Appendix D. WETS Table

USDA Field Office Climate Data

WETS Station : OREGON CITY, OR6334 Creation Date: 09/13/2016
Latitude: 4521 Longitude: 12236 Elevation: 00167
State FIPS/County(FIPS): 41005 County Name: Clackamas
Start yr. - 1971 End yr. - 2000

	Temperature (Degrees F.)			Precipitation (Inches)				
					30% chance will have		avg # of days	avg total
Month	avg daily max	avg daily min	avg	avg	less than	more than	w/.1 or more	snow fall
January	47.9	35.7	41.8	6.59	4.22	7.94	13	0.6
February	52.8	37.3	45.1	5.51	3.83	6.56	12	1.2
March	58.0	39.7	48.9	4.70	3.54	5.49	12	0.0
April	63.4	42.6	53.0	3.46	2.44	4.10	9	0.0
May	70.0	47.6	58.8	2.70	1.72	3.26	7	0.0
June	75.8	52.1	64.0	1.83	1.11	2.22	5	0.0
July	82.6	56.0	69.3	0.83	0.29	1.00	2	0.0
August	83.0	56.1	69.6	1.00	0.21	1.16	3	0.0
September	77.7	52.1	64.9	1.93	0.86	2.41	4	0.0
October	65.9	45.6	55.8	3.48	1.85	4.25	8	0.0
November	53.4	40.2	46.8	6.79	4.43	8.16	13	0.1
December	47.0	35.9	41.5	7.23	4.85	8.65	13	0.6
Annual	-----	-----	-----	------	40.45	50.63	--	----
Average	64.8	45.1	55.0	------	------	------	--	----
Average	-----	-----	-----	46.05	------	------	98	1.7

GROWING SEASON DATES

	Temperature		
Probability	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	1/26 to 12/ 7 346 days	2/15 to 12/ 4 292 days	3/24 to 11/11 232 days
70 percent *	> 365 days > 365 days	2/ 7 to 12/12 307 days	3/16 to 11/19 248 days

WETS Table

* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1911-2016 prcp

Station : OR6334, OREGON CITY
------- Unit = Inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
11											3.49	4.82	8.31
12	9.10	5.27	2.15	2.89	2.17	4.12	0.61	5.16	1.26	4.19	6.71	7.11	50.74
13	8.18	1.28	5.79	4.11	2.36	4.23	0.67	0.74	3.01	4.50	7.50	3.79	46.16
14	12.79	5.07	4.07	4.26	2.11	2.65	0.17	0.00	3.85	4.50	5.07	3.16	47.60
15	6.74	4.40	2.83	2.11	2.78	1.64	1.34	0.00	0.67	2.71	M11.04	10.24	47.50
16	6.44	11.47	12.06	4.21	3.09	1.86	2.90	0.26	1.95	1.64	8.18	4.40	58.41
17	4.21	5.72	8.22	6.97	3.67	1.48	0.01	0.00	2.24	0.03	4.23	18.71	55.49
18	6.40	8.06	5.50	1.22	1.16	0.01	0.67	0.74	0.38	5.07	5.06	4.99	39.26
19	10.91	8.96	6.01	4.42	2.56	1.04	0.06	0.05	3.91	1.73	9.73	6.79	56.17
20	5.84	0.40	4.36	5.61	1.25	3.03	1.18	1.39	5.76	5.01	7.18	9.79	50.80
21	8.92	7.67	5.34	2.17	2.06	1.50	0.03	0.16	2.89	3.52	12.12	1.32	49.50
22	4.04	4.24	7.83	2.94	1.24	0.23	0.00	2.26	1.86	5.03	2.66	9.87	42.20
23	13.00	2.55	3.14	2.10	1.68					0.38	4.77	7.00	34.62
24	3.27	5.87	1.93	1.24						6.58	8.29	5.10	32.28
25	8.80	8.87	2.94	3.81						0.05	5.71	5.55	35.73
26	3.46		1.01	1.50						5.01	9.93	5.39	26.30
27	8.87	8.11	3.65	1.50						4.47	10.19	2.86	39.65
28	5.63	1.76	8.96	6.00						1.92	6.26	8.72	39.25
29	3.50	1.24	5.27	4.37						1.29	0.70	11.34	25.71
30	4.40	6.81	2.07	3.12						2.49	3.05	3.13	25.07
31	M3.29	3.07	6.80	4.50						5.42	0.22	9.15	40.45
32	6.41	M3.69	8.25	3.81						4.83	9.41	6.82	43.16
33	8.48	4.49	6.23	1.01									20.21
34													
35													
36													
37													
38													
39													
40													
41													
42													
43													
44													
45													
46													
47													
48	M0.17	7.57	4.70	4.27	4.73	1.15	0.21	2.07	3.46	2.70	8.46	M10.26	50.45
49	1.46	13.09	3.34	1.16	2.69	1.25	0.94	0.22	2.60	3.17	0.92	6.50	41.36
50	11.44	M6.97	M6.09	3.13	1.09	2.05	1.35	0.45	2.26	10.34	12.70	7.48	65.55
51	10.50	5.93	5.63	1.06	2.50	0.09	0.16	0.34	3.71	5.55	6.25	7.29	49.09
52	6.20	4.72	4.51	1.75	0.89	3.30	0.00	0.09	0.42	0.87	1.32	1.70	31.77
53	16.77	4.76	4.96	2.52	M4.35	1.50	0.04	2.53	1.40	5.39	7.46	9.04	58.52
54	11.25	5.06	3.46	3.88	2.17	3.76	0.69	2.38	1.61	3.91	5.61	6.49	49.47
55	3.02	3.62	5.32	6.30	1.45	1.37	1.39	0.00	3.46	7.88	9.71	11.20	54.52
56	14.25	4.44	7.61	0.68	2.30	1.99	0.02	3.57	1.67	7.69	1.81	4.53	50.56
57	3.26	4.91	9.43	1.66	3.10	1.95	M0.43	0.37	0.68	3.97	4.92	M10.60	44.28
58	2.43	6.93	2.67	5.38	0.61	3.26	0.00	0.04	1.40	1.73	8.21	7.12	46.78
59	10.41	5.75	5.07	1.65	3.76	2.00	0.83	0.17	3.81	4.17	3.34	3.86	44.82
60	4.91	4.94	8.64	4.09	5.80	0.64	0.00	1.33	1.20	3.49	12.68	4.18	49.90

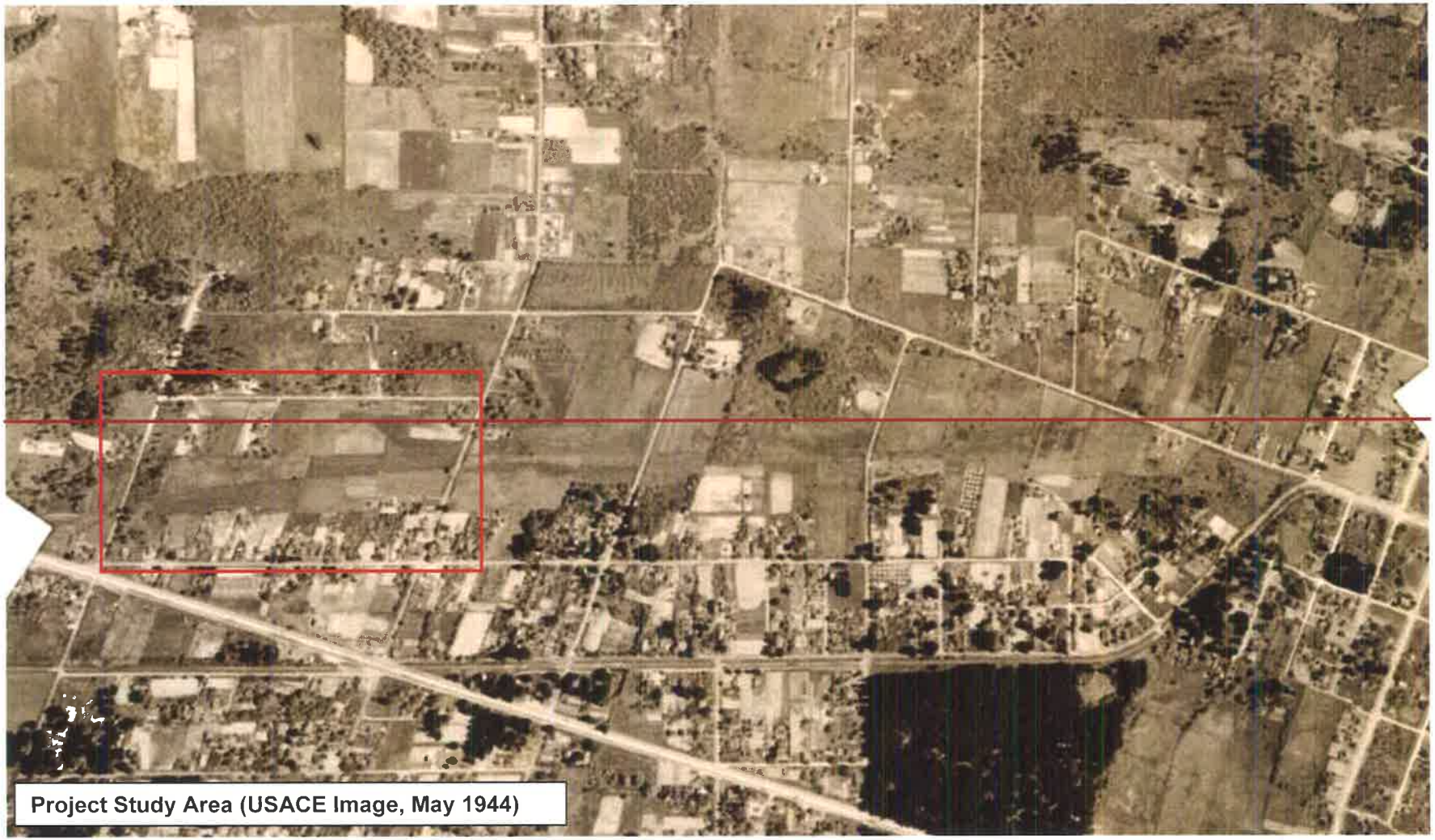
WETS Table **Page 3 of 3**

61	5.22	11.74	7.01	3.47	4.14	0.60	0.57	0.85	0.84	4.04	8.01	6.65	51.14
62	2.13	4.33	5.88	4.05	3.62	1.15	0.06	1.37	2.43	4.36	11.70	3.00	44.16
63	1.96	4.99	8.33	5.06	4.36	1.74	1.30	0.54	1.46	3.68	7.73	4.22	43.37
64	13.64	1.22	4.43	1.85	1.07	2.90	0.76	0.95	1.72	1.22	9.65	14.78	54.19
65	10.67	1.99	1.47	3.42	1.91	0.75	0.24	1.50	0.03	2.54	7.28	8.87	40.67
66	9.75	2.19	6.43	1.29	1.31	1.67	1.28	0.31	1.72	3.32	6.60	8.29	44.14
67	8.65	2.76	6.08	3.54	2.52	1.17	0.00	0.00	0.81	6.36	2.74	M6.24	40.87
68	5.53	8.87	3.60	1.95	3.23	3.44	0.50	4.95	3.83	7.09	7.89	14.56	65.44
69	M10.47	3.92	2.99	9.44	2.23	4.48	0.09	0.11	4.50	5.00	3.77	9.15	56.15
70	14.05	6.03	3.01	3.76	1.81	0.69	0.09	0.00	2.15	3.59	8.69	9.36	53.23
71	10.08	4.50	8.27	4.33	2.41	3.16	0.37	1.50	3.79	4.37	7.66	10.25	58.69
72	9.17	6.71	6.53	4.81	2.87	0.73	0.50	0.71	4.41	1.04	6.47	9.79	53.74
73	5.90	2.34	4.00	1.79	1.62	2.23	0.08	1.40	3.18	M4.00	14.21	11.93	52.68
74	9.57	6.70	8.04	2.81	2.63	1.18	2.82	0.06	0.40	2.44	7.21	6.87	50.73
75	8.28	5.51	5.67	2.44	1.93	2.12	0.74	3.31	0.00	6.25	5.54	7.79	49.56
76	6.33	8.11	3.64	M3.55	2.12	0.67	0.87	2.30	1.25	1.20	0.93	1.69	32.66
77	1.65	3.52	4.20	0.77	4.31	1.41	0.68	3.01	4.41	2.92	M7.17	11.49	44.54
78	5.96	4.53	1.88	5.84	4.45	1.71	1.53	2.36	2.88	0.61	4.73	3.27	39.75
79	2.90	8.99	3.30	3.94	2.49	0.70	0.52	0.98	M3.14	5.70	3.75	7.73	44.14
80	11.38	4.38	3.71	3.91	1.30	3.79	0.18	0.22	1.65	1.56	7.60	12.61	52.29
81	1.84	4.51	3.13	2.55	1.83	4.52	0.28	0.00	2.84	4.79	5.49	11.42	43.20
82	7.75	M8.22	5.18	4.37	1.66	1.05	0.22	1.27	3.76	4.25	5.42	10.39	53.55
83	8.70	8.93	7.87	2.50	2.11		4.24	2.57	M0.53	2.16	9.82	6.78	56.21
84	3.29	5.53		3.82	5.19	4.60	0.00	0.03		6.24	12.34	4.27	45.31
85	0.46	M3.84	4.39	1.38	0.92	M2.51	0.43	0.52	2.65	3.59	6.47	M3.05	30.02
86	M6.56	7.99	3.19	2.40	M2.89	0.57	1.92	M0.00	M0.93	M2.08	M6.93		35.46
87	7.92	4.44	6.00	2.71	M2.11	M0.49	M1.62	0.23	0.84	0.29	2.25	M10.77	39.67
88	9.17	2.04	4.91	5.85	M3.58	1.94	0.59	0.08	M1.51	0.18	11.24	3.43	44.52
89	5.18	3.18	M7.08	2.02	M2.23	1.05	0.58	1.45	1.10	M2.25	3.69	3.98	33.79
90	M9.65	M4.58	2.78	2.59	M1.92	M2.46	0.48	1.00	0.47	M5.94	4.94	3.31	40.12
91	3.50	4.26	3.71	4.63	4.40	2.32	0.06	1.61	0.15	2.98	7.65	5.99	41.26
92	5.24	4.48	1.12	5.10	0.16	0.41	0.26	0.76	1.86	4.19	4.46	M6.51	34.55
93	3.74	1.11	M5.24	6.15	4.24	M1.73	M2.23	M0.23	0.00	M1.43	1.91	M6.48	34.49
94	M5.38	M6.33	4.12	2.14	1.71	1.53	0.08	0.00	1.10	M7.22	M8.74	6.62	44.97
95	7.61	5.44	4.23	3.08	1.54	M1.97	0.76	1.62	M2.93	4.02	M11.00	M8.36	54.16
96	9.17	12.05	3.86	5.63	M5.00	0.91	0.63	0.11	M2.25	M5.33	M9.96	M16.13	71.03
97	M8.45	M2.20	8.63	4.91	M2.37	M2.38	1.01	1.54	4.02	M5.70	M3.97	3.47	48.65
98	M8.91	M4.86	4.68	M1.19	4.99	M1.03	0.43	0.02	1.13	M4.21	11.32	9.74	52.51
99	9.14	10.01	5.60	3.43	3.41	1.78	0.20	0.84	0.19	M2.70		M5.01	42.31
0	M4.06	M6.29	M3.08	M2.26	M3.25	M1.41	M0.46	0.02	M0.48	M3.88	M2.50	M2.90	31.47
1	M1.25	M1.33	M5.02	M2.62	1.60	M1.61	M0.73	1.05	M6.80	M2.65	M6.52	M9.54	34.92
2	M8.03	3.96	M5.55	M3.58	M1.50	M2.09	0.37	0.29	M0.49	0.47	M2.81	M10.18	40.12
3	M7.60	M3.06	M7.85	M5.58	M0.52	M0.70	0.00		1.02	M3.02	M6.20	9.30	45.74
4	M5.98	3.33		M1.74	M2.38	2.15	0.15	3.20	M2.27	M5.62	1.89	4.35	33.06
5	M2.26	0.78	M5.43	M3.13	M4.57	M2.06	0.57	M0.50	M1.58	M3.19	M6.91	9.91	40.89
6	M13.20	M2.90	M4.17	6.28		1.01	M0.09	M0.06	M1.75	M1.59	M12.41	M2.34	45.00
7	M1.01	M2.13	M1.69	M1.59	0.61	M0.49	M0.32	0.00	0.32	M6.14	M5.90	M9.50	29.70
8	M7.92	M3.53	M6.10	M0.30		M1.44		M1.53	M0.45		M7.34	M3.43	35.15
9	6.06	M3.22	4.08	1.30	0.98	1.05	M0.17	0.69	1.60	M2.01	M6.70	M5.23	35.57
10	M5.39	3.65	M6.04	M4.16	M3.52	M3.72	0.32	0.17	M2.94	M5.73	7.91	11.43	54.88
11	M5.35	5.17	M8.25	M5.58	3.32	M1.48	1.10	M0.00	M1.04		M9.14	M4.30	44.73
12	M9.24	M3.11	M8.43	4.84	M3.16	M3.54	M0.79	M0.00	M0.09	M7.92	M9.00	M9.74	60.86
13	M3.56	2.40	M1.05		M2.69	M0.12	M0.00		M5.56	M1.05	M3.94	M2.08	23.43
14	M3.21	M3.83	M9.02	3.93	M2.59	M1.33	0.91	M0.77	1.56	M6.66	M3.39	M5.08	42.48
15	M3.28	M3.99	5.52	2.35	M1.00	0.32	0.26	0.80	0.96	M4.31	M7.50	M14.15	44.44
16	M7.35	M3.43	M5.47	3.45	1.12	M1.49	M0.43	M0.07					22.81

