less Indicators (2 or more r Stained Leaves (B9) (N Ind 4B) Ie Patterns (B10) ason Water Table (C2) on Visible on Aerial In rphic Position (D2)	equired) //LRA 1, 2,
Depth (inches): Remarks: S = sand HYDROLOGY Metland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B	; Si = silt; C = cla cators: um of one requir 2) 32)	<u>ed; check a</u>	II that app Water-Stai 1, 2, 4A Salt Crust Aquatic Inv Hydrogen Dxidized R Presence o	ly) ned Lea , and 4E (B11) /ertebra Sulfide (Rhizosph of Reduc	aves (B9) (e : B) Odor (C1) neres along l ced Iron (C4	e; vf = very fine xcept MLRA Living Roots (C	Secondary <u>Secondary</u> Water-S 4A, a Drainag Dry-Sea Saturati 3) Geomo Shallow	ore clay); - = light (less Indicators (2 or more r Stained Leaves (B9) (N Ind 4B) Be Patterns (B10) ason Water Table (C2) on Visible on Aerial Im rphic Position (D2)	equired) //LRA 1, 2,
Depth (inches): Remarks: S = sand HYDROLOGY Wetland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B Iron Deposits (B5)	; Si = silt; C = cla cators: um of one requir 2) 32) 4)	ed; check a	II that app Water-Stai 1, 2, 4A Salt Crust Aquatic Inv Hydrogen S Dxidized R Presence of Recent Iron	ly) ned Lea , and 4E (B11) vertebra Sulfide (Rhizosph of Reduc n Reduc	aves (B9) (e : B) Odor (C1) neres along l ced Iron (C4 ction in Tilled	tiving Roots (C b) d Soils (C6)	- <u>Secondary</u> Water-S 4A, a Drainag Dry-Sea Saturati 3) Geomo Shallow FAC-Ne	Indicators (2 or more r Stained Leaves (B9) (N ason Water Table (C2) on Visible on Aerial In rphic Position (D2) r Aquitard (D3) eutral Test (D5)	equired) //LRA 1, 2, //nagery (C9)
Depth (inches): Remarks: S = sand HYDROLOGY Vetland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B Drift Deposits (B3) Algal Mat or Crust (B Iron Deposits (B5) Surface Soil Cracks (; Si = silt; C = cla cators: um of one requir 2) 32) 4) B6)	red; check a	II that app Water-Stai 1, 2, 4A Salt Crust Aquatic Inv Hydrogen Dxidized R Presence of Recent Iron Stunted or	IV) ned Lea , and 4E (B11) /ertebra Sulfide (Rhizosph of Reduc n Reduc Stresse	aves (B9) (e: B) Odor (C1) neres along l ced Iron (C4 ction in Tilled ed Plants (D ⁻	tiving Roots (C b) d Soils (C6)	- <u>Secondary</u> - <u>Secondary</u> Water-S 4A, a Drainag Dry-Sea Saturati 3) Geomo Shallow FAC-Ne Raised	ore clay); - = light (less Indicators (2 or more r Stained Leaves (B9) (N and 4B) ason Water Table (C2) on Visible on Aerial In rphic Position (D2) Aquitard (D3) sutral Test (D5) Ant Mounds (D6) (LRI	equired) //LRA 1, 2, //nagery (C9)
Depth (inches): Remarks: S = sand HYDROLOGY Vetland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B Iron Deposits (B5) Surface Soil Cracks (Inundation Visible on	; Si = silt; C = cla cators: um of one requir 2) 32) 4) B6) Aerial Imagery (ed; check a	II that app Water-Stai 1, 2, 4A Salt Crust Aquatic Inv Hydrogen S Dxidized R Presence of Recent Iron	IV) ned Lea , and 4E (B11) /ertebra Sulfide (Rhizosph of Reduc n Reduc Stresse	aves (B9) (e: B) Odor (C1) neres along l ced Iron (C4 ction in Tilled ed Plants (D ⁻	tiving Roots (C b) d Soils (C6)	- <u>Secondary</u> - <u>Secondary</u> Water-S 4A, a Drainag Dry-Sea Saturati 3) Geomo Shallow FAC-Ne Raised	Indicators (2 or more r Stained Leaves (B9) (N ason Water Table (C2) on Visible on Aerial In rphic Position (D2) r Aquitard (D3) eutral Test (D5)	equired) //LRA 1, 2, //nagery (C9)
Depth (inches): Remarks: S = sand TYDROLOGY Vetland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B Iron Deposits (B5) Surface Soil Cracks (Inundation Visible on Sparsely Vegetated (; Si = silt; C = cla cators: um of one requir 2) 32) 4) B6) Aerial Imagery (ed; check a	II that app Water-Stai 1, 2, 4A Salt Crust Aquatic Inv Hydrogen Dxidized R Presence of Recent Iron Stunted or	IV) ned Lea , and 4E (B11) /ertebra Sulfide (Rhizosph of Reduc n Reduc Stresse	aves (B9) (e: B) Odor (C1) neres along l ced Iron (C4 ction in Tilled ed Plants (D ⁻	tiving Roots (C b) d Soils (C6)	- <u>Secondary</u> - <u>Secondary</u> Water-S 4A, a Drainag Dry-Sea Saturati 3) Geomo Shallow FAC-Ne Raised	ore clay); - = light (less Indicators (2 or more r Stained Leaves (B9) (N and 4B) ason Water Table (C2) on Visible on Aerial In rphic Position (D2) Aquitard (D3) sutral Test (D5) Ant Mounds (D6) (LRI	equired) //LRA 1, 2, //nagery (C9)
Depth (inches): Remarks: S = sand HYDROLOGY Wetland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B Iron Deposits (B5) Surface Soil Cracks (Inundation Visible on Sparsely Vegetated (Field Observations:	; Si = silt; C = cla cators: um of one requir 2) 32) 4) B6) Aerial Imagery (Concave Surface	ed; check a	II that app Water-Stai 1, 2, 4A Salt Crust Aquatic Inv Hydrogen Dxidized R Presence of Recent Iron Stunted or	IV) ned Lea , and 4E (B11) /ertebra Sulfide (Rhizosph of Reduc n Reduc Stresse	aves (B9) (e: B) Odor (C1) neres along l ced Iron (C4 ction in Tilled ed Plants (D ⁻	tiving Roots (C b) d Soils (C6)	- <u>Secondary</u> - <u>Secondary</u> Water-S 4A, a Drainag Dry-Sea Saturati 3) Geomo Shallow FAC-Ne Raised	ore clay); - = light (less Indicators (2 or more r Stained Leaves (B9) (N and 4B) ason Water Table (C2) on Visible on Aerial In rphic Position (D2) Aquitard (D3) sutral Test (D5) Ant Mounds (D6) (LRI	equired) //LRA 1, 2, //nagery (C9)
Depth (inches): Remarks: S = sand HYDROLOGY Netland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B Iron Deposits (B5) Surface Soil Cracks (Inundation Visible on Sparsely Vegetated (Field Observations: Surface Water Present?	; Si = silt; C = cla cators: um of one requir 2) 32) 4) B6) Aerial Imagery (Concave Surface Yes	ed; check a 	II that app Water-Stai 1, 2, 4A Salt Crust Aquatic Inv Hydrogen Dxidized R Presence of Recent Iron Stunted or	ly) ned Lea , and 4E (B11) /ertebra Sulfide (Rhizosph of Reduc n Reduc Stresse olain in F	aves (B9) (e: B) Odor (C1) neres along l ced Iron (C4 ction in Tilled ed Plants (D ⁻	Living Roots (C b) d Soils (C6) 1) (LRR A)	- <u>Secondary</u> - <u>Secondary</u> Water-S 4A, a Drainag Dry-Sea Saturati 3) Geomo Shallow FAC-Ne Raised	ore clay); - = light (less Indicators (2 or more r Stained Leaves (B9) (N and 4B) ason Water Table (C2) on Visible on Aerial In rphic Position (D2) Aquitard (D3) sutral Test (D5) Ant Mounds (D6) (LRI	equired) //LRA 1, 2, //nagery (C9)
Depth (inches): Remarks: S = sand HYDROLOGY Wetland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B1) Sediment Deposits (B3) Algal Mat or Crust (B Iron Deposits (B5) Surface Soil Cracks (Inundation Visible on	; Si = silt; C = cla cators: <u>um of one requir</u> 2) 32) 4) B6) Aerial Imagery (Concave Surface	ed; check a 	II that app Water-Stai 1, 2, 4A Salt Crust Aquatic Inv Hydrogen S Dxidized R Presence of Recent Iron Stunted or Dther (Exp X	ly) ned Lea , and 4E (B11) vertebra Sulfide (Shizosph of Reduc n Reduc Stresse plain in F	aves (B9) (e B) Odor (C1) neres along l ced Iron (C4 ction in Tilled ed Plants (D ⁻ Remarks)	Living Roots (C b) d Soils (C6) 1) (LRR A)	- <u>Secondary</u> - <u>Secondary</u> Water-S 4A, a Dry-Sea Dry-Sea Saturati 3) Geomo Shallow FAC-Ne Raised Frost-H	Indicators (2 or more r Stained Leaves (B9) (N and 4B) Pe Patterns (B10) ason Water Table (C2) on Visible on Aerial In rphic Position (D2) Aquitard (D3) Butral Test (D5) Ant Mounds (D6) (LRI eave Hummocks (D7)	equired) ////////////////////////////////////
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Depth (inches): Remarks: S = sand HYDROLOGY Wetland Hydrology Indi Primary Indicators (minim Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B Iron Deposits (B3) Algal Mat or Crust (B Iron Deposits (B5) Surface Soil Cracks (Inundation Visible on Sparsely Vegetated O Field Observations: Surface Water Present? Water Table Present? Saturation Present?	; Si = silt; C = cla cators: um of one requir 2) 32) 4) B6) Aerial Imagery (Concave Surface Yes Yes Yes Yes	ed; check a 	Il that app Water-Stai 1, 2, 4A Salt Crust Aquatic Inv Hydrogen S Dxidized R Presence of Recent Iron Stunted or Dther (Exp X X X X	IV) ned Lea , and 4E (B11) /ertebra Sulfide (Rhizosph of Reduc n Reduc Stresse olain in R olain in R	aves (B9) (e: B) Odor (C1) neres along I ced Iron (C4 ction in Tillec ed Plants (D Remarks) pth (inches): pth (inches):	Living Roots (C b) d Soils (C6) 1) (LRR A)	- <u>Secondary</u> - <u>Secondary</u> - <u>Water-S</u> 4A, a Drainag Dry-Sea - Dry-Sea - Saturati 3) Geomo - Shallow - FAC-Ne Raised - Frost-H Wetlan	Indicators (2 or more r Stained Leaves (B9) (N and 4B) Pe Patterns (B10) ason Water Table (C2) on Visible on Aerial In rphic Position (D2) Aquitard (D3) Butral Test (D5) Ant Mounds (D6) (LRI eave Hummocks (D7)	required) //ILRA 1, 2, // hagery (C9) R A)

WETLAND DETERMIN	IATION DAT	A FORM – West	ern Mounta	ains, Valleys and	Coast Region	
Project/Site: Harmony Road Townhomes		City/County:	Milwaukie / C	lackamas	Sampling Date: 12/5	5/2017
Applicant/Owner: Cascadia Planning & Dev. S	Srvcs/Old Time In	vestments, Inc.		State: OR	Sampling Point:	P8
Investigator(s): C. Mirth Walker, Tom Dee		Section, T	ownship, Rang	e: 31D, T1S, R2E, TL	2200	
Landform (hillslope, terrace, etc.): terrace				(concave, convex, none):		(%): 3
Subregion (LRR): A, Northwest Forests and C	oast	Lat:	_ Lon	g:	Datum: NAI	
Soil Map Unit Name: Wapato silty clay		· · · · · · · · · · · · · · · · · · ·	_	- <u> </u>	classification: None	
Are climatic / hydrologic conditions on the site t		e of year?	Ye		(If no, explain ir	n Remarks)
Are Vegetation ,Soil	, or Hydrology	significantly of	disturbed? A	Are "Normal Circumstar		
Are Vegetation ,Soil	, or Hydrology			If needed, explain any	answers in Remarks.)
SUMMARY OF FINDINGS - Attach	site map sho	wing sampling	point locat	ions, transects, i	mportant feature	es, etc.
Hydrophytic Vegetation Present?	Yes	No X				
Hydric Soil Present?	Yes X	No	Is the Samp	led Area		
Wetland Hydrology Present?	Yes	No X	within a We	tland? Yes	No X	_
Precipitation prior to fieldwork: 3.48 inches	2 weeks prior (P	ortland); 1.94" abov	e normal WYT	D; 11.73" above norma	al CYTD.	
Remarks:						
Central north sewer easement.						
VEGETATION						
	Absolute	Dominant	Indicator	Dominance Test w	orksheet:	
Tree Stratum (Plot size: <u>30' r</u>)	<u>% Cover</u>	Species?	<u>Status</u>	Number of Dominar		
1. Populus balsamifera	60%	Yes	FAC	That Are OBL, FAC		(A)
2.				···· · · · , · ·	,	()
3.	-	· · · · · · · · · · · · · · · · · · ·		Total Number of Do	minant	
4.		·		Species Across All		(B)
	60%	= Total Cover			<u> </u>	(D)
Sapling/Shrub Stratum (Plot size:10' r				Percent of Dominan	nt Species	
1. Fraxinus latifolia	20%	Yes	FACW	That Are OBL, FAC		<u>⁄</u> (A/B)
2. Prunus laurocerasus	10%	Yes	NOL	Prevalence Index	,	- (A/D)
2	<u></u>	No	FAC	Total % Cover		
 Crataegus monogyna Corylus cornuta 	2%	<u> </u>	FAC	OBL species	$0 \times 1 =$	0
5. Ilex aquifolium	2%	·	FACU		$\frac{0}{25} \times 2 =$	50
	_	No Total Cavar + 2			71 x 3 =	
Herb Stratum (Plot size: <u>5' r</u>)	39%	= Total Cover + 2 =	41%		$71 \times 3 =$	213 416
<u> </u>	05%	N	FAOL	· · · · · · · · · · · · · · · · · · ·		
	95%	Yes	FACU		<u> </u>	50 (B)
	5%	<u>No</u>	FACW	Prevalence Inde		729 (B) .47
3. Equisetum arvense	1%	No	FAC			.41
4 5		·		Hydrophytic Veget	or Hydrophytic Vegeta	ation
		·		2 - Dominance		allon
6.		·				
7		·		3 - Prevalence I		
8.		·			al Adaptations ¹ (Provi	
9.					arks or on a separate	sheet)
10		·			n-Vascular Plants ¹	
11					drophytic Vegetation ¹	
Woody Vine Stratum (Plot size: <u>10' r</u>		= Total Cover		-	soil and wetland hyd	rology must
) 5%	Yes	FACU	be present.		
 Rubus ursinus Rubus armeniacus 	5%	Yes	FACO	Hydrophytic		
	10%	= Total Cover		Vegetation	Yes No	x
% Bare Ground in Herb Stratum 0%				Present?		
Remarks:				Entoro	d by: KL QC by:	cmw
Sapling/Shrub Stratum also has 1% each Thuja	a <i>plicata</i> (FAC) a	nd <i>Cornus alba</i> (FA	CW)	LINGIC		