Product generated by ACIS - NOAA Regional Climate Centers

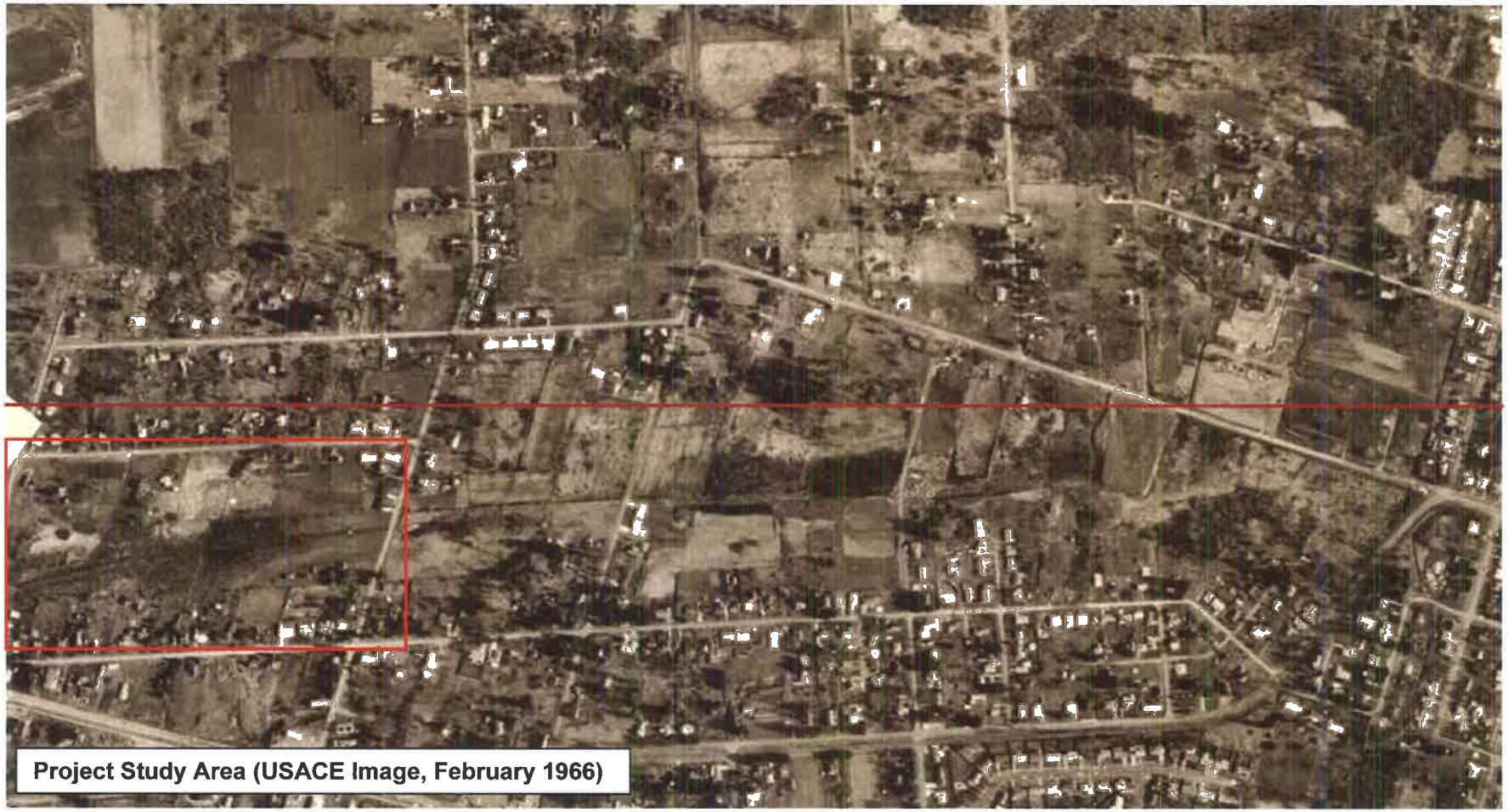
Appendix E. Historic Aerial Imagery

Project Study Area (USACE Image, July 1936)

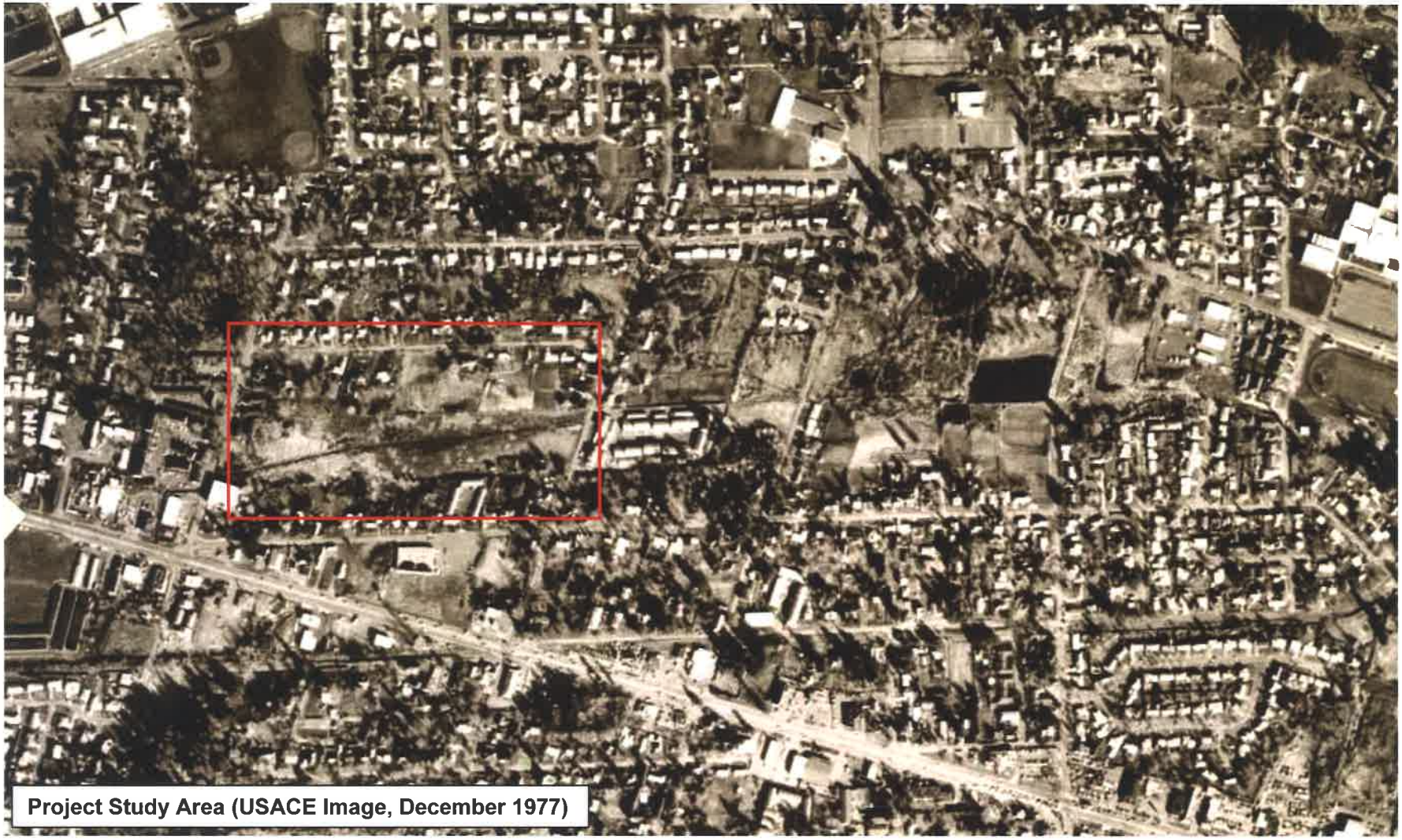


Project Study Area (USACE Image, May 1944)

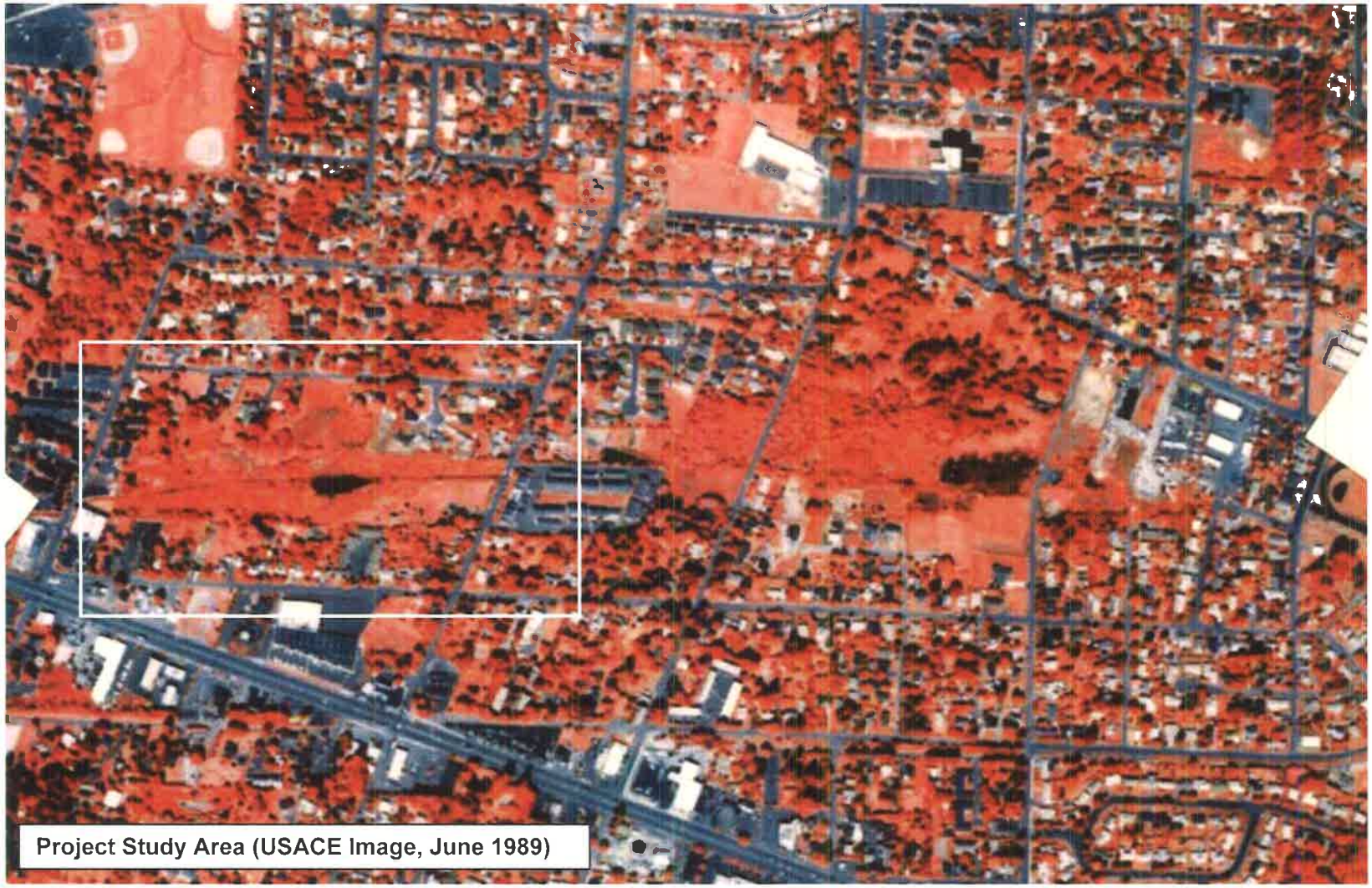
Project Study Area (USACE Image, April 1956)



Project Study Area (USACE Image, February 1966)



Project Study Area (USACE Image, December 1977)


Project Study Area (USACE Image, June 1989)

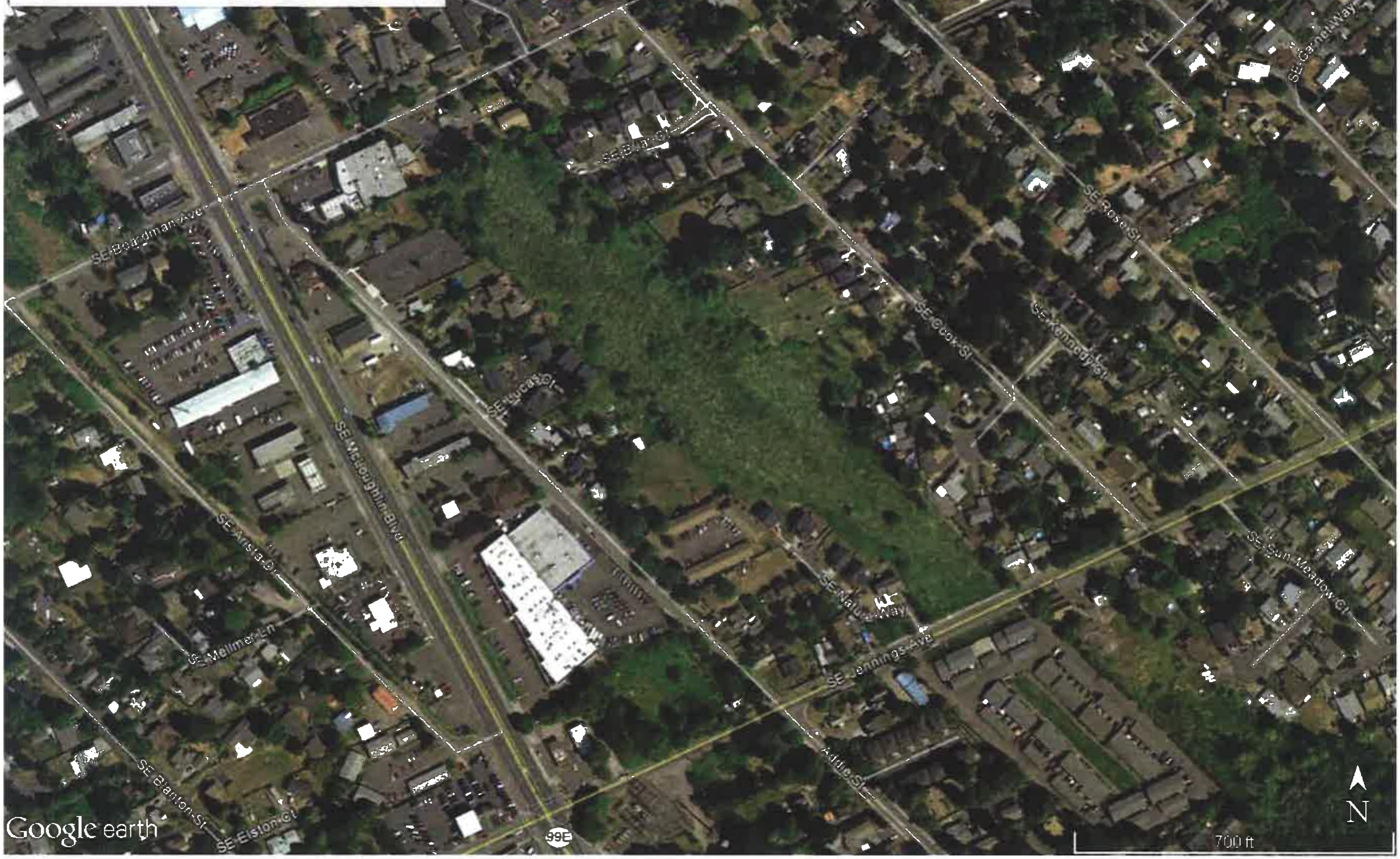

Project Study Area June 19, 1994
SE Colony Ct
SE Carmel Way
SE Boardman Ave
SE Ross St
SE Kennedy Ct
SE Cogar St
SE Lucas Ct
99E
SE Natura Way
SE Jennings Ave
SE Sun Meadow Ct
SE Mallmer Ln
SE Blanton St
Google earth
700 ft
N


Project Study Area October 3, 2002
SE Boardman Ave
SE Blair St
SE Rose St
SE Gardner Way
SE Cook St
SE Kennedy Ct
SE Lucas Ct
SE Edgehill Blvd
SE Arista Dr
SE Mellmer Ln
SE Nature Way
SE Jennings Ave
SE Sunnybrook Ct
Addie St
SE Blanton St
SE Elston Ct
99E
Google earth
Image © 2015 DigitalGlobe
700 ft
N


Project Study Area July 30, 2005
SE Boardman Ave
SE Bike Ct
SE Rose St
SE Garnet Way
SE Cook St
SE Kennedy Ct
SE Lucas Ct
SE McLoughlin Blvd
SE Ariola Ct
SE Nature Way
SE Sun Meadow Ct
SE Mellmer Ln
SE Jennings Ave
Addie St
SE Blanton St
SE Elston Ct
99E
Google earth
Image © 2016 DigitalGlobe
700 ft
N


Project Study Area July 23, 2008
SE McLoughlin Blvd
SE Jennings Ave
SE Natura Way
SE Addie St
SE Sunmeadow Ct
SE Arista Dr
SE Blanton St
SE Elston Ct
99E
N
700 ft
Google earth

Project Study Area August 20, 2011




Project Study Area April 17, 2015
SE Boardman Ave
SE Bond St
SE Rose St
SE Garnet Way
SE Cook St
SE Kennedy Ct
SE Lucas Ct
SE McLoughlin Blvd
SE Arista Ct
SE Melmer Ln
SE Blanton St
SE Elston Ct
99E
SE Jennings Ave
SE Sun Meadow Ct
Addie St
Google earth
700 ft
N

Appendix C. Civil Design Plans

Water Quality Resource Area

Boardman Wetland Design Project

Clackamas County, Oregon

February 14, 2017

Contents

Tables

Appendices

Abbreviations and Acronyms

EPSC	Erosion Prevention Control Plan
HCA	Habitat Conservation Area
M	Medium Density
Metro	Portland Metropolitan region
OLWSD	Oak Lodge Water Services District
PEM	Palustrine Emergent
PPWF	Primary Protect Water Feature
R	Residential
UGB	urban growth boundary
VC	vegetated corridor
WQRA	Water Quality Resource Area
ZDO	Zoning and Development Ordinance

1 Introduction

The application for a Water Quality Resource Area (WQRA) Development Permit has been prepared for the Oak Lodge Water Services District (OLWSD) Boardman Wetland Design Project (project) in compliance with requirements outlined in Section 709 of the Clackamas County Zoning and Development Ordinance (ZDO). The project area lies within the Portland Metropolitan region (Metro) urban growth boundary (UGB) in the northwestern portion of Clackamas County, Oregon, east of Oregon Route 99E, and north of the City of Gladstone (Figure 1, all figures are located in Appendix A). The 8.4-acre Boardman Wetlands are bordered by SE Boardman Avenue to the north, SE Cook Street to the east, SE Jennings Avenue to the south, and SE Addie Street to the west (Figure 2). The Boardman Creek drainage basin, comprised of the South and North Boardman basins, covers approximately 1,327 acres. The basin consists of 21 miles of piped creek and 4 miles of open stream. Boardman Creek enters the wetland area from a culvert beneath SE Jennings Avenue, flows approximately 1,500 feet northwest through the central portion of the wetland and exits the area via a culvert beneath SE Boardman Avenue. Boardman Creek discharges the Boardman Wetlands, flows along the Trolley Trail, through Stringfield Family Park, and enters the Willamette River at Walta Vista Street. The majority of Boardman Creek is piped beneath existing development in the area. The Boardman Wetlands and Boardman Creek are primary protected water features according to 709.02(B) and 709.02(C), respectively. These features are also mapped as primary protected water resources on the Title 3 map for Section 2e2e18 from Metro's Regional Land Information.

OLWSD is proposing improvements to wetland and utility function within the 8.4-acre Boardman Wetlands. The project would replace the sanitary sewer line and manholes, provide wetland enhancement and functional uplift for approximately half of the wetland site, and develop a public boardwalk trail system through the wetland. OLWSD has a sanitary sewer maintenance easement through the site and recently purchased approximately half of the wetland area and two adjacent residential lots on SE Addie Street. Both residential lots will be re-developed to provide parking and an outdoor classroom for use by the community and the nearby schools; however, the majority of development will occur outside of the WQRA. The proposed project activities would not result in removal of WQRA area and would not change the existing WQRA category.

2 Water Quality Resource Area

Subsection 709.06(B)(1)(a) of the Clackamas County ZDO states than a WQRA Map Verification shall be required for development that is proposed to be in the WQRA. The mapped WQRA on the Title 3 map for Township 2E, Range 2E, Section 18 shows the majority of the proposed project area is categorized as a Primary Protect Water Feature (PPWF) and as a Wetland Area (Appendix A). The WQRA mapped along Boardman Creek and the Boardman Wetlands occurs on the following taxlot parcels:

- 22E18CA02716
- 22E18CA04101
- 22E18CA04407
- 22E18CA04200
- 22E18CA04300

Per Section 709.02(E) and Table 709-1, the width of the WQRA vegetated corridor (VC) for a Primary Protected Water Resource with slopes <25% is 50 feet from the edge of bankfull stage and the delineated edge of a protected wetland (Table 1). Because the VC exhibits less than 25% canopy cover and greater than 10% surface coverage of non-native vegetation, the WQRA is considered a degraded existing vegetated corridor per Table 709-2. The corridor is dominated by residential development including impervious surfaces and landscaped lawns. In the absence of development the corridor is comprised mainly of invasive reed canary grass and Himalayan blackberry.

The Boardman Wetlands are drained by Boardman Creek which passes through the central portion of the project area and wetland. The 50-foot vegetated corridor for Boardman Creek occurs entirely within the Boardman Wetlands. A wetland delineation was performed in the project area in June 2016 by a qualified wetland specialist pursuant to the Oregon Department of State Lands wetland delineation procedures. The wetland delineation report concluded approximately 4.7 acres of Palustrine Emergent (PEM) Semipermanently Flooded wetland habitat (PEM1F) are present within the project area (Appendix B).

Table 1. Width of WQRA Vegetated Corridor

Water Resource	Protected Water Resource Type	Slope Adjacent to Protected Water Source	Starting point from Measurements from Water Resource	Width of Vegetated Corridor
Boardman Creek	Primary	<25	Edge of bankfull stage	50 feet
Delineated wetland	Primary	<25	Delineated edge of protected wetland	50 feet

Boardman Creek and the majority of the Boardman Wetlands are located in an area zoned Urban Low Density Residential R-7) while the most westerly taxlots (22E18CA04200 and 22E18CA04300) are zoned Medium Density (M) Residential (MR-1). The project area is located within the Metro UGB. The overall contiguous area of vegetative cover is low structure, non-native and invasive in nature.

3 Proposed Development within the WQRA

3.1 Sanitary Sewer Line Rehabilitation

A sanitary sewer line was installed beneath Boardman Creek in 1961 and is currently managed by OLWSD. The line has reached the end of the design life and must be replaced. The line extends approximately 1500 feet through the center of the wetland and connects three lateral lines that service adjacent residences to the main trunk line. The existing sanitary sewer line through the wetland will be replaced with a new pipeline. Proposed repair to the sanitary sewer line will be completed using trenchless technology. Three existing lateral sewer lines will be restored to the main trunk line once repairs have been made. In accordance with Section 709.04(K), this action is considered maintenance, repair or improvement of utility facilities. Because portions of the WQRA would be restored and vegetation removed will be replaced with native vegetation, the proposed sanitary sewer line rehabilitation activities would be exempt from requirements of Section 709. Ingress and egress to the site will occur from the SE Addie Street lots and via the OLWSD easement located on the SE Jennings and SE Boardman Streets. The proposed action will be localized to OLWSD's sewer line easement and will not intrude further into surrounding WQRA and will not be discussed further in this application.

3.2 Wetland Enhancement

The majority of the WQRA is dominated by non-native, invasive plant species. The proposed wetland enhancement component of the project includes removing some of the invasive and non-native communities, and planting mixes of native trees and herbaceous vegetation designed to function in riparian and buffer/upland areas as well as riparian fringe and seasonally flooded areas. A series of features will be constructed throughout the wetland enhancement area for the purposes of enhancing hydrologic function. These features include hummocks and hollows, a small pond and a simulated beaver dam foundation. An existing beaver dam located on Boardman Creek in the northern portion of the project area would be removed. Although the mapped WQRA will experience temporary impacts during restoration work, the acreage of the WQRA will not be impacted and restoration activities are expected to increase the overall function of the wetland and its associated surface water features. The purpose of the proposed restoration is to enhance Boardman Wetlands and Boardman Creek, and is part of local efforts to enhance the Boardman-Rinearson Wetland Complex. Restoration work is exempt from the requirements of Section 709 as outlined in 709.04(E); therefore, these restoration activities will not be discussed further in this application.

3.3 Public Space Development

A component of the proposed project is to provide recreation and educational opportunities for the surrounding communities. The project proposes to develop a public space to provide parking and an outdoor classroom for the surrounding community and nearby Candy Lane Elementary School (see Appendix C for plan set). This development will occur on taxlots 22E18CA04200 and 22E18CA04300 located on SE Addie Street.

The majority of this development will occur outside the WQRA. The project proposes to construct an elevated boardwalk path that circumnavigates the wetland feature. Approximately 1800 feet of boardwalk would be constructed within WQRA categorized as a Primary Protected Water Resource. Due to the elevated boardwalk design and construction method, permanent impacts to the WQRA only include the area occupied by each helical screw pile. Because the boardwalk will be founded with helical screw piles, decking can be constructed from an elevated position, eliminating the need for temporary construction impacts within WQRA. The boardwalk alignment was chosen to minimize impacts to high quality wetland features. There would be up to two public ingress/egress routes to the boardwalk from taxlot 22E18CA04200 on SE Addie Street. The two pervious pavement paths connecting the boardwalk to the parking area will be 4-foot and 8-foot wide. Path construction includes excavating soils to a depth of approximately 6-8 inches, backfilling with crushed rock, and placing forms pervious pavers. Rockwalls will be installed in the WQRA to create viewing and resting opportunities for users of the public space (see Appendix C for plan set).

3.4 Project Effects

Development within the WQRA will be avoided to the extent possible; however, the project will result in temporary and permanent impacts to the WQRA. Approaches were implemented during the project design phase to minimize development impacts resulting from the footprint of boardwalk and trail system. During the design phase several alternatives were evaluated and subsequently dismissed due to the higher level of impacts. A path constructed at grade would have required substantial grading and fill within the WQRA and would have resulted in reducing water quality functions within the WQRA. A floating boardwalk design was also dismissed. This design option would have allowed the boardwalk to rest on the ground surface during periods of lower water disrupting the natural physical processes necessary for healthy plant survival and increasing the design footprint. The proposed elevated boardwalk allows those critical functions to be preserved while eliminating the need for grading and thereby minimizing the footprint of the design (Appendix C).

The project design team evaluated several path alignment alternatives through and around the wetland area using a wetland habitat map (Figure 4, Appendix A), created early during project development. This wetland habitat map highlighted areas of Oregon Ash, spirea, willow, and reed canary grass. The project team utilized this information to formulate a path alignment that would minimize impacts to the higher quality wetlands containing Oregon ash, spirea, and willow. The project also includes an extensive planting plan around the boardwalk within the WQRA. Several native plant pallets will be used to increase plant success and overall plant diversity. The diverse plants include species adapted to upland, riparian, emergent wetlands and open water environments can be found on the planting plan sheets found in Appendix C.

Although impact-reduction approaches would be incorporated, minor temporary and permanent impacts to the WQRA are anticipated during construction of the boardwalk and trail system, and during placement of rock walls (Appendix C).