SOIL

	Matri	^		Redox F	eatures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remark
0-4	10YR 3/2	100	-				SiL	_
4-14+	10YR 4/1	98	10YR 4/6	2	С	М	gr SiL	and rounded
								cobbles
			-					_
								_
			-					_
ype: C=Concer	ntration, D=Deplet	ion, RM=Re	duced Matrix CS=C	overed or Coate	d Sand Grains.	² Location:	PL=Pore Lining, M=I	Matrix.
ydric Soil Indic	ators: (Applicabl	e to all LRR	s, unless otherwi	se noted.)		Indicators for	or Problematic Hyd	dric Soils ³ :
Histosol (A1)			Sandy Redox	(S5)		2 cm Mu	ck (A10)	
Histic Epiped	on (A2)		Stripped Matri	x (S6)			ent Material (TF2)	
Black Histic (A3)		Loamy Mucky	Mineral (F1) (ex	cept MLRA 1)	Very Sha	allow Dark Surface (TF12)
Hydrogen Su			Loamy Gleyed				xplain in Remarks)	-
	ow Dark Surface (A11)	X Depleted Mati				. ,	
Thick Dark Su	urface (A12)		Redox Dark S	urface (F6)		³ Indicators of	f hydrophytic vegeta	ation and
Sandy Mucky	/ Mineral (S1)		Depleted Dark	Surface (F7)		wetland hy	drology must be pre	esent,
Sandy Gleyed	d Matrix (S4)		Redox Depres	sions (F8)		unless dist	urbed or problemation	c.
Type: <u>N</u> Depth (inches):	lone N/A	C = clay; L =	loam or loamy; co	= coarse; f = fine		ydric Soil Pres + = heavy (mo	sent? Yes X re clay); - = light (les	
Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrolo	N/A S = sand; Si = silt; y pgy Indicators:			= coarse; f = fine		•		
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrolo	N/A S = sand; Si = silt; y pgy Indicators:		neck all that apply)		e; vf = very fine;	+ = heavy (mo	re clay); - = light (les	ss clay)
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrolo	N/A S = sand; Si = silt; Pagy Indicators: s (minimum of one		neck all that apply)	= coarse; f = fine	e; vf = very fine;	+ = heavy (mo	re clay); - = light (les	ss clay)
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrolo rimary Indicators	N/A N/A s = sand; Si = silt; y pgy Indicators: s (minimum of one er (A1)		neck all that apply) Water-Stained 1, 2, 4A, ar	l Leaves (B9) (ex d 4B)	e; vf = very fine;	+ = heavy (mo _ <u>Secondary Ir</u> Water-St 4A, ar	re clay); - = light (les ndicators (2 or more ained Leaves (B9) (nd 4B)	ss clay)
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrolo rimary Indicators Surface Water High Water T Saturation (A	N/A N/A S = sand; Si = silt; pgy Indicators: s (minimum of one er (A1) Table (A2) 3)		neck all that apply)	l Leaves (B9) (ex d 4B)	e; vf = very fine;	+ = heavy (mo - <u>Secondary Ir</u> Water-St 4A, ar Drainage	re clay); - = light (les ndicators (2 or more ained Leaves (B9) (nd 4B) e Patterns (B10)	ss clay) <u>required)</u> (MLRA 1, 2,
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY Vetland Hydrolo rimary Indicators Surface Wate High Water T Saturation (A Water Marks	N/A N/A S = sand; Si = silt; y y y y y y y y y y y y		heck all that apply) Water-Stained 1, 2, 4A, ar Salt Crust (B1 Aquatic Invert	I Leaves (B9) (ex I d 4B) 1) ebrates (B13)	e; vf = very fine;	+ = heavy (mo <u>Secondary Ir</u> <u>Water-St</u> 4A, ar Drainage Dry-Seas	re clay); - = light (les ndicators (2 or more rained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2	
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrolo rimary Indicators 	N/A N/A S = sand; Si = silt; pgy Indicators: s (minimum of one er (A1) Table (A2) 3) (B1) posits (B2)		Mater-Stained Water-Stained 1, 2, 4A, ar Salt Crust (B1 Aquatic Invert Hydrogen Sul	I Leaves (B9) (ex I d 4B) 1) ebrates (B13) fide Odor (C1)	e; vf = very fine;	+ = heavy (mo _ <u>Secondary Ir</u> Water-St Uater-St Drainage Dry-Seas Saturatic	re clay); - = light (les <u>adicators (2 or more</u> ained Leaves (B9) (ad 4B) P Patterns (B10) son Water Table (C2 on Visible on Aerial I	
Type: <u>N</u> Depth (inches): Temarks: S TYDROLOGY Vetland Hydrolo rimary Indicators Surface Water High Water T Saturation (A Water Marks Sediment Dep Drift Deposits	N/A N/A S = sand; Si = silt; Pagy Indicators: s (minimum of one er (A1) Table (A2) 3) (B1) posits (B2) s (B3)		heck all that apply) Water-Stained 1, 2, 4A, ar Salt Crust (B1 Aquatic Invert Hydrogen Sul Oxidized Rhiz	l Leaves (B9) (ex Id 4B) 1) ebrates (B13) fide Odor (C1) ospheres along L	e; vf = very fine; ccept MLRA	+ = heavy (mo - <u>Secondary Ir</u> Water-St 4A, ar Drainage Dry-Seas Saturatic 3) Geomore	re clay); - = light (les ndicators (2 or more rained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2)	<u>required)</u> (MLRA 1, 2,
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrolo rimary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment Dep Drift Deposits Algal Mat or (N/A N/A S = sand; Si = silt; pgy Indicators: s (minimum of one er (A1) Table (A2) 3) (B1) posits (B2) s (B3) Crust (B4)		heck all that apply) Water-Stained 1, 2, 4A, ar Salt Crust (B1 Aquatic Invert Hydrogen Sul Oxidized Rhiz Presence of F	I Leaves (B9) (ex I d 4B) 1) ebrates (B13) fide Odor (C1) ospheres along L educed Iron (C4)	e; vf = very fine; ccept MLRA _iving Roots (C3	+ = heavy (mo - <u>Secondary Ir</u> Water-St 4A, ar Drainage Dry-Seas Saturatic 3) Geomorp Shallow	re clay); - = light (les ndicators (2 or more rained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3)	<u>required)</u> (MLRA 1, 2,
Type: <u>N</u> Depth (inches): Remarks: S IYDROLOGY Vetland Hydrolo Vetland Hydrolo Vetland Hydrolo Trimary Indicators Surface Water High Water T Saturation (A Water Marks Sediment Dep Drift Deposits Algal Mat or C Iron Deposits			Meck all that apply) Water-Stained 1, 2, 4A, ar Salt Crust (B1 Aquatic Invert Hydrogen Sul Oxidized Rhiz Presence of F Recent Iron R	I Leaves (B9) (ex Id 4B) 1) ebrates (B13) fide Odor (C1) ospheres along L educed Iron (C4) eduction in Tilled	e; vf = very fine; ccept MLRA _iving Roots (C3) d Soils (C6)	+ = heavy (mo - <u>Secondary Ir</u> Water-St 4A, ar Drainage Dry-Seas Saturatic Saturatic Shallow FAC-Net	re clay); - = light (les <u>ndicators (2 or more</u> ained Leaves (B9) (nd 4B) P Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5)	<u>required)</u> (MLRA 1, 2, 2) magery (C9)
Type: <u>N</u> Depth (inches): Remarks: S TYDROLOGY Vetland Hydrolo Primary Indicators Surface Water High Water T Saturation (A Water Marks Sediment Dep Drift Deposits Algal Mat or (Iron Deposits Surface Soil (N/A S = sand; Si = silt; r	e required; ch	Mater-Stained Water-Stained 1, 2, 4A, ar Salt Crust (B1 Aquatic Invert Hydrogen Sul Oxidized Rhiz Presence of R Recent Iron R Stunted or Str	I Leaves (B9) (ex id 4B) 1) ebrates (B13) fide Odor (C1) ospheres along L educed Iron (C4) eduction in Tilled essed Plants (D1	e; vf = very fine; ccept MLRA _iving Roots (C3) d Soils (C6)	+ = heavy (mo - <u>Secondary Ir</u> Water-St 4A, ar Drainage Dry-Seas Saturatic Saturatic Shallow FAC-Net Raised A	re clay); - = light (les ndicators (2 or more rained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5) on Mounds (D6) (LF	<u>required)</u> (MLRA 1, 2, 2) magery (C9)
Type: <u>N</u> Depth (inches): emarks: S YDROLOGY Vetland Hydrolo rimary Indicators Surface Water High Water T Saturation (A Water Marks Sediment Dep Drift Deposits Algal Mat or (Iron Deposits Surface Soil (Inundation Vi	N/A N/A S = sand; Si = silt; pgy Indicators: s (minimum of one s (A1) Table (A2) 3) (B1) posits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) sible on Aerial Image	e required; ch	Meck all that apply) Water-Stained 1, 2, 4A, ar Salt Crust (B1 Aquatic Invert Hydrogen Sul Oxidized Rhiz Presence of F Recent Iron R	I Leaves (B9) (ex id 4B) 1) ebrates (B13) fide Odor (C1) ospheres along L educed Iron (C4) eduction in Tilled essed Plants (D1	e; vf = very fine; ccept MLRA _iving Roots (C3) d Soils (C6)	+ = heavy (mo - <u>Secondary Ir</u> Water-St 4A, ar Drainage Dry-Seas Saturatic Saturatic Shallow FAC-Net Raised A	re clay); - = light (les <u>ndicators (2 or more</u> ained Leaves (B9) (nd 4B) P Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5)	<u>required)</u> (MLRA 1, 2, 2) magery (C9)
Type: <u>N</u> Depth (inches): emarks: S IYDROLOGY /etland Hydrolo rimary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment Dep Drift Deposits Algal Mat or (Iron Deposits Surface Soil (Inundation Vi	N/A S = sand; Si = silt; r	e required; ch	Mater-Stained Water-Stained 1, 2, 4A, ar Salt Crust (B1 Aquatic Invert Hydrogen Sul Oxidized Rhiz Presence of R Recent Iron R Stunted or Str	I Leaves (B9) (ex id 4B) 1) ebrates (B13) fide Odor (C1) ospheres along L educed Iron (C4) eduction in Tilled essed Plants (D1	e; vf = very fine; ccept MLRA _iving Roots (C3) d Soils (C6)	+ = heavy (mo - <u>Secondary Ir</u> Water-St 4A, ar Drainage Dry-Seas Saturatic Saturatic Shallow FAC-Net Raised A	re clay); - = light (les ndicators (2 or more rained Leaves (B9) (nd 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I phic Position (D2) Aquitard (D3) utral Test (D5) on Mounds (D6) (LF	<u>required)</u> (MLRA 1, 2, 2) magery (C9)
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Type: <u>N</u> Depth (inches): Remarks: S HYDROLOGY Vetland Hydrolo Primary Indicators Surface Water High Water T Saturation (A Water Marks Sediment Dep Drift Deposits Algal Mat or (Iron Deposits Surface Soil (Inundation Vi Sparsely Veg Surface Water Pr	N/A S = sand; Si = silt; ogy Indicators: s (minimum of one s (minimum of one or (A1) able (A2) 3) (B1) posits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) sible on Aerial Imagetated Concave S ons: resent? Yes sent? Yes	agery (B7) Surface (B8)	No X	I Leaves (B9) (ex id 4B) 1) ebrates (B13) fide Odor (C1) ospheres along L educed Iron (C4) eduction in Tilled essed Plants (D1 n in Remarks) Depth (inches):	e; vf = very fine; ccept MLRA _iving Roots (C3) d Soils (C6) 1) (LRR A)	+ = heavy (mo - <u>Secondary Ir</u> Water-St 4A, ar Drainage Dry-Seas Saturatic Saturatic Shallow FAC-Neu Raised A Frost-He	re clay); - = light (les adicators (2 or more ained Leaves (B9) (ad 4B) Patterns (B10) son Water Table (C2 on Visible on Aerial I ohic Position (D2) Aquitard (D3) utral Test (D5) ant Mounds (D6) (LF ave Hummocks (D7	<u>required)</u> (MLRA 1, 2, 2) magery (C9) RR A)