Table 2. Summary of Project-related Impacts

Construction Element	Impact Type	Location	Acreage	Square Feet
Boardwalk	Permanent	PPWF	0.007	284
Rockwalls	Permanent	PPWF	0.002	108
	Temporary	PPWF	0.019	836
	Permanent	Corridor	0.005	241
	Temporary	Corridor	0.033	1444
Pervious Path	Permanent	PPWF	0.008	344
	Temporary	PPWF	0.016	706
	Permanent	Corridor	0.025	1100
	Temporary	Corridor	0.037	1616

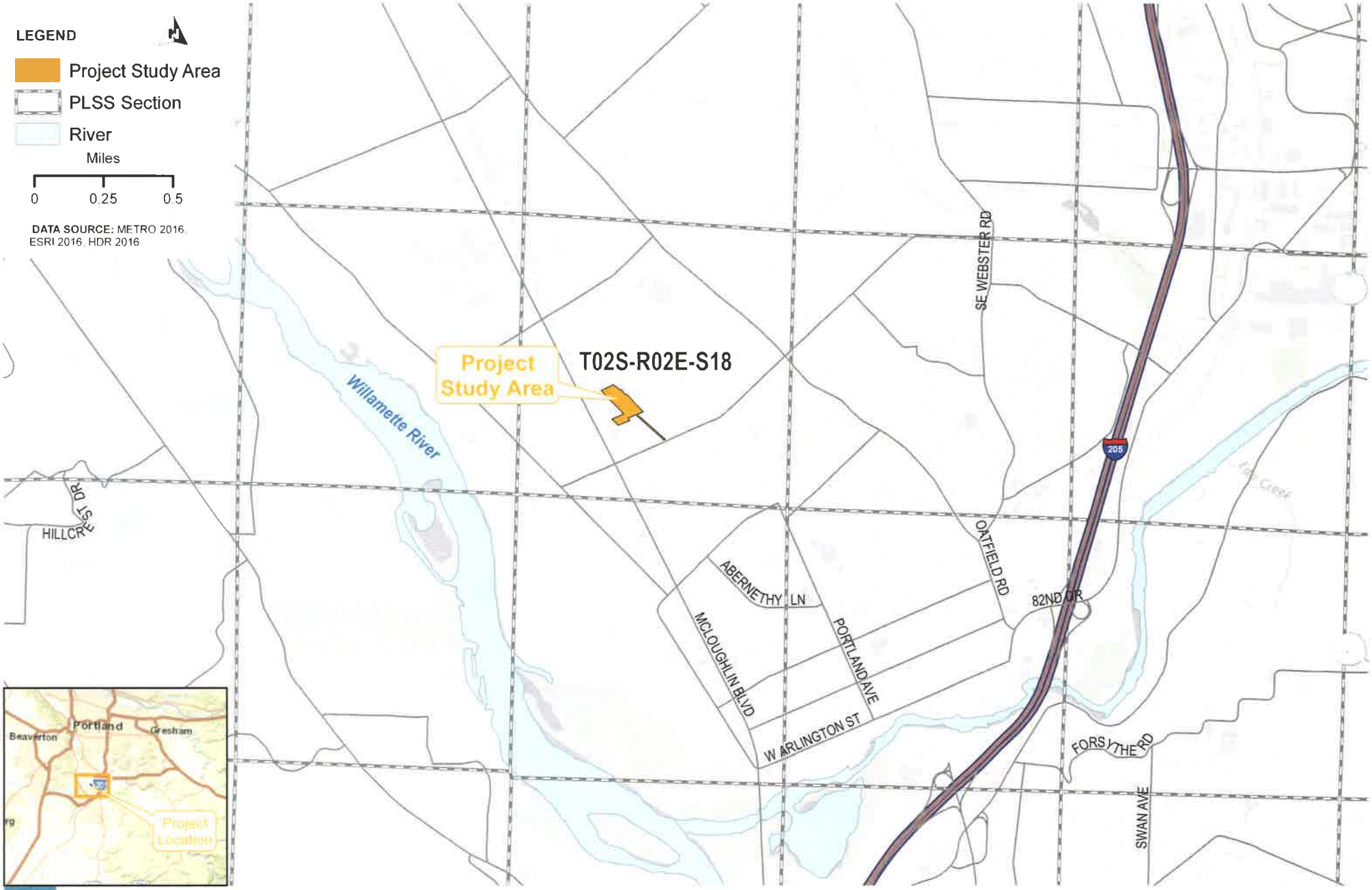
Overall, proposed project activities will create functional uplift in the WQRA by increasing canopy cover, reducing non-native and invasive plant species, and planting native communities that represent the vegetative composition though would naturally occur on site.

4 Project Mitigation

All temporary and permanent impacts to trees, vegetation, and soils will be mitigated on site in accordance with section 709.10 of the Clackamas County ZDO. Boardwalk design, layout, and installation technique will minimize impacts and limit disturbance to vegetation and soils in riparian and upland areas while still achieving overall project goals. Construction footprints and impacts would be minimized by developing and implementing a Construction Management Plan (Appendix C) and an Erosion Prevention and Sediment Control (EPSC) Plan (Appendix C) as outlined in 709.08. A construction work easement would be clearly marked and those areas of the WQRA not authorized for disturbance would be identified on project plans and in the field. At a minimum, the areas of the WQRA proposed to be graded for utility and restoration work will be delineated with silt fencing. All stormwater inlets will be protected for the duration of the project and will remain in place after construction activities are completed until soils on site have stabilized. The work area around the manhole within the wetland will be isolated and dewatered. Water removed from the work area will be pumped north and discharged in an area outside the WQRA. When not in use, equipment (excavators, graders, pavers, cement mixers, personnel vehicles, etc.) and material will be staged and/or stockpiled outside the WQRA on the SE Addie Street residential tax lots, 22E18CA04200 and 22E18CA04300. Project personnel and equipment ingress and egress for the site will occur mainly on the SE Addie Street lots, as well as through the OLWSD easements from SE Jennings Avenue (Figure 2). Native landscaping materials will be used and will be harvested locally where possible. Trees within the WQRA not proposed for removal during restoration work would be protected from impacts from construction equipment and native soils will be conserved onsite. Areas within the degraded WQRA that are disturbed and undisturbed by construction will be mitigated using a mix of native vegetation that would naturally occur in riparian, upland and

seasonally or permanently flooded wetlands (see planting plans, Appendix C). All debris will be removed from the project area and bare areas will be vegetated with native vegetation. Approximately 13,500 trees and herbaceous vegetation starts will be planted throughout the entire 4.7-acre wetland area as part of the proposed project. Monitoring of planting establishment will be conducted by OLWSD during until plant establishment is complete and invasive plant communities have been reduced to ensure the survivorship of newly planted native species. By implementing the mitigation and construction best management practices outlined above, the boardwalk and trail system will not impact the overall ecological function, size or value of the WQRA.

Appendix A. Figures



PROJECT LOCATION

FIGURE 1

HABITAT CONSERVATION AND WATER QUALITY RESOURCE AREAS

FIGURE 2

Plot date: 10 Sept 08 M:\plan\arc\08098_Title13_Sections\Title13_layout.mxd

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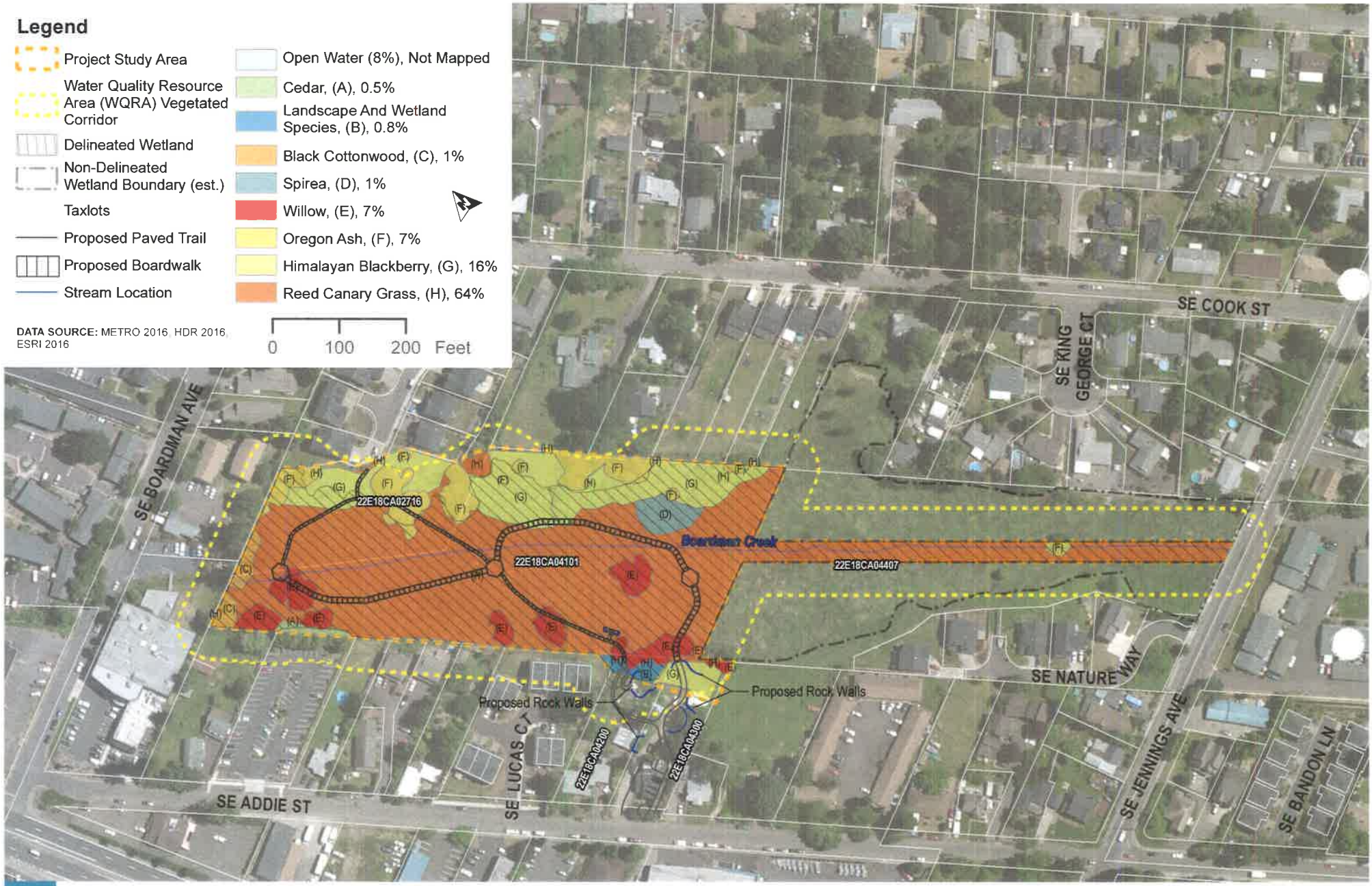
Figure 3. Habitat Conservation Area Map



WETLAND AND VEGETATION INVENTORY

FIGURE 4

Appendix B. Wetland Delineation Report

Wetlands and Waterbodies Delineation Report

Boardman Wetland Design

Clackamas County, Oregon

January 9, 2017

Contents

Tables

Appendices

1 Landscape Setting and Land Use

Oak Lodge Sanitary District (OLSD) is proposing to improve wetland functions for approximately half of the 8.4-acre wetland known as the Boardman Wetlands, which is part of the Boardman Wetland Design project (project), (Figure 1; all figures are located in Appendix A). The project would provide rehabilitation or replacement of the sanitary sewer line and manholes in the wetland, wetland enhancement, and construction areas of the public boardwalk trail system through a portion of the wetland. OLSD has a sewer maintenance easement through the site and recently purchased approximately half of the wetland area and two adjacent residential lots on SE Addie Street: parcels 22E18CA04200 and 22E18CA04300 (Figure 2). At least one of the residential lots would be re-developed to provide parking, a public restroom, and an outdoor classroom for the nearby Candy Lane Elementary School. These lots have a direct connection to the Boardman Wetlands.

The 5.5-acre Boardman Wetland Design project study area is located within the United States Geological Survey (USGS) Gladstone Quadrangle Map (USGS 1984), Township 2 South, Range 2 East, Section 18 (Figure 1). The study area lies within the Portland Metropolitan region (Metro) urban growth boundary (UGB) in the northwestern portion of Clackamas County, Oregon, east of Oregon Route 99E, and north of the City of Gladstone. The Boardman Wetlands are bordered by SE Boardman Avenue to the north, SE Cook Street to the west, SE Jennings Avenue to the south, and SE Addie Road to the west.

As defined by the Environmental Protection Agency (EPA), the project study area occurs within the Willamette Valley Ecoregion. The Willamette Valley Ecoregion is defined by the Willamette River and consists of broad alluvial flats and low basalt hills, with soils of deep alluvial silts from river deposits and dense heavy clays from fluvial deposits. The Willamette Valley Ecoregion is relatively low gradient, and historically, the Willamette River was extensively braided. These factors contribute to the current hydrology of the valley, characterized by numerous oxbow lakes, ponds and wetlands as well as sluggish, meandering streams and rivers (EPA 2016). The project study area occurs in the EPA Level IV Ecoregion 3c, Prairie Terraces. This ecoregion supports Oregon white oak prairies, and in wetter areas supports Oregon ash and Douglas fir. This ecoregion was historically comprised of seasonal wetlands and ponds, and currently many streams are channelized, ditched, and/or diverted (EPA 2016).

The Boardman Creek drainage basin, comprised of the South and North Boardman basins, covers approximately 1,327 acres. The basin consists of 21 miles of piped creek and 4 miles of open stream. Boardman Creek begins in the Boardman Wetlands, flows along the Trolley Trail, through Stringfield Family Park, and enters the Willamette River at Walta Vista Street (NCUWC 2016). The majority of Boardman Creek is piped beneath existing development in the area. The Boardman Wetlands habitat is classified as a Palustrine Emergent (persistent) Seasonally Flooded (PEM1C) wetland by the National Wetland Inventory (NWI, Figure 3; [USFWS 2016a]).

Elevations within the Boardman Wetland Design project study area are between 67 and 75 feet above sea level. The majority of the study area is flat with slopes of less than

3 percent occurring mainly along the boundaries where the wetland area transitions to residential development. Boardman Creek enters the study area from a culvert beneath SE Jennings Avenue and travels approximately 1,500 feet from southeast to northwest forming several ponds through the central portion of the study area (Figure 5A). The creek discharges to a culvert beneath SE Boardman Avenue north of the East Side Athletic Club, located at 4606 SE Boardman Avenue (Figure 5A).

The project study area is bordered by residential development zoned R-7 (Urban Low Density Residential) occurring on SE Boardman Avenue to the north, SE Cook Street to the east, and SE Jennings Avenue to the south; development zoned MR-1 (Medium Density Residential) occurs on SE Addie Street to the west.

2 Site Alterations

Land surveys completed in the 1880s show that Boardman Creek was originally a large, unrestricted, terrace wetland with numerous small tributaries (WSM 2014). As the area began to be settled, the wetlands were extensively ditched and converted to a series of stream channels. In the early 1900s the wetlands were effectively drained for agricultural purposes (WSM 2014). The land was subsequently converted to commercial, industrial, and residential development, and was modified further by construction of the local road system and placement of utility infrastructure. Aerial imagery dating back to 1936 indicates the area may have been used for agricultural purposes (See Historic Aerial Imagery in Appendix E). The majority of SE Addie Street was developed with residences at this time but very little development had occurred on SE Jennings Avenue or SE Cook Street. No residences or businesses had been developed on SE Boardman Avenue and Boardman Creek appears to have been ditched. Agricultural uses of the wetland area apparently ceased between 1956 and 1966. Residential and infrastructure development in the area continued steadily until recently. A sanitary sewer trunk line was installed through the wetland, beneath Boardman Creek, in 1961. The majority of disturbance within the project study area over the past 15 years is associated with residential development on SE Briar Court, SE Cook Street, SE Nature Way, and SE Lucas Court (See Google Earth aerial imagery in Appendix E).

Currently the remaining wetlands are surrounded by residential development to the north, east, and west, and SE Jennings Avenue to the south. As shown in aerial imagery, the majority of the area surrounding the Boardman Wetlands had been previously developed (Appendix E). Between 2002 and 2005, four single-family dwellings were construction on SE Cook Street; parcels were also developed on SE Briar Court and SE Nature Way. In July 2007 parcels were developed on SE Lucas Court. By 2008, all development in residential areas surrounding the wetlands was completed and no other apparent site alterations have occurred since.

The historic and ongoing development of the surrounding area has degraded the overall quality of the vegetation and habitat in the study area. Previous development has significantly altered natural drainage in the area through ditching, piping, rerouting, and the installation of culverts. Areas with large amounts of impervious surface decrease infiltration and increase stormwater discharge to the wetland area. Residential development has resulted in fill material being placed along the borders of adjacent

parcels that surround the study area. Remaining, undeveloped portions of the Boardman Wetlands are vegetated; however, non-native and invasive species are abundant due to historic development and ongoing disturbance.

3 Precipitation Data and Analysis

The project study area lies within Clackamas County, which is situated at the western base of the northern Oregon Cascade Mountain Range. According to the National Climatic Data Center, the project study area is within U.S. Climate Division 2, Willamette Valley. The Oregon Climate Service describes this division as similar to a Mediterranean climate, with warm, dry summers and cool, wet winters (Taylor and Bartlett 1993). The growing season in this area lasts from February 15 to December 4 (292 days) (NRCS 2016a; Appendix D). Annual average temperatures recorded at the closest Natural Resources Conservation Service (NRCS) Climate Analysis for Wetlands (WETS) station in Oregon City (OR6334) range from 45.1˚F to 64.8˚F (NRCS 2016a). Average annual precipitation recorded at the WETS station is 46.05 inches (NRCS 2016a). The cooler months are the wettest, with the majority of annual rainfall occurring between November and March. Conversely, the warmer months are driest; average rainfall is less than 2 inches per month between June and September (NRCS 2016a).

Recorded precipitation data for the 3 months preceding the field survey, conducted on June 22 and June 24, 2016, were gathered from the nearest weather station in Oregon City, Oregon (Station 356334, Appendix D), and compared to the average precipitation range reported in the WETS table (Table 3-1 and Appendix D). Rainfall throughout the study area was average and normal for the month of April, below average and not within normal range during May, and below average, but within the normal range for June. Approximately 0.97 inches of rainfall was recorded during the 2 weeks prior to the field survey (June 8 - June 21, 2016). Approximately 0.52 inches of rainfall was recorded on June 22, and no rainfall was recorded on June 24. The precipitation for the water year to the date of the wetland survey (October 2015 - June 2016) is 48.62 inches; approximately 115 percent of the average water year of 42.29 inches for the same period (NRCS 2016a).

Because the current water year is above average, below average and out of normal range precipitation during the month of May is not expected to have influenced the presence or absence of vegetation, hydrologic indicators, or wetlands in the study area. Observed precipitation data in the months leading up to the field investigation was analyzed using the Direct Antecedent Rainfall Evaluation Method (NRCS 2015); climate in area was drier than normal.

Table 3-1. Summary of Precipitation between April and June 2016 in Oregon City, Clackamas County, Oregon

Month	Recorded Precipitation (inches)	Monthly Precipitation Average (inches)	Percent of Average Recorded	30% chance (inches)[1]	
				Less Than	More Than
April	3.45	3.46	99.7%	<2.44	>4.10
May	1.12	2.70	41.2%	<1.72	>3.26
June	1.49	1.83	81.4%	<1.11	>2.22

Source: NRCS 2016a (See WETS table in Appendix D)
[1] 30 percent chance less than or more than ranges for normal precipitation.

4 Methods

4.1 Review of Existing Materials

- USGS Topographical, Gladstone Quadrangle Map
- NWI, Gladstone Quadrangle Map (U.S. Fish and Wildlife Service [USFWS] 2016a) (Figure 3, Appendix A)
- Soil Survey of Clackamas County, Oregon (Gerig 1985) (Figure 4, Appendix A)
- Precipitation data from Climate Analysis for Wetlands (WETS) OR6334, Oregon City, Oregon (NRCS 2016a, Appendix F)
- Hydric Soils List, Clackamas County, Oregon (NRCS 2016b) (Figure 4, Appendix A)

4.2 Wetlands

Field investigations were conducted by HDR on June 22 and 24, 2016. The NWI identified one PEM1C wetland, which covers the majority of the study area (Figure 3, Appendix A).

The wetland area was delineated using the methods described in the United States Army Corps of Engineers' (USACE) Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the USACE Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Environmental Laboratory 2010).

Sample plots (labeled SP on figures) were taken in areas to confirm the presence and characteristics of wetland and upland areas. Plots were selected by initial observation of topographic depressions, wetland vegetation, visual evidence of hydrology, and examination of soil samples. At sites exhibiting positive indicators of wetland characteristics, multiple soil pits were dug in conjunction with analysis of vegetative and hydrologic indicators to aid in the determination of wetland boundaries. Once a plot site was selected, a soil pit was dug, soils, hydrology and vegetation were investigated, and results were recorded using the USACE Wetland Determination Data Form

(Appendix B). In many areas, the wetland continues offsite and no corresponding upland plot exists within the project study area. In areas highly modified by fill placement, the wetland boundary was determined by observed changes in vegetation communities and hydrological features similar to those observed at representative wetland sample plots in which data was collected. In these cases, test soil pits were dug to confirm the presence of wetland soils. Landscape elevations were reviewed on maps and in the field to aid in determining the wetland boundary in these areas.

Sample plot locations are shown in Figure 5A-5E in Appendix A and data forms associated with sample plots are included in Appendix B. Representative site photographs from sample plots and observation points are included in Appendix C. Methods used to determine the presence of hydric soil, hydrology, and hydrophytic vegetation are discussed below. Variations to the standard methodology, if necessary, are indicated on the data forms.

4.2.1 Vegetation

At each plot, the percent absolute cover for each species was visually estimated and recorded. Herbaceous cover was assessed within a 10-foot radius plot, and trees, shrubs, and woody vines were estimated within a 30-foot radius plot (Environmental Laboratory 1987, 2010). In accordance with USACE methodology, greater than 50 percent of the dominant plant species must be classified as hydrophytic or have a prevalence index less than or equal to 3.00 for a site to display a positive wetland vegetation indicator.

The dominant plant species were identified using standard taxonomic references (Guard 2010; Pojar and MacKinnon 2004; and Cooke 1997). The wetland indicator status for each species was determined in accordance with the National Wetland Plant List (Environmental Laboratory 2014; USACE 2016). Vegetation was recorded as obligate (OBL), facultative-wetland (FACW), facultative (FAC), facultative upland (FACU), or upland (UPL).

At the time of the wetland delineation surveys some of the herb species, including grasses and sedges, did not have additional characteristics present to help species identification. All dominant plants were identified to species level and the wetland indicator status was recorded on the datasheet. Non-dominant plants that could not be identified to the species level were omitted from the analysis. If necessary, the most common indicator status for the genus was selected to determine dominance based on the National Wetland Plant List. These instances are noted on the data sheets, where applicable.

4.2.2 Soils

Soils at each representative wetland and upland sample plot were typically inspected to a depth of 15 to 26 inches to determine the presence or absence of hydric soil indicators based on the NRCS Indicators of Hydric Soils (NRCS 2010). Soil samples were moistened when necessary to aid in the determination of soil matrix and redoximorphic features (if present): hue, value, and chroma colors (Munsell Color Services, 2009). Soil texture was evaluated using field methods described by USACE and NRCS.

Figure 4 shows the mapped soils in the study area. Table 4-1 provides soil names, hydric status, and the approximate percentage of each soil in the study area (NRCS 2016b).

Table 4-1. Study Area Soils

Soil Type (Map Unit Symbol)	Percentage of Study Area	Hydric Status
Cove silty clay loam (25)	84.5	Hydric
Woodburn silt loam, 3 to 8 percent slopes (91B)	15.5	Non-hydric, hydric inclusions

Source: NRCS 2016b

Cove silty clay loam soils are deep, poorly-drained soils on floodplains formed in clayey alluvium. The surface layer of these soils is typically comprised of black silty clay loam (Gerig 1985). Woodburn silt loam soils are deep, moderately well-drained soil occurring on broad valley terraces. Surface layers are comprised of very dark brown and dark brown silt loam (Gerig 1985).

4.2.3 Hydrology

To document wetland hydrology characteristics, primary and secondary indicators were investigated at each of the sample plots. These indicators included the presence of inundation or standing water at the surface, saturation, drainage patterns, hydrogen sulfide odor, iron deposits, high water table, and/or reduced iron when using an Alpha-alpha dipyridyl solution (alpha-alpha).

4.3 Ordinary High Water Mark

The ordinary high water mark (OHWM) for waterways in the study area was determined in the field using the methodology outlined in the USACE Regulatory Guidance Letter 05-05 (USACE 2005). The USACE guidance is consistent with the definition of OHWM put forth by the Oregon Department of State Lands (DSL). For purposes of the Clean Water Act (CWA), OHWM is "that line on the shore established by the fluctuation of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (USACE 2005). These indicators were not observed in the field for Boardman Creek or any other water feature present on site.

5 Description of All Wetlands and Other Non-Wetland Waters

5.1 Delineated Wetlands

The Boardman Wetlands encompass approximately 8.4 total acres (Figure 5A). One wetland, Wetland A, was delineated within the 5.5-acre study area (Figure 2). Wetland A is approximately 4.7 acres and is located in a topographic depression (Figure 5A). The majority of Wetland A classifies as Palustrine Emergent Semipermanently Flooded habitat (PEM1F, [USFWS 1979]), and classifies as a Depressional wetland

hydrogeographically (Adamus 2001). A total of 15 sample plots (SP1 to SP15) were completed in the project study area. Ten sample plots were determined to be within the wetland boundary and five sample plots were determined to be within upland areas. In many areas the wetland continues outside the boundaries of the study area; in such cases, a paired upland plot was not completed due to access restrictions.

The majority of the wetland has open herbaceous cover with isolated pockets of shrubs and trees that occur mainly along the wetland borders and within the northern portion of the project study area. Herbaceous vegetation in the wetland is dominated by reed canary grass (*Phalaris arundinacea*, FACW). The tree and shrub community of the wetland is dominated by Oregon ash (*Fraxinus latifolia*, FACW) and willow species (*Salix* ssp., FAC/FACW). The wetland and upland vine community, where present, is solely dominated by Himalayan blackberry (*Rubus armeniacus*, FAC). The surrounding upland community varies widely, but is mainly comprised of Oregon ash (*Fraxinus latifolia*, FACW), facultative willow species (*Salix* ssp.), reed canary grass (*Phalaris arundinacea*, FACW), common velvet grass (*Holcus lanatus*), and Himalayan blackberry (*Rubus armeniacus*, FAC; See datasheets in Appendix B).

The wetland hydrology is primarily influenced by Boardman Creek and stormwater runoff from surrounding residential development that is conveyed to the wetland by several stormwater outfalls (Figure 5A-5C). Boardman Creek enters the wetland area from a culvert beneath SE Jennings Avenue, flows approximately 1,500 feet northwest through the central portion of the wetland and exits the area via a culvert beneath SE Boardman Avenue. A total of five stormwater outfalls discharge to the wetland (Figure 5A-5C). Additionally, one unmapped, open air outfall was encountered just east of the project study area (PP16, Figure 5C). Due to topographic position, field observations of highly saturated conditions, and presence of surface water throughout most of the wetland area, hydrology may also be attributed to groundwater inputs. Multiple historic aerial images evaluated over a number of years at different times of the year indicate a large portion of the study area appears to be saturated/flooded for most of the year. Historical aerial images available from the US Army Corps of Engineers and Google Earth date back to July 1936 and are shown in Appendix E. Surface saturation is visible in all images beginning in 1977; high water table is assumed throughout the wetland area for all years except years of extreme drought.

Soils within the wetland area are mapped as Cove silty clay loam (25) and Woodburn silt loam, 3 to 8 percent slopes (91B); both are hydric soils (NRCS 2016b). Soils at SP4 and SP6 were problematic due to lack of hydric soil indicators; the problematic soils procedure outlined in the Western Mountains, Valley, and Coast Regional Supplement was applied (Environmental Laboratory 2010). Problematic soil situation 4b(6), Seasonally Ponded Soils, was applied when evaluating SP4 and SP6 and soils were considered hydric. Landscape setting is likely to concentrate flow away from the sample plot in both cases.

In the northeastern portion of the study area the natural landscape has been modified by placement of fill associated with residential development on SE Briar Court. This modification has likely shifted the natural wetland boundary west and modified natural hydrology. In this area hydrology and wetland vegetation were comparable to SP10 (Figure 5C) and was used primarily to determine the wetland boundary. Additionally, test pits were dug (See Photo 34 is Appendix C for example of test pit) along the boundary

and wetland soils were confirmed by strong hydrogen sulfide odor and the presence of redoximorphic features within the upper 6 inches of soil profiles (Photo 35, Appendix C).

The wetland continues offsite along the study area boundaries to the south and southeast (Figure 5B, 5C, and 5E). Most parcels that border the wetland area to the east of the study area have been filled; therefore, the wetland is not expected to continue offsite in this area.

5.2 Waters of the State/United States

Boardman Creek enters the study area from a culvert beneath SE Jennings Avenue and travels approximately 1,500 feet from southeast to northwest forming several ponds through the central portion of the study area (Figure 5A). The creek discharges to a culvert beneath the east parking lot of the East Side Athletic Club located at 4606 SE Boardman Avenue (Figure 5A) and eventually discharges to the Willamette River at a point approximately 3,000 feet northwest of the project area, as the crow flies. Boardman Creek is an at-grade stream with an unconsolidated bottom and no defined bed and bank; therefore, no OHWM was determined during field surveys. Due to the relatively flat landscape and extensive presence of reed canary grass, the creek channel is not apparent though much of the wetland corridor. Large ponds, backwater channels and areas of standing water are prevalent through the study area. The thalweg of Boardman Creek is likely the lowest point in the area where water collects, channelizes and moves offsite. Based on these characteristics and considering the additional hydrologic inputs, Boardman Creek acts as a discharge point for the surrounding headwater wetland area. No fish species occur in Boardman Creek (Streamnet 2016).

6 Deviation from LWI or NWI

The Local Wetland Inventory (LWI) did not show any mapped wetlands within the project study area. The Boardman Wetlands are classified as a Palustrine Emergent (persistent) Seasonally Flooded (PEM1C) wetland habitat by the NWI (USFWS 2016a; Figure 4). However, based on historic aerial imagery (Appendix E) and field observations (Appendix A and Appendix C), it is likely that surface water and high water table persists throughout the year; therefore Wetland A should be classified as a Palustrine Emergent (persistent) Semipermanently flooded (PEM1F) wetland habitat.

7 Mapping Methods

During the field delineation, data plot locations, wetland boundaries, and OHWM boundaries were recorded using a resource grade Trimble GeoXH 6000 Global Positioning System (GPS). Mapping accuracy of the unit is 50 cm (1.64 feet) using post-processed differential data correction after being downloaded. Once post-processing was completed, the data were overlain onto the National Agriculture Imagery Program (NAIP) aerial photographs used for field maps with the project, and GPS data using GIS software. The data illustrated on Figure 5A-5C has a sub-meter mapping accuracy using post-processed differential data correction.

8 Additional Information

USACE and DSL will assert jurisdiction over water and wetland features that meet regulatory authority as defined by the following:

- USACE will assert jurisdiction over traditional navigable waters, which includes all the waters described in 33 C.F.R. § 328.3(a)(1), and 40 C.F.R. § 230.3 (s)(1). The agencies will assert jurisdiction over wetlands adjacent to traditional navigable waters, including over adjacent wetlands that do not have a continuous surface connection to traditional navigable waters.
- DSL regulates "waters" (including rivers and wetlands) for the State of Oregon. DSL regulates waters using volume amounts of materials (i.e., sediments) removed or filled into a regulated water resource and location of activity. Waters of the state are regulated under the Removal/Fill Law (Oregon Revised Statue [ORS] 196.795–990) are defined under OAR 141-085-0515.

Based on observations made at the site of surface or clear subsurface connections to regulated waters, including the Willamette River, and best professional judgment, Wetland A and Boardman Creek would be considered jurisdictional and regulated by both USACE and DSL:

- Wetland A meets the jurisdictional definition of a wetland by both USACE and DSL as defined in 33 C.F.R. § 328.7 and OAR 141-085-0515(4).
- Boardman Creek is connected via surface drainage to the Willamette River, which is considered jurisdictional to USACE and DSL and would be considered jurisdictional per 33 C.F.R. § 328.3(f).
- Boardman Creek within the project study area is not a fish-bearing stream and does not serve as critical habitat to any species listed under the Endangered Species Act (USFWS 2016b). No sensitive species are known to occur within the wetland (ORBIC 2016). Many wildlife species, including ducks, songbirds, red-tailed hawks, and nutria, were observed using the wetlands during field surveys.

9 Results and Conclusions

Within the project study area there is one wetland (Wetland A) and one surface water resource (Boardman Creek). Wetland A is approximately 4.7 acres, classified as a PEM1F wetland habitat located in a topographic depression that receives water from Boardman Creek, stormwater conveyance system discharges, and likely from groundwater inputs. Boardman Creek is a low-gradient, perennial, non-fish bearing stream moving through developed, residential areas in unincorporated Clackamas County to its confluence with the Willamette River. Both Wetland A and Boardman Creek would be considered jurisdictional to the USACE and DSL.