WETLAND DETERMIN	VATION DATA	A FORM – West	ern Mounta	ains, Valleys and Coast Region
Project/Site: Harmony Road Townhomes		City/County:	Milwaukie / C	Clackamas Sampling Date: 12/5/2017
Applicant/Owner: Cascadia Planning & Dev. S	Srvcs/Old Time In	vestments, Inc.		State: OR Sampling Point: P9
Investigator(s): C. Mirth Walker, Tom Dee		Section, T	ownship, Rang	ge: 31D, T1S, R2E, TL 2200
Landform (hillslope, terrace, etc.): terrace			Local relief	(concave, convex, none): concave Slope (%): 2
Subregion (LRR): A, Northwest Forests and C	Coast	Lat:	_ Lon	ng: Datum: NAD 1983
Soil Map Unit Name: Wapato silty clay			_	NWI classification: None
Are climatic / hydrologic conditions on the site		e of year?	Ye	es X No (If no, explain in Remarks)
Are Vegetation ,Soil	, or Hydrology	significantly	disturbed? A	Are "Normal Circumstances" present? Yes X No
Are Vegetation ,Soil	, or Hydrology	naturally prol	blematic? ((If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach	site map sho	wing sampling	point locat	tions, transects, important features, etc.
Hydrophytic Vegetation Present?	Yes	No X		
Hydric Soil Present?	Yes	No X	Is the Samp	oled Area
Wetland Hydrology Present?	Yes X	No	within a We	etland? Yes No X
Precipitation prior to fieldwork: 3.48 inches	s 2 weeks prior (P	ortland); 1.94" abov	e normal WYT	ID; 11.73" above normal CYTD.
Remarks:				
NE corner of site.				
VEGETATION				
	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30' r</u>)	<u>% Cover</u>	Species?	<u>Status</u>	Number of Dominant Species
1. Populus balsamifera	70%	Yes	FAC	That Are OBL, FACW, or FAC: 2 (A)
2.				
3.				Total Number of Dominant
4.				Species Across All Strata: 4 (B)
	70%	= Total Cover		
Sapling/Shrub Stratum (Plot size:10' r				Percent of Dominant Species
1. Symphoricarpos albus	20%	Yes	FACU	That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
2. Crataegus monogyna	10%	Yes	FAC	Prevalence Index worksheet:
	<u>10 %</u>	No	FACW	Total % Cover of: Multiply by:
 Physocarpus capitatus Fraxinus latifolia 				
-	5%	<u>No</u>	FACW	
5. <u>Thuja plicata</u>	4%	No Tatal Oscara 4	FAC	
Herb Stratum (Plot size:_5' r_)	44%	= Total Cover + 1 =	= 45%	FAC species $89 \times 3 = 267$
				FACU species $120 \times 4 = 480$
1. <u>Hedera helix</u>	95%	Yes	FACU	UPL species $0 \times 5 = 0$
2. Juncus patens	5%	No	FACW	Column Totals: 224 (A) 777 (B)
3. Equisetum arvense	5%	No	FAC	Prevalence Index = $B/A = 3.47$
4. Polystichum munitum	5%	No	FACU	Hydrophytic Vegetation Indicators:
5.				1 - Rapid Test for Hydrophytic Vegetation
6				2 - Dominance Test is >50%
7				3 - Prevalence Index is ≤3.0 ¹
8				4 - Morphological Adaptations ¹ (Provide supporting
9				data in Remarks or on a separate sheet)
10				5 - Wetland Non-Vascular Plants ¹
11				Problematic Hydrophytic Vegetation ¹ (Explain)
		= Total Cover		¹ Indicators of hydric soil and wetland hydrology must
Woody Vine Stratum (Plot size: <u>10' r</u>)			be present.
1				Unders had a
2		Tatal Queen		Hydrophytic Vegetation Yes No X
	0%	= Total Cover		· <u> </u>
% Bare Ground in Herb Stratum 0%				Present?
Remarks: <i>Ilex aquifolium</i> 1% FACU in S/S Stratum.				Entered by: <u>KL</u> QC by: <u>cmw</u>

US Army Corps of Engineers SWCA Environmental Consultants SOIL Profile

Profile Description:	(Describe to the depth needed to document the indicator or confirm the absence of indicators.)	

Profile Descriptio	on: (Describe	to the depth	needed to documer	nt the indicator	or confirm th	e absence of i	ndicators.)	
Depth	Ma	trix	<u> </u>	Redox Fe	atures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-12	10YR 4/1	99	10YR 4/6	1	С	М	SiL	Rounded cobbles
			_					
			_					
			_					
			_					
¹ Type: C=Concent	ration, D=Depl	etion, RM=Re	educed Matrix CS=Co	overed or Coated	Sand Grains.	² Location:	PL=Pore Lining, M=	Matrix.
Hydric Soil Indica	tors: (Applica	ble to all LRF	Rs, unless otherwis	e noted.)		Indicators f	or Problematic Hyd	dric Soils ³ :
Histosol (A1)			Sandy Redox (S5)		2 cm Mu	uck (A10)	
Histic Epipedo	n (A2)		Stripped Matrix	(S6)		Red Par	ent Material (TF2)	
Black Histic (A	3)		Loamy Mucky I	Mineral (F1) (exc	ept MLRA 1)	Very Sh	allow Dark Surface	(TF12)
Hydrogen Sulfi	ide (A4)		Loamy Gleyed	Matrix (F2)		Other (E	xplain in Remarks)	
Depleted Below	w Dark Surface	e (A11)	Depleted Matrix	k (F3)				
Thick Dark Sur	rface (A12)		Redox Dark Su	Irface (F6)		³ Indicators of	of hydrophytic vegeta	ation and
Sandy Mucky I	Mineral (S1)		Depleted Dark	Surface (F7)		wetland hy	/drology must be pre	esent,
Sandy Gleyed	Matrix (S4)		Redox Depress	sions (F8)		unless dis	turbed or problemati	c.
Restrictive Layer	(if present):							
-								
	ock refusal					lydric Soil Pre	aanto Vaa	No X
Depth (inches):	12	_				•		
Remarks: S = Tiny shard of broke			= loam or loamy; co =	= coarse, $r = nne$,	vi = very line	, + = neavy (mo	ore clay); - = light (le	ss clay)
	in glade in pla	vory rooky.						
HYDROLOGY								
Wetland Hydrolog	y Indicators:							
Primary Indicators	(minimum of or	ne required; c	heck all that apply)			<u>Secondary I</u>	ndicators (2 or more	required)
Surface Water	(A1)		Water-Stained	Leaves (B9) (exc	ept MLRA	Water-S	tained Leaves (B9)	(MLRA 1, 2,
X High Water Ta	. ,		 1, 2, 4A, and	1 4B)		4A, a	nd 4B)	
X Saturation (A3)			Salt Crust (B11	-		Drainag	e Patterns (B10)	
Water Marks (I			Aquatic Inverte				son Water Table (C	2)
Sediment Dep			Hydrogen Sulfi			Saturati	on Visible on Aerial	/ Imagery (C9)
Drift Deposits (. ,			spheres along Li	vina Roots (C		phic Position (D2)	
Algal Mat or Cl				educed Iron (C4)	ing roote (e	·	Aquitard (D3)	
Iron Deposits (duction in Tilled	Soils (C6)		utral Test (D5)	
Surface Soil C	· · ·			ssed Plants (D1)	· · ·		Ant Mounds (D6) (LI	RR A)
	. ,	magany (B7)						
Inundation Visi		0,0,0	Other (Explain	in Remarks)			eave Hummocks (D7)
Sparsely Vege		Surface (B8)						
Field Observation	s:							
Surface Water Pre	sent? Yes	s	No X	Depth (inches):				
Water Table Prese	ent? Ye	s <u>X</u>	No	Depth (inches):	6	Wetland	d Hydrology Preser	nt?
Saturation Present	t? Ye	s <u>X</u>	No	Depth (inches):	surface		Yes X	No
(includes capillary	fringe)							
Describe Recorde	d Data (stream	gauge, moni	toring well, aerial pho	otos, previous ins	pections), if a	vailable:		
Remarks:							Entered by: KL	QC by: cmw
	Table: dam/we	ir on Minthorr	n Creek may back-up	water into soil.	erv slight sm	all depression	· · · · · · · · · · · · · · · · · · ·	
position.	,				, , ,	,,		5 - 1 - 5

ATTACHMENT B:

SITE VEGETATION LIST

	6115 SE Harmony Road	d	
	Site Vegetation List		
August	25, 2016, and October 17 and D	December 5, 2017	
Common Name	Scientific Name	Wetland Indicator Status	Native and Invasive, Noxious
NATIVE			·
grand fir	Abies grandis	FACU	native
big-leaf maple	Acer macrophyllum	FACU	native
red alder	Alnus rubra	FAC	native
devil's-pitchfork	Bidens frondosa	FACW	native
taper-fruit short-scale sedge	Carex leptopoda	FAC	native
red osier dogwood	Cornus alba	FACW	native
beaked hazelnut	Corylus cornuta	FACU	native
field horsetail	Equisetum arvense	FAC	native
Oregon ash	Fraxinus latifolia	FACW	native
sticky-willy	Galium aparine	FACU	native
lamp rush	Juncus effusus	FACW	native
spreading rush	Juncus patens	FACW	native
yellow-skunk-cabbage	Lysichiton americanus	OBL	native
American wild mint	Mentha arvensis	FACW	native
Pacific ninebark	Physocarpus capitatus	FACW	native
western or pineland sword fern	Polystichum munitum	FACU	native
balsam poplar (black cottonwood)	Populus balsamifera	FAC	native
Oregon white oak	Quercus garryana	FACU	native
white-stem raspberry	Rubus leucodermis	FACU	native
California dewberry	Rubus ursinus	FACU	native
Pacific willow	Salix lasiandra	FACW	native
giant sequoia	Sequoiadendron giganteum	NOL	native (to California)
common snowberry	Symphoricarpos albus	FACU	native
western arborvitae (western red cedar)	Thuja plicata	FAC	native
squashberry	Viburnum edule	FACW	native
NON-NATIVE			
horse chestnut*	unknown species	unknown species	unknown species
colonial bent	Agrostis capillaris	FAC	non-native
English hawthorn*	Crataegus monogyna	FAC	non-native
English ivy*	Hedera helix	FACU	invasive, noxious
English holly*	llex aquifolium	FACU	non-native
spotted touch-me-not	Impatiens capensis	FACW	non-native
pale-yellow iris (yellow flag)*	Iris pseudacorus	OBL	noxious
European privet*	Ligustrum vulgare	FACU	non-native
perennial rye grass	Lolium perenne	FAC	non-native
dawn redwood	Metasequoia glyptostroboides	NOL	non-native
Portuguese laurel*	Prunus Iusitanica	NOL	non-native
English laurel*	Prunus laurocerasus	NOL	non-native
creeping buttercup	Ranunculus repens	FAC	non-native
Himalayan blackberry*	Rubus armeniacus	FAC	invasive, noxious
thornless blackberry	Rubus species	-	non-native
climbing (bittersweet) nightshade*	Solanum dulcamara	FAC	invasive
NATIVE STATUS UNKNOWN			
knotweed or smartweed	Polygonum species	OBL to NOL	-
rose	Rosa species	FAC to UPL	-

*Priority target non-native species for removal; all are on the City of Portland Nuisance Plant List.

Wetland Indicator Status and taxonomy for the Western Mountains, Valleys, and Coast Region per the National Wetland Plant List 2016 v3.3.

Accessed May 3, 2016. http://rsgisias.crrel.usace.army.mil/NWPL/ Portland Plant List. Available at:

https://www.portlandoregon.gov/citycode/article/322280

Accessed September 22, 2016 and November 7, 2017

WETLAND INDICATOR STATUS (WIS)	
OBL	Obligate Wetland Plant – Almost always occurs in wetlands (hydrophyte), rarely in uplands
FACW	Facultative Wetland Plant - Usually occur in wetlands (hydrophyte), but may occur found in non-wetlands
FAC	Facultative Plant – Occurs in wetlands (hydrophyte) and uplands (nonhydrophyte)
FACU	Facultative Upland Plant - Usually occur in non-wetlands (non-hydrophyte), but may occur in wetlands
I IPI	Upland Plant - Almost always occurs in uplands (non-hydrophyte), almost never occurs in wetlands. UPL plants have a WIS in other regions
NOL	Not Listed - Plants that are not on the National Wetland Plant List are assumed to be UPL and have no WIS in any region

ATTACHMENT C:

REPRESENTATIVE SITE PHOTOGRAPHS



Photo 1. View north of western portion of vegetated corridor. Photo date October 17, 2017.



Photo 2. View north of central portion of vegetated corridor. Photo date October 17, 2017.



Photo 3. View north of eastern portion of vegetated corridor. Photo date October 17, 2017.



Photo 4. View east of lot. Photo date October 17, 2017.



Photo 5. View northwest of manhole. Photo date August 25, 2016.



Photo 6. View west of typical condition vegetated corridor. Photo date October 17, 2017.



Photo 7. View north of Plot 6, below ordinary high water line of Minthorn Creek. Photo date October 17, 2017.



Photo 8. View northeast of Minthorn Creek from eastern propery line. Photo date October 17, 2017.

ATTACHMENT D:

OFWAM DATA FORMS

FOR CITY OF MILWAUKIE NATURAL RESOURCE ASSESSMENT



Oregon Freshwater Wetland Assessment Methodology

Prepared by:

Emily Roth Natural Resources Conservation Service

Richard Olsen Argonne National Laboratory (formerly with the Oregon Department of Environment Quality)

Patty Snow Oregon Department of Fish and Wildlife

Richard Sumner U.S. Environmental Protection Agency

Editing, graphics and layout by Scott McCannell. Cover design by Frank Roth and cover illustration by Sandra Noel.

The preparation of this manual was supported in part by a grant from the U.S. Environmental Protection Agency—Region X.

This manual is published by: Wetlands Program Oregon Division of State Lands 775 Summer St. NE Salem, OR 97310



Revised Edition, April 1996

The origins of this manual

The template for this evaluation method, the *Method for the Comparative Evaluation of Nontidal Wetlands in New Hampshire*, was published in 1991 by the New Hampshire Department of Environmental Services. The New Hampshire method was based on a similar method developed by the Connecticut Department of Environmental Protection. The *Oregon Freshwater Wetland Assessment Methodology* uses some of the same wetland functions developed in the previous two publications. A general wetland characterization, a wetlands of special interest for protection category, and sensitivity to impacts and enhancement potential sections have been added. Some functions used in the New Hampshire or Connecticut methodologies have been combined or removed. All were modified to reflect wetland types found in Oregon. The revised edition clarifies and rearranges some questions, directions and answers found in the December 1993 edition.

The methodology was written by an inter-agency group that worked together for two and a half years. The size and make-up of the group fluctuated, but the following people and other representatives from their agencies were authors of various sections:

Emily Roth

Oregon Division of State Lands

Patty Snow Oregon Department of Fish and Wildlife

Richard Olsen (and **Mike Nixon**) Oregon Department of Environmental Quality

Richard Sumner U.S. Environmental Protection Agency, Corvallis

A July 1993 draft of the Oregon Method was field tested in four areas of the state located within Clatsop, Linn, Benton and Deschutes counties and the Portland metropolitan area. In each area, a group of wetlands experts selected an assortment of familiar wetlands. They evaluated the functions of each wetland based upon their best professional judgment. We then brought together a second group of individuals, including community planners and interested community members. They visited some of the same wetlands and conducted an evaluation using the Oregon Method. The results of their evaluation were then compared to those of the expert group. We used the information from the comparison test to refine the final document.

This edition of the Oregon Freshwater Wetland Assessment Methodology is a modification of the original. Changes reflect suggestions of numerous users. We appreciate any comments or suggestions you have concerning the methodology. Suggestions will be evaluated and incorporated into future editions. Submit comments concerning the methodology or requests for additional copies of this manual to:

Wetlands Program Oregon Division of State Lands 775 Summer St. N.E. Salem, OR 97310 (503) 378-3805

The development of this methodology was funded in part by a grant from the U.S. Environmental Protection Agency.

The Oregon Method should be cited as follows:

Roth, E.M., R.D. Olsen, P.L. Snow, and R.R. Sumner. 1993. *Oregon Freshwater Wetland Assessment Methodology*. Ed. by S.G. McCannell. Oregon Division of State Lands. Salem, OR.

Acknowledgments: second edition

The Oregon Freshwater Wetland Methodology had been in use for almost two years, at least two growing seasons, when we started these revisions. Coastal, central, eastern, Willamette Valley, and southern Oregon wetlands were assessed for either wetland inventories or training sessions. We learned that some clarifications needed to be made and responses simplified, but luckily, no one encountered any fatal flaws.

The revisions were made possible due to the invaluable critique and reasonable suggestions from:

- Lisa Heigh, a graduate student at Oregon State University, who put it through a consistency test, using it as a basis for her masters project.
- The consultant community, our main users, who gave feedback on both clarification and scientific value. I would especially like to thank Mirth Walker and Christie Galen of Fishman Environmental Services and John van Staveren of Pacific Habitat Services.
- Richard Sumner, one of the principal authors and grant wizard extraordinaire at EPA's Corvallis laboratory.

Numerous others also suggested revisions that helped make the second edition more user friendly. They included EnviroCorps members, various people who braved our wetland identification and assessment trainings, and citizen users. I thank them all "en masse."

These revisions would not have been undertaken if it wasn't for Janet Morlan with the Oregon Division of State Lands and Ken Bierly, now working in the Governor's Office on Watershed Health (taking a breather from the Division). Without their subtle yet consistent prodding, I would never have attempted and completed the revisions. They help me keep at least one of my feet mired in the wetland mucks of Oregon. Thanks Janet and Ken.

My final thanks goes to the editor, Scott McCannell. As with the original, his patience persisted with my delays, revisions and the contracting process.

Cheers!