10 Disclaimer

This report documents the investigation, best professional judgment, and conclusions of the investigators. It should be considered a Preliminary Jurisdictional Determination and used at your own risk until it has been approved in writing by the DSL in accordance with OAR 141-090-0005 through 141-090-0055, and the USACE in accordance with Section 404 of the CWA (OAR 141-090-0035 [7][k]).

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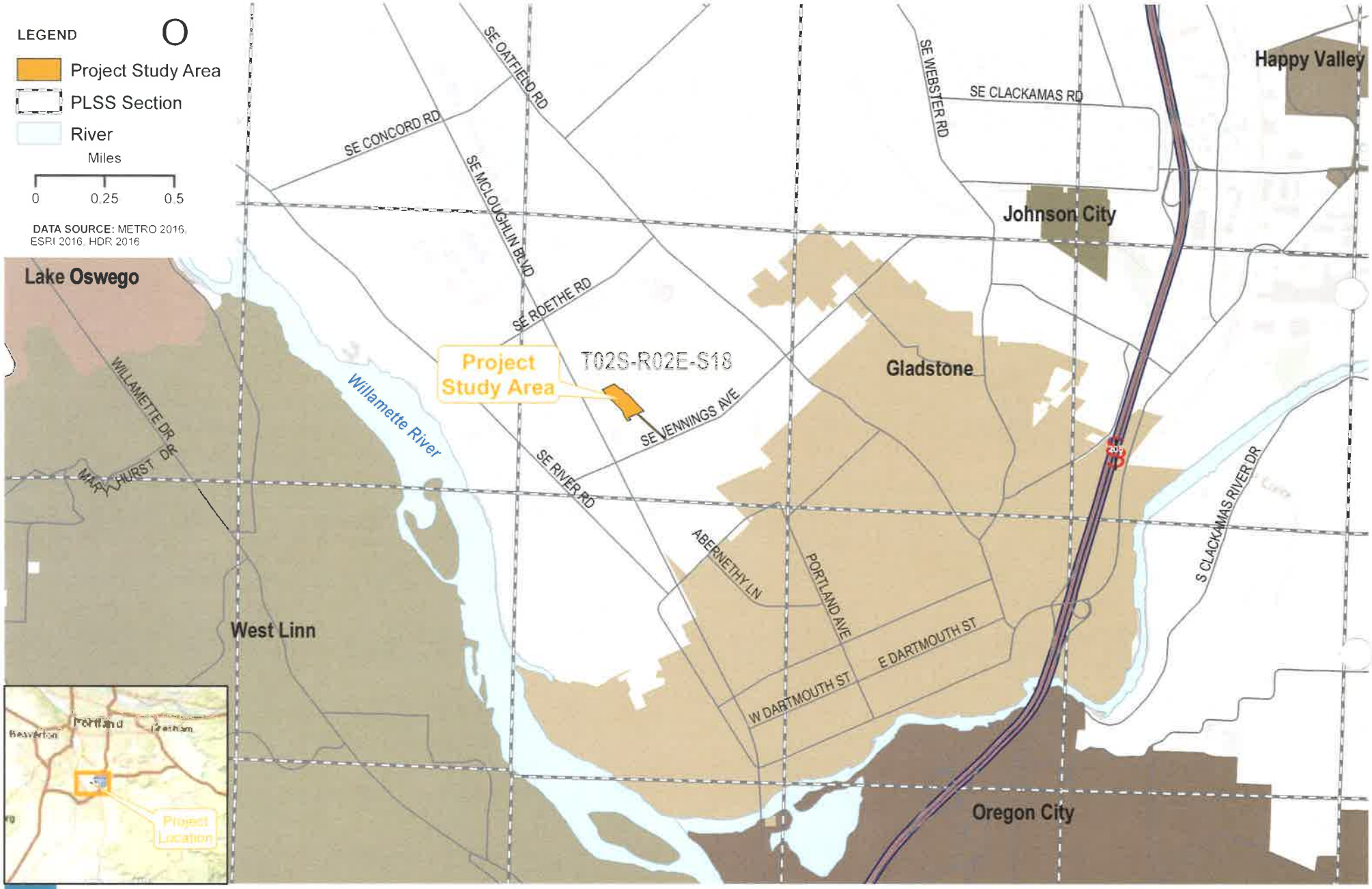
Appendix A. Figures



BOARDMAN WETLAND DESIGN

PROJECT LOCATION

FIGURE 1

BOARDMAN WETLAND DESIGN

TAXLOTS

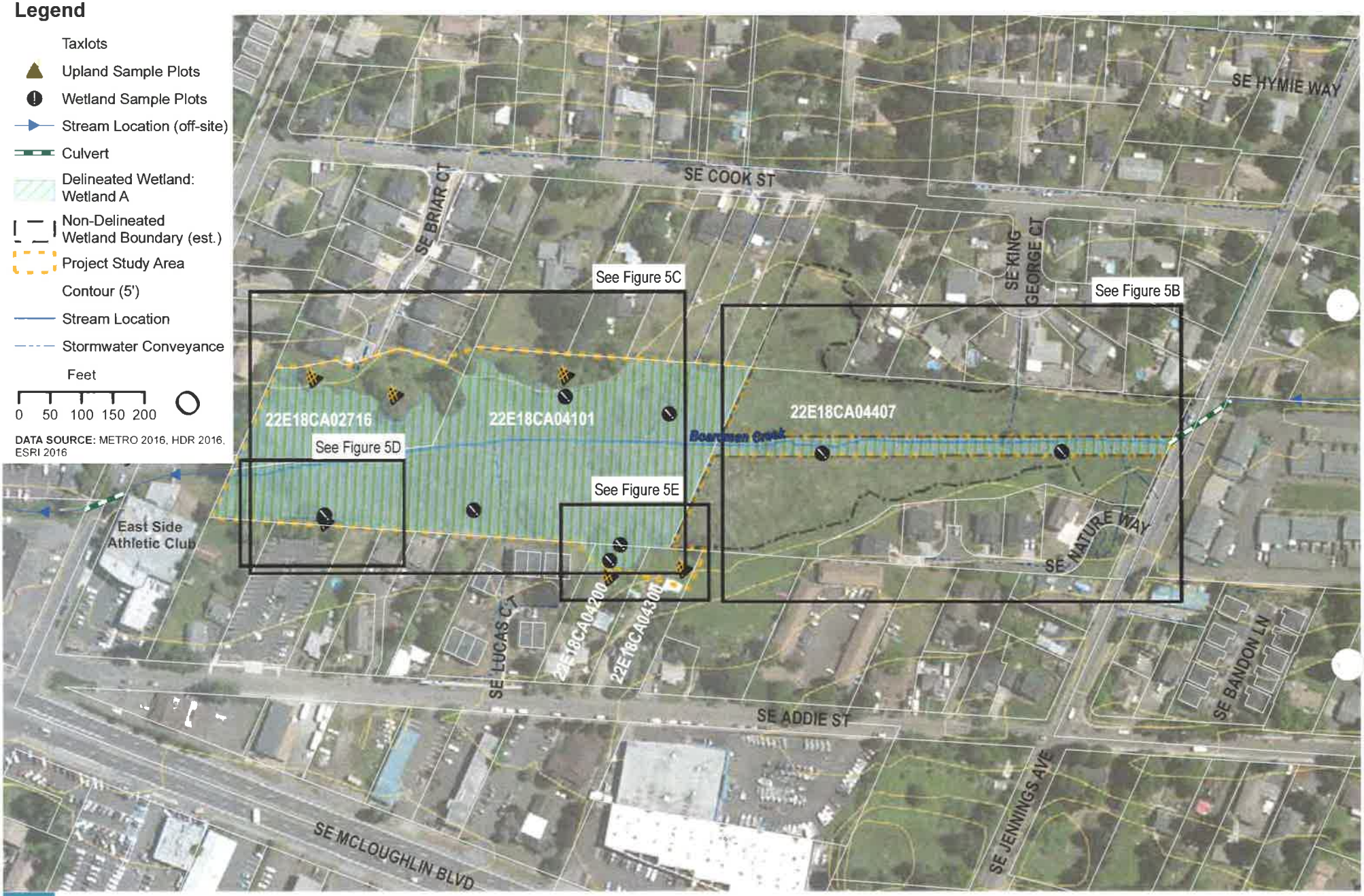
FIGURE 2

BOARDMAN WETLAND DESIGN
NATIONAL WETLAND INVENTORY
FIGURE 3

BOARDMAN WETLAND DESIGN

MAPPED SOILS

FIGURE 4



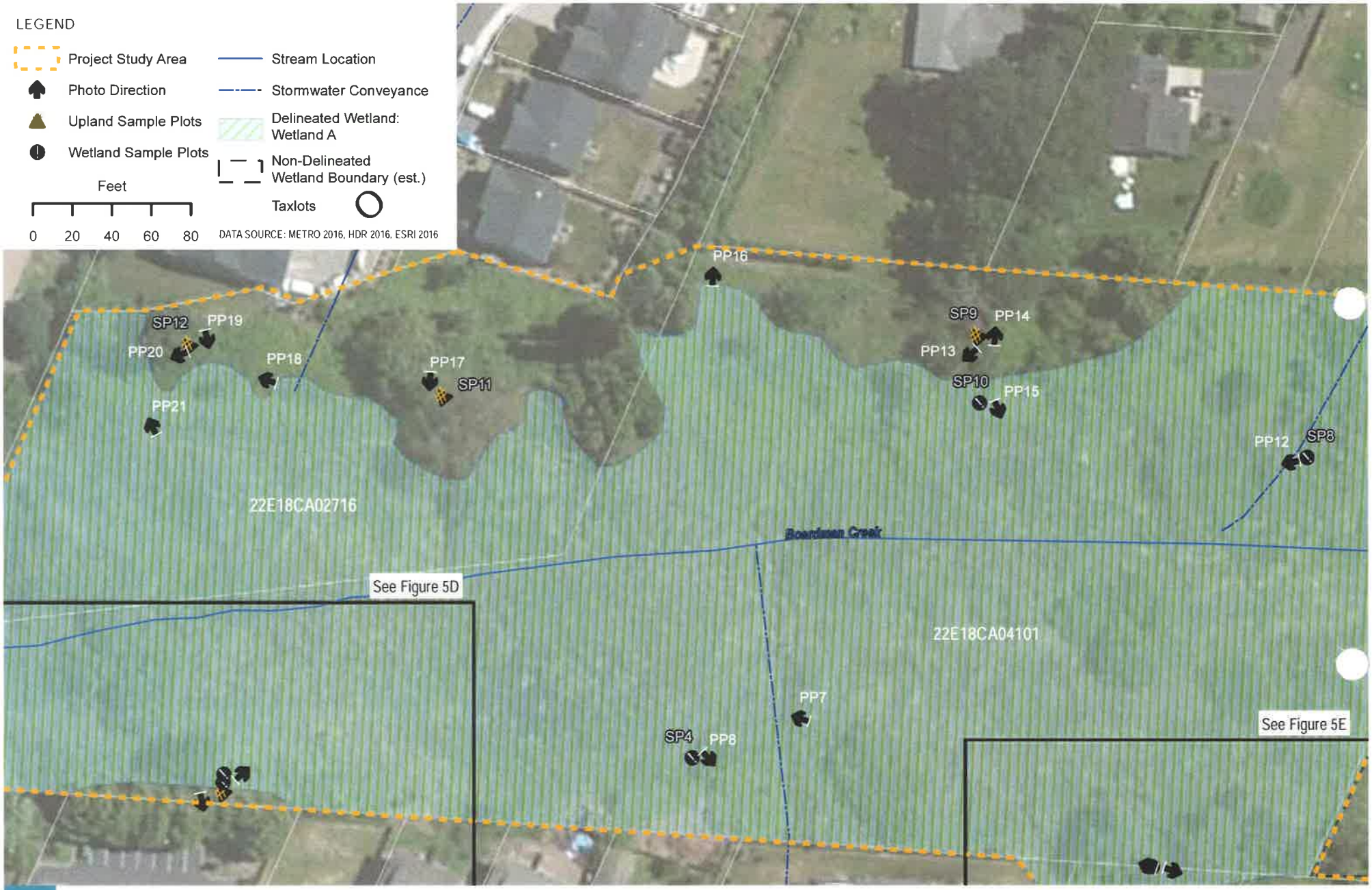
BOARDMAND WETLAND DESIGN

WETLAND DELINEATION INDEX

FIGURE 5A

BOARDMAN WETLAND DESIGN
WETLAND DELINEATION

FIGURE 5B



BOARDMAN WETLAND DESIGN

WETLAND DELINEATION

FIGURE 5C

BOARDMAN WETLAND DESIGN

WETLAND DELINEATION

FIGURE 5D

BOARDMAN WETLAND DESIGN

WETLAND DELINEATION

FIGURE 5E

Appendix B. Delineation Data Forms

Data Sheet Summary Index

Associated Wetland	Plot ID	Met Vegetation Criteria	Met Soils Criteria	Met Hydrology Criteria	Is Plot within a Wetland?
Wetland A	SP1	Yes	Yes	Yes	Yes
Wetland A	SP2	Yes	Yes	Yes	Yes
Wetland A	SP3	Yes	Yes	Yes	Yes
Wetland A	SP4	Yes	Yes	Yes	Yes
Wetland A	SP5	No	No	Yes	No
Wetland A	SP6	Yes	Yes	Yes	Yes
Wetland A	SP7	Yes	Yes	Yes	Yes
Wetland A	SP8	Yes	Yes	Yes	Yes
Wetland A	SP9	Yes	Yes	No	No
Wetland A	SP10	Yes	Yes	Yes	Yes
Wetland A	SP11	Yes	No	No	No
Wetland A	SP12	Yes	No	No	No
Wetland A	SP13	Yes	No	No	No
Wetland A	SP14	Yes	No	No	No
Wetland A	SP15	Yes	Yes	Yes	Yes

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

Project/Site: Boardman Creek City/County: Clackamas Co. Sampling Date: 6/22/2016

Applicant/Owner: OLSD State: OR Sampling Point: SP1

Investigators: Irina Lapina Jennifer Maze Section, Township, Range S 18 T 2S R 2E

dform (hillslope, terrace, etc.): Floodplain Local Relief (concave, convex, none): Concave Slope(%) 1

ubregion (LRR): A Lat: 45.392985 Long: -122.609865 Datum: NAD83

Soil Map Unit Name: Cove silty clay loam NWI Classification: PEM1C

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

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

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

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

Hydrophytic Vegetation Present? Yes X No

Hydric Soil Present? Yes X No **Is the Sampled Area within a Wetland?** **Yes X No**

Wetland Hydrology Present? Yes X No

Remarks:
Sunny, 58-80 deg F, no rain past 3 days.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

X Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

% Bare Ground in Herb Stratum 0

Hydrophytic Vegetation Present? **Yes X No**

arks: (Include photo numbers here or on a separate sheet.)

Plot adjacent to Boardman Creek; appox 0.5 ft west. Pedestrian mentioned observation of beaver earlier in spring when grass was shorter.

SOIL

Sampling Point: SP1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 to 1	10YR 2 / 2	100					SILTY CLAY	Oi moist
1 to 11	10YR 2 / 2	20	2.5YR 2.5/1	60	D	M	SILTY CLAY	A
1 to 11	/		5YR 3/4	20	C	PL	SILTY CLAY	
11 to 22	G1 2.5 / 1	100					SILTY CLAY	B very black, gleyed
22 to 24	5Y 3 / 1	90	5YR 4/6	10	C	PL	SILTY CLAY	Depleted

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

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [x] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1) (except MLRA 1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- [ ] 2 cm Muck (A10)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
Positive reaction to alpha, alpha-dipyridyl reagent. Faint depletions, very prominently black organic material (muck) filtered in horizons below.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- [ ] Salt Crust (B11)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [x] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Stunted or Stressed Plants (D1) (LRR A)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- [ ] Drainage Patterns (B10)
- [x] Dry-Season Water Table (C2)
- [ ] Saturation Visible on Aerial Imag (C9)
- [x] Geomorphic Position (D2)
- [x] Shallow Aquitard (D3)
- [x] FAC-Neutral Test (D5)
- [ ] Paised Ant Mounds (D6) (LRR A)
- [ ] Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):	
Water Table Present?	Yes	X	No		Depth (inches):	20
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	14

Wetland Hydrology Present? Yes X No

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

Remarks:
D2- drainage way within floodplain; D3 - potential clay layers below

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

Project/Site: Boardman Creek City/County: Clackamas Co. Sampling Date: 6/22/2016

Applicant/Owner: OLSD State: OR Sampling Point: SP2

Investigators: Irina Lapina Jennifer Maze Section, Township, Range S 18 T 2S R 2E

dform (hillslope, terrace, etc.): Floodplain Local Relief (concave, convex, none): None Slope(%) 0

ubregion (LRR): A Lat: 45.393633 Long: -122.611020 Datum: NAD83

Soil Map Unit Name: Cove silty clay loam NWI Classification: PEM1C

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

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

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

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

Hydrophytic Vegetation Present?	Yes	X	No				
Hydric Soil Present?	Yes	X	No	**Is the Sampled Area within a Wetland?**	**Yes**	**X**	**No**
Wetland Hydrology Present?	Yes	X	No				

Remarks:
Sunny, 58-80 deg F, no rain past 3 days.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	80	Y	FACW
Juncus effusus	10	N	FACW
Typha latifolia	10	N	OBL
Callitriche heterophylla	3	N	OBL
	103	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum 0

arks: (Include photo numbers here or on a separate sheet.)

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across all Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	13	x 1 =	13
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	103 (A)		193 (B)

Prevalence Index = B/A= 1.87

Hydrophytic Vegetation Indicators:

X Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No**

SOIL

Sampling Point: SP2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 to 18	/						SILTY MUCK	Muck

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

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1) (except MLRA 1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- [ ] 2 cm Muck (A10)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
Soils too saturated to determine characteristics of soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [x] Iron Deposits (B5)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- [ ] Salt Crust (B11)
- [ ] Aquatic Invertebrates (B13)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Stunted or Stressed Plants (D1) (LRR A)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [x] Saturation Visible on Aerial Imag.(C9)
- [x] Geomorphic Position (D2)
- [x] Shallow Aquitard (D3)
- [x] FAC-Neutral Test (D5)
- [ ] Paised Ant Mounds (D6) (LRR A)
- [ ] Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	X	No	Depth (inches):	2
Water Table Present?	Yes	X	No	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes	X	No	Depth (inches):	0

Wetland Hydrology Present? Yes X No

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

Remarks:
D2 - Soil point adjacent to Boardman Creek. Standing water at site = 30%.

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

Project/Site: Boardman Creek City/County: Clackamas Co. Sampling Date: 6/22/2016

Applicant/Owner: OLSD State: OR Sampling Point: SP3

Investigators: Irina Lapina Jennifer Maze Section, Township, Range S 18 T 2S R 2E

dform (hillslope, terrace, etc.): Floodplain Local Relief (concave, convex, none): None Slope(%) 0

Subregion (LRR): A Lat: 45.393930 Long: -122.612345 Datum: NAD83

Soil Map Unit Name: Woodburn silt loam, 3 to 8 percent slopes NWI Classification: PEM1C

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

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

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

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

Hydrophytic Vegetation Present?	Yes	X	No				
Hydric Soil Present?	Yes	X	No	**Is the Sampled Area within a Wetland?**	**Yes**	**X**	**No**
Wetland Hydrology Present?	Yes	X	No				

Remarks:
Sunny, 58-80 deg F, no rain past 3 days.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Salix lasiandra	50	Y	FACW
Salix bebbiana	20	Y	FACW
Salix scouleriana	15	Y	FAC
	85	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Rosa woodsii	20	Y	FACU
Fraxinus latifolia	5	N	FACW
Salix bebbiana	5	N	FACW
Salix scouleriana	5	N	FAC
	35	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	60	Y	FACW
Solanum dulcamara	10	N	FAC
	70	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum 0

arks: (Include photo numbers here or on a separate sheet.)

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	140	x 2 =	280
FAC species	30	x 3 =	90
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	190 (A)		450 (B)

Prevalence Index = B/A= 2.37

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No**

SOIL

Sampling Point: SP3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 to 21	10YR 2 / 1	100					SILT LOAM	

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

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1) (except MLRA 1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- [ ] 2 cm Muck (A10)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
Positive reaction to alpha, alpha-dipyridyl reagent. Sticky soil texture.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- [ ] Salt Crust (B11)
- [ ] Aquatic Invertebrates (B13)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [x] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Stunted or Stressed Plants (D1) (LRR A)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [x] Geomorphic Position (D2)
- [x] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Paised Ant Mounds (D6) (LRR A)
- [ ] Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	X	No	Depth (inches):	2
Water Table Present?	Yes	X	No	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes	X	No	Depth (inches):	0

Wetland Hydrology Present? Yes X No

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

Remarks:
Standing water covered approximately 3% of total plot area. Positive reaction to alpha, alpha-dipyridyl reagent. D2 - Sample plot adjacent to Boardman Creek. D3 - Clay layers present.

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

Project/Site: Boardman Creek City/County: Clackamas County Sampling Date: 6/22/2016

Applicant/Owner: OLSD State: OR Sampling Point: SP4

Investigators: Irina Lapina Jennifer Maze Section, Township, Range S 18 T 2S R 2E

Landform (hillslope, terrace, etc.): Floodplain Local Relief (concave, convex, none): None Slope(%) 0

Subregion (LRR): A Lat: 45.394430 Long: -122.612896 Datum: NAD83

Soil Map Unit Name: Cove silty clay loam NWI Classification: PEM1C

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

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

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

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

Hydrophytic Vegetation Present?	Yes	X	No				
Hydric Soil Present?	Yes	X	No	**Is the Sampled Area within a Wetland?**	**Yes**	**X**	**No**
Wetland Hydrology Present?	Yes	X	No				

Remarks:
Sunny, 58-80 deg F, no rain past 3 days. Transitional area continues south; problematic soils.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Corylus cornuta	5	Y	FACU
	5	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Physocarpus capitatus	5	Y	FACW
	5	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	80	Y	FACW
Convolvulus arvensis	2	N	NL
	82	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum 0

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across all Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66.7%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	85	x 2 =	170
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	90 (A)		190 (B)

Prevalence Index = B/A= 2.11

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No**

SOIL

Sampling Point: SP4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
to	/		7.5YR 4/3	1	D	M	SILTY CLAY LOAM	Grey depleted inclusior
to	/		2.5YR 8/4	1	C	M	SILTY CLAY LOAM	Dark when wet
0 to 1	/							Oa layer, dry duff
1 to 13	10YR 2/1	100					SILTY CLAY LOAM	A
13 to 21	10YR 2/1	97	2.5YR 8/4	1	C	PL	SILTY CLAY LOAM	

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

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☑ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

Dark organic material translocated to layers below surface. Soils considered problematic due to lack of indicators; problematic hydric soil procedure applied. Hydrophytic vegetation, saturation and high water table is present. Landscape setting is likely to concentrate water at gentle toe of slope just east of sample plot along transitional area of wetland boundary. Area may be seasonally ponded, 4b(6) p.113, organic matter might mask features in upper 12 inches of soil. Due to presence of wetland vegetation and hydrology, soils considered hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):	
Water Table Present?	Yes	X	No		Depth (inches):	12
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	11

Wetland Hydrology Present? Yes X No

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

D2 - Sample plot adjacent to floodplain.

Remarks:

D2 - Sample plot adjacent to floodplain.

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

Project/Site: Boardman Creek City/County: Clackamas Co. Sampling Date: 6/22/2016

Applicant/Owner: OLSD State: OR Sampling Point: SP5

Investigators: Irina Lapina Jennifer Maze Section, Township, Range S 18 T 2S R 2E

dform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): Concave Slope(%) 2-3

Subregion (LRR): A Lat: 45.394815 Long: -122.613636 Datum: NAD83

Soil Map Unit Name: Woodburn silt loam, 3 to 8 percent slopes NWI Classification: PEM1C

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

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

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

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

Hydrophytic Vegetation Present?	Yes	No X			
Hydric Soil Present?	Yes	No X	**Is the Sampled Area within a Wetland?**	**Yes**	**No X**
Wetland Hydrology Present?	Yes X	No			

Remarks:
Sunny, 58-80 deg F, no rain past 3 days.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Crataegus monogyna	3	Y	FAC
	3	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Lapsana communis	15	Y	FACU
Hedera helix	7	Y	FACU
Phalaris arundinacea	3	N	FACW
Bromus tectorum	2	N	NL
Convolvulus arvensis	2	N	NL
	29	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus armeniacus	75	Y	FACU
	75	=Total Cover	

% Bare Ground in Herb Stratum 0

arks: (Include photo numbers here or on a separate sheet.)

West side of plot reduced due to position along fence and parking lot.

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	3	x 2 =	6
FAC species	3	x 3 =	9
FACU species	97	x 4 =	388
UPL species	0	x 5 =	0
Column Totals:	103 (A)		403 (B)

Prevalence Index = B/A= 3.91

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

Dominance Test > 50%

Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **No X**

SOIL

Sampling Point: SP5

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 to 18	10YR 2 / 1	100					CLAY LOAM	Soil uniform throughout sample.

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

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ☐ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☑ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):	
Water Table Present?	Yes	X	No		Depth (inches):	20
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	14

Wetland Hydrology Present? Yes X No

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

Remarks:

D2 - Adjacent to floodplain.

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

Project/Site: Boardman Creek City/County: Clackamas County Sampling Date: 6/22/2016

Applicant/Owner: OLSD State: OR Sampling Point: SP6

Investigators: Irina Lapina Jennifer Maze Section, Township, Range S 18 T 2S R 2E

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%) 0

Subregion (LRR): A Lat: 45.394824 Long: -122.613623 Datum: NAD83

Soil Map Unit Name: Woodburn silt loam, 3 to 8 percent slopes NWI Classification: PEM1C

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

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

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

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

Hydrophytic Vegetation Present?	Yes	X	No			
Hydric Soil Present?	Yes	X	No	**Is the Sampled Area within a Wetland?**	**Yes**	**X** **No**
Wetland Hydrology Present?	Yes	X	No			

Remarks:
Sunny, 58-80 deg F, no rain past 3 days. Transitional area, soil pit was dug ~4-5 feet east of SP5; 6 feet east of SP5 is flooded.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Fraxinus latifolia	20	Y	FACW
	20	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Physocarpus capitatus	30	Y	FACW
Spiraea douglasii	30	Y	FACW
Crataegus monogyna	20	Y	FAC
	80	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	65	Y	FACW
Convolvulus arvensis	3	N	NL
Juncus effusus	2	N	FACW
	70	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus armeniacus	15	Y	FACU
	15	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across all Strata:	6	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	83.3%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	147	x 2 =	294
FAC species	20	x 3 =	60
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	182 (A)		414 (B)

Prevalence Index = B/A= 2.27

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

% Bare Ground in Herb Stratum 5

Hydrophytic Vegetation Present? **Yes** **X** **No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP6

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
1 to 16	10YR 2 / 1	100					SILT LOAM	
16 to 18	10YR 2 / 1	99	10YR 4/1	1	D	M	SILT LOAM	

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

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

Positive reaction to alpha, alpha-dipyridyl reagent within upper 3 inches of soil sample. No hydric soils indicators present; problematic hydric soil procedure applied due to presence hydrophytic vegetation and wetland hydrology on site. Due to landscape positionon wetland transitional area, water is likely to concentrate farther east.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☑ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☑ Geomorphic Position (D2)
- ☑ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	X	No	Depth (inches):	2
Water Table Present?	Yes	X	No	Depth (inches):	9
Saturation Present? (includes capillary fringe)	Yes	X	No	Depth (inches):	2

Wetland Hydrology Present? Yes X No

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

Remarks:

Positive reaction to alpha, alpha-dipyridyl reagent. D2 - Adjacent to floodplain.

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

Project/Site: Boardman Creek | City/County: Clackamas Co. | Sampling Date: 6/22/2016

Applicant/Owner: OLSD | State: OR | Sampling Point: SP7

Investigators: Irina Lapina, Jennifer Maze | Section, Township, Range: S 18 T 2S R 2E

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%): 0

Subregion (LRR): A | Lat: 45.394832 | Long: -122.61361 | Datum: NAD83

Soil Map Unit Name: Woodburn silt loam, 3 to 8 percent slopes | NWI Classification: PEM1C

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

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

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

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

Hydrophytic Vegetation Present?	Yes	X	No			
Hydric Soil Present?	Yes	X	No	**Is the Sampled Area within a Wetland?**	**Yes**	**X** **No**
Wetland Hydrology Present?	Yes	X	No			

Remarks:
Sunny, 58-80 deg F, no rain past 3 days.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Fraxinus latifolia	20	Y	FACW
	20	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Physocarpus capitatus	30	Y	FACW
Spiraea douglasii	30	Y	FACW
Crataegus monogyna	20	Y	FAC
	80	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	65	Y	FACW
Convolvulus arvensis	3	N	NL
Juncus effusus	2	N	FACW
	70	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus armeniacus	15	Y	FACU
	15	=Total Cover	

% Bare Ground in Herb Stratum 5

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across all Strata:	6	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	83.3%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	147	x 2 =	294
FAC species	20	x 3 =	60
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	182 (A)		414 (B)

Prevalence Index = B/A= 2.27

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **X** **No**

SOIL

Sampling Point: SP7

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 to 15	10YR 3 / 2	100					SILT LOAM	

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

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1) (except MLRA 1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- [ ] 2 cm Muck (A10)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- [ ] Salt Crust (B11)
- [ ] Aquatic Invertebrates (B13)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Stunted or Stressed Plants (D1) (LRR A)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [x] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [x] FAC-Neutral Test (D5)
- [ ] Paised Ant Mounds (D6) (LRR A)
- [ ] Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	X	No	Depth (inches):	6
Water Table Present?	Yes	X	No	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes	X	No	Depth (inches):	0

Wetland Hydrology Present? Yes X No

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

Remarks:

D2 - Adjacent to floodplain.

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

Project/Site: Boardman Creek City/County: Clackamas County Sampling Date: 6/24/2016

Applicant/Owner: OLSD State: OR Sampling Point: SP8

Investigators: Irina Lapina Jennifer Maze Section, Township, Range S 18 T 2S R 2E

Landform (hillslope, terrace, etc.): Floodplain Local Relief (concave, convex, none): Concave Slope(%) 0

Subregion (LRR): A Lat: 45.394198 Long: -122.611585 Datum: NAD83

Soil Map Unit Name: Cove silty clay loam NWI Classification: PEM1C

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

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

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

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

Hydrophytic Vegetation Present?	Yes	X	No				
Hydric Soil Present?	Yes	X	No	**Is the Sampled Area within a Wetland?**	**Yes**	**X**	**No**
Wetland Hydrology Present?	Yes	X	No				

Remarks:
Cloudy, 56-67 deg F, 0.3in precip.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rosa woodsii	60	Y	FACU
Spiraea douglasii	30	Y	FACW
Crataegus monogyna	25	Y	FAC
	115	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	5	Y	FACW
	5	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus armeniacus	7	Y	FACU
	7	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	25	x 3 =	75
FACU species	67	x 4 =	268
UPL species	0	x 5 =	0
Column Totals:	127 (A)		413 (B)

Prevalence Index = B/A= 3.25

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

% Bare Ground in Herb Stratum <1

Hydrophytic Vegetation Present? **Yes X No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP8

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 to 13	10YR 2 / 1	100					LOAM	A - Loam, black and mucky
13 to 15	10YR 2 / 1	95	7.5YR 3/4	5	C	M	LOAM	

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

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1) (except MLRA 1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- [ ] 2 cm Muck (A10)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
Positive reaction to alpha, alpha-dipyridyl reagent. Soils saturated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- [ ] Salt Crust (B11)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [x] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Stunted or Stressed Plants (D1) (LRR A)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- [x] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [x] Geomorphic Position (D2)
- [x] Shallow Aquitard (D3)
- [x] FAC-Neutral Test (D5)
- [ ] Paised Ant Mounds (D6) (LRR A)
- [ ] Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):	
Water Table Present?	Yes	X	No		Depth (inches):	7
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland Hydrology Present? Yes X No

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

Remarks:
Positive reaction to alpha, alpha-dipyridyl reagent. D2 - Adjacent to floodplain.