Emily Roth NRCS/Community Resource Conservation Center March 1996

Acknowledgments: first edition

The inter-agency working team consisted of more than just the authors. We would like to give a special thanks to Frank Flynn and Lynn Beaton with the Oregon Department of Land Conservation and Development, Jim Goudzwaard with the U.S. Army Corps of Engineers—Portland District, and Steve Morris and Michelle Day with the U.S. National Marine fisheries Service for attending meetings, reviewing numerous drafts of the text and providing valuable input throughout the entire process. We would also like to thank Bob Frenkel, Marv Yoshinaka, Peggy Elting, Rosemary Furfey, John Christy, and Tom Robertson for their participation in the process. For various reasons, they could not continue through the entire development of the manual, but their contributions helped to strengthen the methodology.

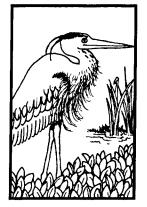
We relied on Karen Strohmeyer, Rosemary Furfey, Neil Maine, Steve Moser and Dave Leslie to organize our field testing groups. Their efforts and feedback made the methodology more user friendly and led to many revisions. Lynn Putnam assisted the inter-agency group with the initial testing. She endured the "group process" and even managed to out shout us a few times. Also, a special thanks to all the people who participated in the field testing; they are too numerous to list here.

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Cheers!

Emily Roth Oregon Division of State Lands November 1993



Wildlife habitat

Wetlands provide habitat for many wildlife species. A single wetland often cannot satisfy all require ments for wildlife use, so its proximity to other bodies

of water or upland areas is important. Buffers and corridors are also essential for this reason, and they reduce human disturbance as well. Many species also have special habitat requirements: Good water quality is necessary for amphibians and mammals; structural diversity is important for birds; and a combination of open water and grazing areas is important for waterfowl.

For this assessment, **urban wetlands are those within urban growth boundaries or urban or rural service areas.** Because of the impacts of human activities, urban wetlands may not satisfy as many habitat requirements as wetlands in undeveloped areas. This should not be interpreted to mean that urban wetlands have limited value for all wildlife. The importance of an urban wetland may be increased because of its location and surroundings.

Assessment questions

Question 1

How many Cowardin wetland classes are present?

Directions

See question 21 in the Wetland Characterization. Count only those Cowardin classes for which you answered "a," "b" or "c." For urban areas, also consider the mix of species (Question 22 in the Wetland Characterization.) *Rural areas:* a. Three or four.

- b. Two.
- c. One.

Urban areas:

- a. Two or more.
- b. One class with more than five plant species.
- c. One class with five or fewer plant species.

Rationale

In Northwest wetlands, vegetation is the most important component of wildlife habitat. It is widely recognized that plant community diversity increases animal community diversity. The existence of two Cowardin classes adjacent to each other may also improve wildlife habitat value because some wetland wildlife species use the edge between plant communities. ("Edge" describes the border between vegetation types or between a vegetation type and open water.)

Structural diversity is also important. If several layers of vegetation are present, more diverse habitat types are provided. (Different birds nest in different layers.) In addition, the number of layers affects the amount of natural debris, which is necessary for amphibians and other wildlife.

Notes

a. PFO and PEM, PAB

What is the dominant wetland vegetation cover type?

Directions

See question 23 in the Wetland Characterization.

- a. Woody vegetation.
- b. Emergent vegetation and ponding, or open water only.
- c. Emergent vegetation or wet meadow.

Rationale

Wooded and shrub wetlands provide habitat for the largest overall species assemblages. Emergent wetlands associated with open water are also an essential habitat for a large number of wetland species, particularly waterfowl, amphibians and wading birds. Emergent wetlands without open water provide habitat for wetland species to a lesser degree.

Question 3

What is the degree of Cowardin classa. Hinterspersion for the wetland beingb. Mobserved?c. L

a. High.b. Moderate.c. Low.

Directions

See question 24 in the Wetland Characterization.

Rationale

Interspersion occurs when two or more wetland types or upland inclusions create a mosaic or pattern. In a wetland composed of approximately concentric bands of vegetation, such as cattails ringed by shrubs, interspersion is low. At the opposite extreme, small patches of shrubs scattered throughout an emergent marsh represent a high degree of interspersion.

When two or more vegetation types are highly interspersed, a great deal of edge is created. Edge is important because many wildlife species are edge dwellers. Generally, the greater the edge, the greater the diversity of wildlife.

Notes

a.

b.

If the wetland contains unvegetated open water, how many acres of unvegetated open water are present?

Directions

See question 28 in the Wetland Characterization.

Rural areas:

- a. More than 3 acres.
- b. Between 0.5 and 3 acres.
- c. Less than 0.5 acres.

Urban areas:

- a. More than 1 acre.
- b. Between 0.5 and 1 acre.
- c. Less than 0.5 acres.

Rationale

Open water is essential to a number of wetland wildlife species, including waterfowl, wading birds, amphibians and some reptiles.

Question 5

How is the wetland connected to another body of water, such as a stream, lake or pond?

Directions

See question 18 in the Wetland Characterization.

- a. The wetland is connected by surface water to another body of water.
- b. No surface water connection exists to another body of water, but other bodies of water lie within 1 mile of the wetland.
- c. No surface-water connection exists to another body of water, and no other bodies of water lie within 1 mile of the wetland.

Rationale

Wetland wildlife species will often use surface water to travel between a wetland and deep water. Also, water must be available during critical phases for the wildlife that use it. Water available during the nesting season is more valuable to wildlife than water available only during the winter.

C.

a.

Question 6 (for Western OR only)

How is the wetland connected to other wetlands?

Directions

See question 27 in the Wetland Characterization.

- a. Connected to other wetlands within a 3-mile radius by a perennial or intermittent stream, irrigation or drainage ditch, culvert, canal or lake.
- b. Not connected by surface waters, but other unconnected wetlands lie within a 3-mile radius.
- c. Not connected to other wetlands by surface waters, and no other unconnected wetlands lie within a 3-mile radius.

Rationale

Proximity to other wetlands increases a wetland's utility as habitat. Nearby wetlands sometimes contain features absent from the assessment wetland. For example, birds such as the great blue heron may roost near one wetland but travel to another to fish if the wetland where they roost doesn't have an ample supply of fish.

This criterion applies only in western Oregon. Because of the dry climate in eastern Oregon, isolated wetlands provide important habitat to both local and migratory species.

Question 7

What is the water quality condition of stream reaches in the watershed upstream of the wetland or adjacent to the wetland?

Directions

See questions 7 and 8 in the Wetland Characterization. If both "a" and "b" apply, choose "a."

- a. No upstream or adjacent reaches are listed as *water quality limited*, and all upstream or adjacent reaches are listed as *no problem* (or no data available) for nonpoint source pollutants.
- b. One or more upstream or adjacent reaches are listed in *moderate* water quality condition for nonpoint source pollutants.
- c. One or more upstream or adjacent reaches are listed as *water quality limited* or in *severe* water quality condition for nonpoint source pollutants.

Rationale

Poor water quality can harm many terrestrial and aquatic species. The character of a wetland ecosystem can change when exposed to nutrients and other chemicals beyond tolerable limits. Excess nutrients, for example, can cause oxygen deficiencies, which in turn can cause a change in the species composition of both plant and animal communities. Studies in Washington and elsewhere have indicated that amphibians are especially sensitive to water quality.

Notes



Э.

C.

Question 8

What is the dominant existing land use within 500 feet of the wetland's edge?

Directions

See question 15 in the Wetland Characterization. If the responses you gave to question 15 in the Characterization indicate that two or more land-use categories are equally dominant, pick the one that will yield the lowest letter response for this question. (Example: In question 15 of the Wetland Characterization, you responded "b. Between 20% and 50%" to both Exclusive Forest Use lands and developed uses, and the remainder of your responses to question 15 were "a. Less than 20%." For this Wildlife Habitat question, you would respond "a. Exclusive Forest Use or Open Space.")

a. Exclusive Forest Use or Open Space.

b. Agriculture.

c. Developed uses.

Rationale

Wildlife habitat generally deteriorates as land use changes from forested land to agricultural land to urban land. Certain game species, such as deer and some waterfowl, may benefit from land clearing. However, the majority of wildlife species are affected adversely when the land is developed because of fencing, lighting and loss of habitat.

Notes

Oregon Freshwater Wetland Assessment Methodology

Question 9a

For **rural areas:** What percentage of the wetland's edge is bordered by upland wildlife habitat that is at least 150 feet wide?

Question 9b

For **urban areas:** What percent of the wetland's edge is bordered by a vegetative buffer at least 25 feet wide?

Directions

For rural areas, see question 25 in the Wetland Characterization. For urban areas, see question 26 in the Wetland Characterization.

Rationale

A buffer zone, an uncut or undisturbed area of vegetation providing wildlife cover, increases a wetland's wildlife habitat potential. It provides habitat for both upland animals and wetland dependent species that require upland habitat for parts of their life cycle. A buffer zone also decreases the impacts of disturbance on the wetland. This is particularly important for nesting birds, which may be disturbed by people and household pets.

Well-vegetated buffer areas and corridors are particularly significant in urban areas because of their beneficial effect on water quality as well as their value for wildlife.

Wildlife habitat: assessment criteria

The wetland provides diverse wildlife habitat if:

At least four questions are answered "a," and no more than one is answered "c."

The wetland provides habitat for some wildlife species if:

Answers do not satisfy the above- or below-listed criteria.

All questions are answered "c."

The wetland's wildlife habitat function is lost or not present if:

a. Greater than 40%.b. Between 10% and 40%.

- c. Less than 10%.
- c. Less man 1070.
- a. Greater than 40%.
- b. Between 10 and 40%.
- c. Less than 10%.

Notes

a.

The wetland provides habitat for some species.



Fish habitat

This index assesses the contribution of wetlands connected to streams, rivers, lakes or ponds to fish habitat. or this index, "connected to" im-

plies a surface-water connection. The assessment should be done on the reach of the stream or on a section of lake that actually borders the wetland or is contained within the wetland.

A stream is defined as a waterbody with a distinct channel and flow. Examples include sloughs, perennial streams and intermittent streams. If dikes or berms have been built on the stream banks between the stream and wetland that do not allow continual exchange of surface water, do not complete this index. If both a stream and lake are present, choose the one with the longest wetland surface connection.

Wetlands that contribute to habitat for fish include areas with dense, overhanging vegetation. This vegetation provides shade, cover and food sources to related waterways and lakes. Wetlands also provide spawning, rearing and resting opportunities for fish. However, a wetland need not actually contain fish to contribute to fish habitat because wetlands may perform important functions for fish-bearing waters downstream.

The assessment of fish habitat is divided into two parts. Part A evaluates the wetland habitat connected to rivers and streams. If there is no stream or river associated with the wetland, then leave Part A out of the assessment. Part B evaluates the wetland habitat connected to ponds (water greater than 6 feet deep) and lakes. If there is no lake or pond connected to the wetland, then leave Part B out of the assessment. If no stream, river, pond or lake is connected to the wetland, then leave this index out of the assessment altogether.

Notes

Assessment questions: Part A—streams

Question 1

What percentage of the stream is shaded by stream-side (riparian) vegetation?

Directions

See question 31 in the Wetland Characterization.

- *Western Oregon:* a. More than 75%.
- b. Between 50% and 75%.
- c. Less than 50%.

Eastern Oregon:

- a. 50% or more.
- b. 25% or more, but less than 50%.
- c. Less than 25%.

Rationale

Many Oregon streams are unsuitable for anadromous and resident fish because riparian vegetation has been cleared. High water temperatures that result from removal of stream-side vegetation can make a stream unsuitable for some fish species. Salmonids and some resident fish are particularly susceptible to elevated water temperatures. The amount and type of stream-bank cover also affects the amount of large woody debris in the stream or river system. In addition, stream-bank vegetation provides habitat for insects, an important food source for salmonids.

Question 2

What is the physical character of the stream is in a natural channel?

Directions

56

See question 30 in the Wetland Characterization.

- a. The stream is in a natural channel, or modified portions of the stream are returning to a natural channel.
- b. Only portions of the stream channel are modified.
- c. The stream is extensively modified or confined in a nonvegetated channel or pipe.

Rationale

Although the species or age composition of low- and high-gradient streams is different, both can provide habitat for fish. Artificially channelized or extensively modified streams, however, usually do not provide fish habitat as well as natural stream channels.

Notes

a.

b.



b.

b.

Question 3

What percentage of the entire stream contains instream structures such as large woody debris, floating submerged vegetation, large rocks or boulders? a. More than 25%.b. Between 10% and 25%.

c. Less than 10%.

Directions

See question 32 in the Wetland Characterization.

Rationale

Cover is essential for good fish habitat. It provides refuge from predators and serves as substrate for insect larva, which are a good food source for some fish species. The presence of large pieces of woody material in pools is essential for providing adequate winter habitat for salmonid species. In addition, large pieces of woody material contribute to bank stability, dissipate energy, generate pool formation and encourage meandering. The breakdown of this material is also important in the nutrient cycle of the stream or river.

Question 4

What is the water quality condition of stream reaches in the watershed upstream of the wetland or adjacent to the wetland?

Directions

See questions 7 and 8 in the Wetland Characterization. If both "a" and "b" apply, choose "a."

- a. No upstream or adjacent reaches are listed as *water quality limited*, and all upstream or adjacent reaches are listed as *no problem* (or no data available) for nonpoint source pollutants.
- b. One or more upstream or adjacent reaches are listed in *moderate* water quality condition for nonpoint source pollutants.
- c. One or more upstream or adjacent reaches are listed as *water quality limited* or in *severe* water quality condition for nonpoint source pollutants.

Rationale

Poor water quality can harm many aquatic species. The whole character of a wetland ecosystem can change when it is exposed to nutrients and other chemicals beyond tolerable limits. Excess nutrients, for example, can cause oxygen deficiencies, which in turn can cause a species composition change in both plant and animal communities. Notes

What is the dominant existing land use within 500 feet of the wetland's edge?

Directions

Refer to the directions for question 8 of the wildlife habitat assessment questions.

Rationale

Fish habitat generally deteriorates as land use becomes more intensive, e.g., changes from forested land to agricultural land (including rangeland) to urban land. The change in intensity often changes the structure of the habitat and increases runoff, pollutant loading and sedimentation.

Question 6

Are fish present in a stream, lake or pond associated with the wetland?

Directions

See question 29 in the Wetland Characterization.

a. Salmon, trout or sensitive species are present at some time during the year.

a. Exclusive Forest Use or Open Space.

b. Agriculture.

c. Developed uses.

- b. Species not covered in "a" are present at some time during the year.
- c. No species are present at any time during the year.

Rationale

The potential for a wetland to benefit fish is directly related to the presence of fish in the stream or river reach within or adjacent to the wetland.

Part B—lakes and ponds

Question 1

Does the lake or pond contain areas of both deep and shallow water?

s a. Yes.

c. No.

b. Cannot be determined.

Directions

See question 33 in the Wetland Characterization.

Rationale

The depth of the pond or lake is important for spawning and may be important for rearing. A mixture of shallow, medium and deeper water is optimum to provide different habitat types. Notes



b. or c.

Minthorn Creek is not shown on the StreamNet mapper website. (http://psmfc.maps.arcgis.com/ apps/webappviewer/index.html? id=3be91b0a32a9488a901c3885b bfc2b0b)

What percentage of the wetland complex contains cover objects such as submerged logs, floating or submerged vegetation, large rocks or boulders? a. More than 25%.b. Between 10% and 25%.

c. Less than 10%.

Directions

See question 35 in the Wetland Characterization.

Rationale

Cover is essential for good fish habitat. It provides refuge from predators and serves as substrate for insect larva, which are a food source for some fish species. The presence of large pieces of woody material in wetlands is essential for providing adequate winter habitat for salmonid species. In addition, large pieces of woody material contribute to bank stability and dissipate energy. The breakdown of this material is also important in the nutrient cycle of the pond or lake.

Question 3

What percentage of the shoreline is shaded at the water's edge by forested or scrub-shrub vegetation? a. 60% or more.
b. 20% or more, but less than 60%.

c. Less than 20%.

Directions

See question 34 in the Wetland Characterization.

Rationale

Shoreline cover provides shading, which moderates water temperature in lakes and ponds. High water temperatures that result from removal of lake-side vegetation can make a lake unsuitable for some fish species. Shoreline vegetation also provides food, large pieces of woody debris and cover from predators. Woodland and scrubland vegetation provides more shading than herbaceous vegetation. Notes

What is the water quality condition of stream reaches in the watershed upstream of the wetland or adjacent to the wetland?

Directions

See questions 7 and 8 in the Wetland Characterization. If both "a" and "b" apply, choose "a."

- a. No upstream or adjacent reaches are listed as *water quality limited*, and all upstream or adjacent reaches are listed as *no problem* (or no data available) for nonpoint source pollutants.
- b. One or more upstream or adjacent reaches are listed in *moderate* water quality condition for nonpoint source pollutants.
- c. One or more upstream or adjacent reaches are listed as *water quality limited* or in *severe* water quality condition for nonpoint source pollutants.

Rationale

See Part A question 4.

Question 5

What is the dominant existing land use within 500 feet of the wetland's edge?

Directions

Refer to the directions for question 8 of the wildlife habitat assessment questions.

See Part A question 5.

Question 6

Are fish in a stream, lake or pond associated with the wetland?

Directions

See question 29 in the Wetland Characterization.

- a. Exclusive Forest Use or Open Space.
- b. Agriculture.
- c. Developed uses.

- a. Salmon, trout or sensitive species are present at some time during the year.
- b. Species not covered in "a" are present at some time during the year.
- c. No species are present at any time during the year.

Rationale

Rationale

The potential for a wetland to benefit fish is directly related to the presence of fish in the pond or lake.

Notes

Fish habitat: assessment criteria

The wetland's fish habitat function is intact if:

The wetland's fish habitat function is impacted or degraded if:

The wetland's fish habitat

Any three questions are answered "a," and no more than one is answered "c."

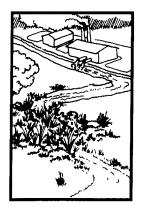
Answers do not satisfy the above- or below-listed criteria.

All questions are answered "c." function is lost or not present if:

Notes

Fish habitat is impacted or degraded.

•



Water quality (pollutant removal)

Sediment trapping

During periods of heavy rainfall, water runoff may cause erosion and increase solids suspended in

receiving surface waters. The excess sediment entering water systems can damage aquatic ecosystems. For example, sediment accumulation in stream bottoms can smother spawning areas and kill aquatic insect larvae. It can also reduce the storage capacity of downstream water supply reservoirs.

Wetlands perform an important function by trapping sediment from waters that pass through them. As water flows through wetlands, it is slowed by vegetation, and sediment settles to the bottom before the water moves farther downstream. As much as 90% of the solids suspended in the water may be removed as the water moves through wetlands, resulting in cleaner water entering streams, rivers, lakes and estuaries.

Nutrient attenuation

Nitrogen and phosphorus are the two nutrients most often associated with water pollution. They are also main ingredients of fertilizers used on agricultural fields and lawns, and both are found in high concentrations in discharges from sewage treatment plants and livestock operations. Excessive amounts of nitrogen and phosphorus in lakes and slow-moving streams can cause algal blooms and subsequent oxygen deficiencies, which may kill fish and reduce water quality. The processes that occur as a result of excess nutrients are lumped together under the term "eutrophication." Within limits, wetlands can reduce nutrient levels so that the effects of eutrophication on downstream areas are prevented or reduced. This index considers only point and non-point pollutant sources that are due to land uses in the watershed.

Assessment questions

Question 1

What is the wetland's primary source of water?

Directions

See question 36 in the Wetland Characterization.

- a. Surface flow, including streams and ditches.
- b. Precipitation or sheet flow.
- c. Groundwater, including seeps and springs.

Rationale

Wetlands bordering a perennial or intermittent stream or lake are areas into which floodwaters spread during periods of high runoff, enabling the wetlands to remove pollutants. Notes

a.

Is there evidence of flooding or ponding during a portion of the growing season?

a. Yes. b. Unable to determine or not applicable. c. No.

Directions

See question 37 in the Wetland Characterization.

Rationale

Water level fluctuation in the wetland indicates the ability to retain water. Impounded or standing water acts as a sediment trap because it greatly slows the flow of the incoming water, allowing suspended solids to settle out. Additionally, the slower velocity increases the contact time of the water with vegetation, resulting in uptake of nutrients by the vegetation. These actions function to reduce pollutant loads.

Question 3

What is the degree of wetland vegetation cover?

See question 21 in the Wetland Characterization. Add the lower end of the ranges for forest, scrub-shrub and emergent vegetation to get the result. If the result is 60% or more, answer "high." If the result is 60%, answer "moderate." Answer "low" for other results.

- a. High (greater than 60%).
- b. Moderate (approximately 60%). c. Low (less than 60%).

Notes a.

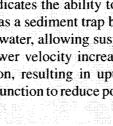
Assessment questions—water quality 64

Directions

Rationale

The more dense the vegetation, the greater the wetland's ability to take up nutrients. A dense stand of persistent emergent plants (such as cattail and rush) along with floating and submerged aquatics would tend to provide maximum nutrient uptake during the growing season. Wooded and scrub-shrub wetlands remove nutrients mainly through settling of suspended solids in runoff and flood waters.

a.



b.

a.

Question 4

What is the wetland's area in acres?

Directions

See questions 17 and 27 in the Wetland Characterization.

- a. More than 5 acres.
- b. Between 0.5 acres and 5 acres; or wetland area is less than
 0.5 acres, and the wetland is connected to other wetlands within a 3-mile radius by a perennial or intermittent stream, irrigation or drainage ditch, canal or lake.
- c. Less than 0.5 acres, and the wetland is not connected to other wetlands within a 3-mile radius by a perennial or intermittent stream, irrigation or drainage ditch, canal or lake.

Rationale

The larger the wetland, the greater its capacity and ability to filter pollutants. Small wetlands connected by surface water act as a series of filters and thus function similarly to a larger wetland.

Question 5

What is the dominant, existing land use within 500 feet of the wetland's edge?

a. Developed uses.

b. Agriculture.

c. Exclusive Forest Use or Open Space.

Directions

Refer to the directions for question 8 of the wildlife habitat assessment questions.

Rationale

Urbanized areas have more impervious surface areas and concentrate pollution sources. Wetlands in urban areas are important for filtering the runoff water before it enters a stream.

N	0	te	S

What is the water quality condition of stream reaches in the watershed upstream of the wetland or adjacent to the wetland?

Directions

See questions 7 and 8 in the Wetland Characterization. If both "a" and "b" apply, choose "a."

- a. One or more upstream or adjacent reaches are listed as *water quality limited* or in *severe* water quality condition for nonpoint source pollutants.
- b. One or more upstream or adjacent reaches are listed in *moderate* water quality condition for nonpoint source pollutants.
- c. No upstream or adjacent reaches are listed as *water quality limited*, and all upstream or adjacent reaches are listed as *no problem* (or no data available) for nonpoint source pollutants.

Rationale

A watershed with upstream pollutant loading sources needs wetlands to reduce pollutant levels in water before it is delivered downstream.

Water quality: assessment criteria		
A wetland's water-quality function is intact if:	Question 1 is answered "a" or "b," questions 2 and 3 are answered "a," and any other question is answered "a" or "b."	
A wetland's water-quality function is impacted or degraded if:	Answers do not satisfy the above- or below-listed criteria.	
A wetland's water-quality function is lost or not present if:	Four out of six questions are answered "c."	

Notes

b.

Water Quality is intact.



Hydrologic control (flood control & water supply)

Wetlands function as natural water-storage areas during periods of high runoff and stream flooding.

At times they act as flood regulators by holding floodwater then slowly releasing it downstream. This temporary storage reduces the amount of water downstream during floods, thereby reducing peak flows. Through this flood storage mechanism, wetlands associated with tributaries of streams or rivers can prevent water from all tributaries reaching the stream or river at the same time (this is called desynchronization). Wetlands can also act as floodwater "brakes." For example, water flowing through riverine wetlands during floods is slowed by trees, shrubs, reeds, rushes and other wetland vegetation. Wetlands acting as brakes can reduce flood peaks and thereby reduce flood damage, bank and bed erosion, and other adverse effects caused by fast moving water.

Wetlands also have long-term water holding abilities. Wetlands may store water for longer periods, sometimes for months. The slow draining of these wetlands to surface water or ground water as the water level in the wetland recedes may contribute to maintenance of baseflows in streams hydrologically connected to the wetland. The ability of this long-term water storage to maintain stream flows is called "flow conservation."

Assessment questions

Question 1

Is all or part of the wetland located a. Yes. within the 100-year floodplain or b. No. within an enclosed basin?

Directions

See question 19 in the Wetland Characterization.

Rationale

Wetlands located within a floodplain or enclosed basin have a greater opportunity to receive and store water from surface flows and to release it slowly downstream or into the groundwater. Notes

b.

Is there evidence of flooding or a. Yes. ponding during a portion of the growb. Unable to determine or not ing season?

Directions

See question 37 in the Wetland Characterization.

Rationale

applicable.

a. More than 5 acres.

c. Less than .5 acres.

b. Between .5 acres and 5 acres.

c. No.

Water marks are valid indicators of seasonal and episodic stage fluctuations in wetlands and, as such, are strong indicators of storage function.

Question 3

What is the wetland's area in acres?

Directions

See question 17 in the Wetland Characterization.

Rationale

Generally, the larger the wetland, the greater its ability to store and attenuate flood flows.

Question 4

Is waterflow out of the wetland restricted (e.g., beaver dam, concrete structure, undersized culvert)?

Directions

See question 38 in the Wetland Characterization.

- a. Yes, the outlet is restricted or the wetland has no outlet.
- b. Minor restrictions slow down the water (i.e., undersized culvert.)
- c. No, the outlet has unrestricted flow.

Rationale

Wetlands with no outlets or with restricted or controlled outlets generally will store greater amounts of water than wetlands with unrestricted flow outlets. Also, the wetland can store water for slower release into the water system.

Notes a. C. b.

What is the dominant wetland vegetation cover type?

Directions

See question 23 in the Wetland Characterization.

a. Woody vegetation.

a. Developed uses.

b. Agriculture.

Space.

- b. Emergent vegetation and ponding, or open water only.
- c. Emergent vegetation or wet meadow.

c. Exclusive Forest Use and Open

Rationale

Densely vegetated wetlands with vegetation greater than 6 feet tall are better able to control flood flows than wetlands dominated by open water or low growing vegetation, which generally offers little resistance.

Question 6

What is the dominant existing land use, within 500 feet of the wetland on the downstream or down-slope edge of the wetland?

Directions

See question 16 in the Wetland Characterization.

Rationale

If the wetland is upstream from developed areas, its ability to control floods becomes more important.

Question 7

What is the dominant land use in the watershed upstream from the assessment area?

a. Urban or urbanizing.

b. Agriculture.

c. Forested or natural area.

Directions

See question 6 in the Wetland Characterization.

Rationale

Runoff volume is directly related to the level of development in the watershed: The more development, the more runoff. The opportunity for the wetland to provide flood control and flow conservation to a community is greater where runoff is greater.

a.	Notes
a.	
а.	

Hydrologic control: assessment criteria

A wetland's hydrologic control function is intact if:

Four or more questions are answered "a."

A wetland's hydrologic control function is is impacted or degraded if:

A wetland's hydrologic control function is lost or not present if:

Answers do not satisify the above- or below-listed criteria.

Four or more questions are answered "c."

Notes

Hydrologic Control is intact.