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

Project/Site: Boardman Creek City/County: Clackamas County Sampling Date: 6/24/2016

Applicant/Owner: OLSD State: OR Sampling Point: SP9

Investigators: Irina Lapina Jennifer Maze Section, Township, Range S 18 T 2S R 2E

Landform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): None Slope(%) 2% to w

Subregion (LRR): A Lat: 45.394624 Long: -122.611928 Datum: NAD83

Soil Map Unit Name: Cove silty clay loam NWI Classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes	X	No				
Hydric Soil Present?	Yes	X	No	**Is the Sampled Area within a Wetland?**	**Yes**	**No**	**X**
Wetland Hydrology Present?	Yes		No	X			

Remarks:
Cloudy, 56-67 deg F, 0.3in precip.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Fraxinus latifolia	75	Y	FACW
	75	=Total Cover	
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	10	Y	FACW
Equisetum arvense	3	N	FAC
	13	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus armeniacus	80	Y	FACU
	80	=Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	85	x 2 =	170
FAC species	3	x 3 =	9
FACU species	80	x 4 =	320
UPL species	0	x 5 =	0
Column Totals:	168 (A)		499 (B)

Prevalence Index = B/A= 2.97

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP9

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
to	/		5YR 4/8	30	C	M	CLAY LOAM	
0 to 10	10YR 2 / 2	100					CLAY LOAM	Ai - Many roots
10 to 16	10YR 2 / 1	10	10YR 4/1	60	D	M	CLAY LOAM	Bw - Compacted

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

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
Shovel refusal at 16" due to soil compaction and presence of root systems.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	No	X	Depth (inches):
Water Table Present?	Yes	No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No	X	Depth (inches):

Wetland Hydrology Present? Yes No X

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

Remarks:
No apparent signs of moisture or saturation to depth of 16"; assumed no dry season water table present. Sample plot elevation 2 feet higher than floodplain. Possible transition area

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

Project/Site: Boardman Creek City/County: Clackamas Cou Sampling Date: 6/24/2016

Applicant/Owner: OLSD State: OR Sampling Point: SP10

Investigators: Irina Lapina Jennifer Maze Section, Township, Range S 18 T 2S R 2E

dform (hillslope, terrace, etc.): Floodplain Local Relief (concave, convex, none): Concave Slope(%) 1% to w

ubregion (LRR): A Lat: 45.395042 Long: -122.612813 Datum: NAD83

Soil Map Unit Name: Cove silty clay loam NWI Classification: PEM1C

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

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

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

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

Hydrophytic Vegetation Present? Yes X No

Hydric Soil Present? Yes X No **Is the Sampled Area within a Wetland?** **Yes X No**

Wetland Hydrology Present? Yes X No

Remarks:
Cloudy, 56-67 deg F, 0.3in precip.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Fraxinus latifolia	40	Y	FACW
	40	=Total Cover	
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	80	Y	FACW
Equisetum arvense	3	N	FAC
	83	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus armeniacus	20	Y	FACU
	20	=Total Cover	

% Bare Ground in Herb Stratum 0

arks: (Include photo numbers here or on a separate sheet.)

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	120	x 2 =	240
FAC species	3	x 3 =	9
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	143 (A)		329 (B)

Prevalence Index = B/A= 2.30

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No**

SOIL

Sampling Point: SP10

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 to 7	10YR 2/1	100					CLAY LOAM	Very black matrix
7 to 16	10YR 2/1	93	7.5YR 3/3	7	C	M	CLAY LOAM	Very black matrix

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

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1) (except MLRA 1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- [ ] 2 cm Muck (A10)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- [ ] Salt Crust (B11)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Stunted or Stressed Plants (D1) (LRR A)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- [ ] Drainage Patterns (B10)
- [x] Dry-Season Water Table (C2)
- [ ] Saturation Visible on Aerial Imag (C9)
- [x] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [x] FAC-Neutral Test (D5)
- [ ] Paised Ant Mounds (D6) (LRR A)
- [ ] Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):	
Water Table Present?	Yes	X	No		Depth (inches):	16
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	10

Wetland Hydrology Present? Yes X No

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

Remarks:
D2 - Within floodplain

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

Project/Site: Boardman Creek | City/County: Clackamas Co... | Sampling Date: 6/24/2016

Applicant/Owner: OLSD | State: OR | Sampling Point: SP11

Investigators: Irina Lapina, Jennifer Maze | Section, Township, Range: S 18 T 2S R 2E

...dform (hillslope, terrace, etc.): Terrace | Local Relief (concave, convex, none): None | Slope(%): 2% to w

...ubregion (LRR): A | Lat: 45.395042 | Long: -122.612813 | Datum: NAD83

Soil Map Unit Name: Cove silty clay loam | NWI Classification: PEM1C

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No		
Hydric Soil Present?	Yes	No X	**Is the Sampled Area within a Wetland?**	**Yes** **No X**
Wetland Hydrology Present?	Yes	No X		

Remarks:
Cloudy, 56-67 deg F, 0.3in precip.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Salix X pendulina	40	Y	FAC
	40	=Total Cover	
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	65	Y	FACW
Impatiens noli-tangere	7	Y	FACW
Equisetum arvense	3	N	FAC
Galium aparine	3	N	FACU
Rumex conglomeratus	3	N	FACW
Solanum dulcamara	3	N	FAC
	84	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus armeniacus	50	Y	FACU
	50	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	46	x 3 =	138
FACU species	53	x 4 =	212
UPL species	0	x 5 =	0
Column Totals:	174 (A)		500 (B)

Prevalence Index = B/A= 2.87

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

% Bare Ground in Herb Stratum 0

Hydrophytic Vegetation Present? **Yes X No**

...arks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP11

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 to 13	10YR 2 / 1	100					LOAM	Soils dark
13 to 18	10YR 2 / 1	90	5YR 4/6	10	C	M,PL	CLAY LOAM	
18 to 26	10YR 2 / 1	65	10YR 3/6	15	C	M	CLAY LOAM	

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

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes No X

Remarks:

Negative reaction to alpha, alpha-dipyridyl reagent. Features may be masked by organic material. Pockets of moisture at 10" but not consistently saturated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	No	X	Depth (inches):
Water Table Present?	Yes	No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No	X	Depth (inches):

Wetland Hydrology Present? Yes No X

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

Remarks:

Negative reaction to alpha, alpha-dipyridyl reagent. No dry season water table present. Sample plot elevation 2 feet higher than floodplain

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

Project/Site: Boardman Creek City/County: Clackamas Co. Sampling Date: 6/24/2016

Applicant/Owner: OLSD State: OR Sampling Point: SP12

Investigators: Irina Lapina Jennifer Maze Section, Township, Range S 18 T 2S R 2E

dform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): Concave Slope(%) 2.5% to

Subregion (LRR): A Lat: 45.395324 Long: -122.613130 Datum: NAD83

Soil Map Unit Name: Cove silty clay loam NWI Classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No			
Hydric Soil Present?	Yes	No X	**Is the Sampled Area within a Wetland?**	**Yes**	**No X**
Wetland Hydrology Present?	Yes	No X			

Remarks:
Cloudy, 56-67 deg F, 0.3in precip.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Fraxinus latifolia	45	Y	FACW
Populus balsamifera	10	N	FAC
	55	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Corylus cornuta	3	Y	FACU
Rosa woodsii	3	Y	FACU
Crataegus monogyna	2	N	FAC
Salix scouleriana	2	N	FAC
Spiraea douglasii	2	N	FACW
	12	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phalaris arundinacea	75	Y	FACW
Equisetum arvense	40	Y	FAC
Lapsana communis	15	N	FACU
Equisetum hyemale	3	N	FACW
Galium aparine	1	N	FACU
Ranunculus spp.	1	N	
Vicia americana	1	N	FAC
	136	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum 0

arks: (Include photo numbers here or on a separate sheet.)

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	125	x 2 =	250
FAC species	55	x 3 =	165
FACU species	22	x 4 =	88
UPL species	0	x 5 =	0
Column Totals:	202 (A)		503 (B)

Prevalence Index = B/A= 2.49

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes X No**

SOIL

Sampling Point: SP12

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 to 16	10YR 3 / 3	100					SILT LOAM	Uniform, dry fill materia

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

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ☐ No ☒

Remarks:
Soils have large pockets of fill material.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	No	X	Depth (inches):
Water Table Present?	Yes	No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No	X	Depth (inches):

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:
Due to lack of native soils, did not dig to 24".

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

Project/Site: Boardman Creek City/County: Clackamas Co. Sampling Date: 6/24/2016

Applicant/Owner: OLSD State: OR Sampling Point: SP13

Investigators: Irina Lapina Jennifer Maze Section, Township, Range S 18 T 2S R 2E

dform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): Concave Slope(%) 1.5% to

Subregion (LRR): A Lat: 45.393648 Long: -122.612152 Datum: NAD83

Soil Map Unit Name: Woodburn silt loam, 3 to 8 percent slopes NWI Classification: PEM1C

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

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

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

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

Hydrophytic Vegetation Present?	Yes	X	No		
Hydric Soil Present?	Yes		No	X	**Is the Sampled Area within a Wetland?**
Wetland Hydrology Present?	Yes		No	X	

Yes **No** **X**

Remarks:
Cloudy, 56-67 deg F, 0.3in precip.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Salix scouleriana	25	Y	FAC
	25	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Holcus lanatus	40	Y	FAC
Poa pratensis	10	N	FAC
Ranunculus repens	7	N	FAC
polygonatum lapathifolium	5	N	FACU
Lolium perenne	3	N	FAC
Lotus corniculatus	3	N	FAC
Rumex crispus	1	N	FAC
Vicia americana	1	N	FAC
	70	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus armeniacus	65	Y	FACU
	65	=Total Cover	

% Bare Ground in Herb Stratum 0

arks: (Include photo numbers here or on a separate sheet.)

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across all Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66.7%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	90	x 3 =	270
FACU species	70	x 4 =	280
UPL species	0	x 5 =	0
Column Totals:	160 (A)		550 (B)

Prevalence Index = B/A= 3.44

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **X** **No**

SOIL

Sampling Point: SP13

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 to 6	10YR 2 / 2	100					SILTY CLAY LOAM	
6 to 9	10YR 2 / 2	99	5YR 5/6	1	C	M	SILTY CLAY LOAM	
9 to 18	10YR 2 / 2	100					SILTY CLAY LOAM	

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

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ☐ No X

Remarks:
Soils dry. No signs of saturation or moisture at 18"; assumed no dry season water table.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	No	X	Depth (inches):
Water Table Present?	Yes	No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No	X	Depth (inches):

Wetland Hydrology Present? Yes ☐ No X

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

Remarks:
No signs of saturation or moisture at 18"; assumed no dry season water table.

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

Project/Site: Boardman Creek City/County: Clackamas Co... Sampling Date: 6/24/2016

Applicant/Owner: OLSD State: OR Sampling Point: SP14

Investigators: Irina Lapina Jennifer Maze Section, Township, Range S 18 T 2S R 2E

dform (hillslope, terrace, etc.): Floodplain Local Relief (concave, convex, none): Concave Slope(%) 2% to N

ubregion (LRR): A Lat: 45.393830 Long: -122.612522 Datum: NAD83

Soil Map Unit Name: Woodburn silt loam, 3 to 8 percent slopes NWI Classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes	X	No		
Hydric Soil Present?	Yes		No	X	**Is the Sampled Area within a Wetland?** **Yes** **No** **X**
Wetland Hydrology Present?	Yes		No	X	

Remarks:
Cloudy, 56-67 deg F, 0.3in precip.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Fraxinus latifolia	3	Y	FACW
	3	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Holcus lanatus	75	Y	FAC
Lotus corniculatus	70	Y	FAC
Vicia americana	10	N	FAC
Juncus effusus	5	N	FACW
	160	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus armeniacus	5	Y	FACU
	5	=Total Cover	

% Bare Ground in Herb Stratum 0

arks: (Include photo numbers here or on a separate sheet.)

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	8	x 2 =	16
FAC species	155	x 3 =	465
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	168 (A)		501 (B)

Prevalence Index = B/A= 2.98

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **X** **No**

SOIL

Sampling Point: SP14

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 to 12	10YR 2 / 2	100					CLAY LOAM	
12 to 16	10YR 4 / 1	95	5YR 4/6	5	D	M,PL	CLAY LOAM	Depleted, light grey

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

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (LRR A)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Paised Ant Mounds (D6) (LRR A)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	No	X	Depth (inches):
Water Table Present?	Yes	No	X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No	X	Depth (inches):

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:
D2 - adjacent to floodplain

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

Project/Site: Boardman Creek City/County: Clackamas Co. Sampling Date: 6/24/2016

Applicant/Owner: OLSD State: OR Sampling Point: SP15

Investigators: Irina Lapina Jennifer Maze Section, Township, Range S 18 T 2S R 2E

dform (hillslope, terrace, etc.): Slope Local Relief (concave, convex, none): Concave Slope(%) 3 to E

Subregion (LRR): A Lat: 45.393875 Long: -122.612440 Datum: NAD83

Soil Map Unit Name: Woodburn silt loam, 3 to 8 percent slopes NWI Classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes	X	No		
Hydric Soil Present?	Yes	X	No	**Is the Sampled Area within a Wetland?**	**Yes** **No**
Wetland Hydrology Present?	Yes	X	No		

Remarks:
Cloudy, 56-67 deg F, 0.3in precip.

VEGETATION– Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Fraxinus latifolia	5	Y	FACW
	5	=Total Cover	
Shrub Stratum			
Herb Stratum (Plot size: 10 Ft)			
Scirpus microcarpus	85	Y	OBL
Phalaris arundinacea	5	N	FACW
Juncus effusus	2	N	FACW
Lotus corniculatus	2	N	FAC
	94	=Total Cover	
Vine Stratum			

% Bare Ground in Herb Stratum 0

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	85	x 1 =	85
FACW species	12	x 2 =	24
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	99 (A)		115 (B)

Prevalence Index = B/A= 1.16

Hydrophytic Vegetation Indicators:

X Rapid Test for Hydrophytic Vegetation

X Dominance Test > 50%

X Prevalence Index ≤ 3.0

Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **X** **No**

SOIL

Sampling Point: SP15

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 to 12	10YR 2/2	100					CLAY LOAM	
12 to 16	10YR 4/1	95	5YR 4/6	5	D	M	CLAY LOAM	

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

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Mucky Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Loamy Mucky Mineral (F1) (except MLRA 1)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils: [3]

- [ ] 2 cm Muck (A10)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

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

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:
Saturated soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Surface Soil Cracks (B6)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
- [ ] Salt Crust (B11)
- [ ] Aquatic Invertebrates (B13)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Stunted or Stressed Plants (D1) (LRR A)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- [ ] Drainage Patterns (B10)
- [ ] Dry-Season Water Table (C2)
- [ ] Saturation Visible on Aerial Imag (C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Paised Ant Mounds (D6) (LRR A)
- [ ] Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):
Water Table Present?	Yes	X	No		Depth (inches): 16
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches): 0

Wetland Hydrology Present? Yes X No

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

Remarks: