3rd GROWING SEASON (2023) MONITORING REPORT

Linnton Mill Restoration Site

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Acronyms and Abbreviations

ACM – ACTIVE CHANNEL MARGIN
CI – CONFIDENCE INTERVAL
CORPS – U.S. ARMY CORPS OF ENGINEERS
DBH – DIAMETER AT BREAST HEIGHT
DSAY – DISCOUNTED SERVICE ACRE YEAR
DO – DISSOLVED OXYGEN
DSL – DEPARTMENT OF STATE LANDS
FT – FEET
HDP – HABITAT DEVELOPMENT PLAN
IRT – INTERAGENCY REVIEW TEAM
LWD – LARGE WOODY DEBRIS
MBI – MITIGATION BANKING INSTRUMENT
NAVD – NORTH AMERICAN VERTICAL DATUM
OCH – OFF-CHANNEL HABITAT
ODA – OREGON DEPARTMENT OF AGRICULTURE
OHWM – ORDINARY HIGH WATER MARK
OLW – ORDINARY LOW WATER
SMP – SEAPORT MIDSTREAM PARTNERS
SSPP – SITE-SPECIFIC PERFORMANCE PLAN
USFWS – U.S. FISH AND WILDLIFE SERVICE
USGS – UNITED STATES GEOLOGICAL SURVEY

1. Overview and Summary

This monitoring report describes the results of the 3rd Growing Season (2023) performance monitoring at the Linnton Mill Restoration Site (Site). The 3rd Growing Season of the Mitigation Banking Instrument (MBI) corresponds to Year 4 of the Habitat Development Plan (HDP). This report covers the period between November 2022 and November 2023.

1.1 Site Overview

The Site is a 27.83-acre off-channel habitat restoration project located along the west side of the lower Willamette River, from river mile 4.5 to 4.8 (Figure 1, Attachment 1). The Site was designed to provide off-channel and cold water refugia habitat to support sub-yearling and yearling juvenile Chinook salmon that rear within this portion of the lower Willamette River, as well as riparian and upland habitat to serve a range of wildlife species including eagle, other native birds, and mink. Restoration of the Site included construction of off-channel habitat (OCH), active channel margin (ACM), riparian, and upland habitats, as well as daylighting Linnton Creek (Figure 2). Seeding occurred in late 2019, and initial planting was completed in early 2020 with additional planting in early 2021.

The Site is approved by the Portland Harbor Trustee Council to provide habitat credits in the form of Discounted Service Acre Years (DSAYs) for liabilities related to the Portland Harbor Natural Resources Damages Assessment (NRDA) process. Additionally, the Site is approved by the Interagency Review Team co-chaired by the Oregon Department of State Lands (DSL) and the U.S. Army Corps of Engineers to provide mitigation credits for unavoidable impacts to aquatic habitats in accordance with Section 10 of the Rivers and Harbors Act, Section 404 of the Clean Water Act, and Oregon DSL Removal/Fill permits.

1.2 Monitoring Summary

All performance standards related to the 3rd Growing Season monitoring were met except A9 Fish Access, which was partially met. Table 1 presents a summary of elements monitored during 2023 and results compared to applicable performance standards.

Table 1. Summary of performance standards and results

Performance Standards	Standard Met	Section
Geomorphic/ Structural Habitat Elements		
A6. OCH and ACM within 10% of as-built area	N/A	N/A
A7. Change in elevation in OCH <20%	N/A	N/A
A8. Change in elevation in ACM <20%	N/A	N/A
A9. Fish access: • No physical conditions that prevent fish access to the OCH • OCH channel gradient < 4% slope • Jump heights will not exceed 6 inches. • The Linnton Creek culvert discharge 11/1-6/30 • Linnton Creek thalweg remain wetted during low water.	 • PARTIALLY • YES • YES • YES • YES	4.1.1

A10. Presence of at least 80% LWD	• YES	4.1.2
Hydrology and Hydraulics		
B1. Area of 50% inundation within 20% of as-built condition.	N/A	N/A
Vegetation*		
Riparian/Upland Forested • C8. ≥ 1,600 native woody stems per acre OR at least 50% cover of native species. • C9. ≥ 3 native tree species and 5 native shrub species. • C10. Cover: o ≥ 10% native herbaceous o ≤ 10% invasive herbaceous	• YES (4,225] • YES (15 and 25) o YES (86.7%) o YES (3.9%)	4.2.1 4.2.2
Off-Channel Shrub • C11. ≥ 1,600 native woody stems per acre OR at least 50% cover of native woody species. • C12. ≥ 5 native shrub species • C13. Cover: o ≥ 10% native herbaceous o < 10% invasive herbaceous	• YES (24,946) • YES (6 and 6) o YES (105.6%) o NO (12.3%)	4.2.3
Off-Channel Emergent • C14. ≥ 5 native emergent/herbaceous species. • C15. Cover: o ≥ 30% native herbaceous o < 10% invasive herbaceous	• Yes (21) o YES (102.7%) o YES (6.2%)	
Water Quality: **Dissolved Oxygen and Temperature**		4.3
Fish and Wildlife (No Performance Standards)		
• Fish presence and use of the site		N/A
• Bald eagle monitoring and avian use of the site o Yes, bald eagles observed perching, foraging, and bathing on Site. • Mink presence and use of site Observations of wildlife included in Attachments 5 and 6		4.4.1
Photographic Monitoring	Attachment 2	

*Invasive refers to plants found on the ODA noxious weeds list or the Portland Plant List ranks A, B, or C. This varies from language used in the SSPP but is clarified here for simplicity. Future reports will follow this reference.

2. Monitoring Questions and Performance Standards

The monitoring program is presented in the Site-Specific Performance Plan (SSPP) for the Site (Exhibit B of the Restoration Plan; Grette Associates 2018). Please refer to that document for full details on the monitoring plan. The monitoring questions posed in the SSPP, applicable performance standards to gauge success, timing, and methods for monitoring years 1-5 are presented in Table 2. The focus of this report is on those standards applicable to Growing Season 3 monitoring requirements.

Table 2. Monitoring questions, performance standards, monitoring schedule, and monitoring methods applicable for the 3rd Growing Season (2023)

Monitoring Question	Performance Standards	Years Monitored						Monitoring Methods
		1	3	5	7	10	1-10	
Geomorphic / Structural Habitat Elements								
Is the restoration site meeting its interim performance standards (IPSs)? Is the total quantity of Off-Channel and ACM habitat that was created being retained over time?	A6. Total area of OCH or ACM habitat within 10% of the as-built condition (minimum 0.5 ft); A7. No greater than 20% elevation change within the Off-Channel habitat; A8. No greater than 20% elevation change within the ACM habitat.	X	X	X	X	X		A6. Habitat zone mapping; CAD A7. Topographic survey A8. Topographic survey
Are the fish able to enter and exit the site? Are habitat elements being retained on site? Have the performance standards been met? If so, is the site ready to move into the long-term stewardship phase?	A9. No physical conditions that prevent fish access to the OCH. The channel gradient throughout the off- channel habitat will not exceed 4% slope and jump heights will not exceed 6 inches. Linnton Creek culvert outlet will discharge from November 1st through June 30th, when juvenile Chinook are likely present in the Willamette River, and the channel thalweg downstream of Linnton Creek will remain wetted during low water conditions. A10. Presence of at least 80% of the total number of large woody debris/structural habitat elements that were placed below the 100-year flood elevation, including any volunteer LWD ≥18" diameter and ≥30' length.						X X	A9. Visual survey, longitudinal profile A10. Visual survey
Hydrology and Hydraulics								
What is the total area of the site that is inundated by the river during periods of high flow?	B1. Areal extent of the 50% inundation level within 20% relative to the as-built condition.	X	X	X	X	X		B1. Water level data logger
Vegetation								
Is vegetation developing in a way that will ultimately generate a native assemblage of appropriate vegetation types?	**Riparian/Upland Forested** C8. A minimum of 1,600 native woody stems per acre OR at least 50% cover of native woody species. C9. At least 3 native tree species and 5 native shrub species. C10. Cover (during the first 5 years, trees/shrubs will be excluded from percent cover): • ≥ 10% native herbaceous • < 10% invasive herbaceous • The remaining percentage of cover can be made up of bare ground, rocks or native herbaceous						X	C8-C10. Plot surveys

Is the restoration site meeting its interim performance standards (IPSs)?	**Off-Channel Shrub** C11. A minimum of 1,600 native woody stems per acre OR at least 50% cover of native woody species. C12. At least 5 native shrub species. C13. Cover (during the first 5 years, shrubs will be excluded from percent cover): • ≥ 10% native herbaceous • < 10% invasive herbaceous • The remaining percentage of cover can be made up of bare ground, rocks or native herbaceous						X	C11-13. Plot surveys
	Off-Channel Emergent C14. At least 5 native emergent/herbaceous species. C15. Cover (during the first 5 years, trees/shrubs will be excluded from percent cover): • ≥ 30% native herbaceous • < 10% invasive herbaceous • The remaining percentage of cover can be made up of bare ground, rocks or native herbaceous.						X	C14-C15. Plot surveys

Portland Harbor NRDA Restoration Goals Questions

Monitoring Question	Performance Standards	Years Monitored	Timing of Monitoring	Monitoring Methods
Water Quality				
Is water quality at the site improving over time and comparable to an appropriate reference condition?	N/A	Years 1-10	Continuous	Data logger
Fish and Wildlife				
Are native fish using the newly restored habitat? What size salmonids are using the site?	N/A	Years 1, 3, 5, 7, 10	2x/mo, Feb - May	Snorkeling or beach seining
What size lamprey are using the site?	N/A	Years 1-5, 10, 15, 20	Once, Apr - Oct	Electrofishing and sediment sample by USFWS
What birds are using the site? Do changes in the bird assemblage, diversity, and abundance at the site indicate that habitat quantity and quality have improved?	N/A	Years 1, 3, 5, 7, 10	3x, Apr - Jun	Bird surveys
Are bald eagles using the site? If so, how often and for what activities?	N/A	Years 1, 3, 5, 7, 10	Weekly, mid Dec -Aug	
Are mink using the newly restored habitat? Has mink abundance at the site increased?	N/A	Years 1, 3, 5, 7, 10	6x, Apr - Jun	Shoreline survey, camera traps
Photo Monitoring				
Is vegetation developing in a way that will ultimately generate a native assemblage of appropriate vegetation types?	N/A	Years 0-10	Jul - Oct	Photo points

2.1 Wetlands and Waters Delineation

In addition to annual monitoring questions and performance standards described above, the MBI requires that a wetland delineation be conducted throughout the Site in the 3rd Growing Season of the monitoring period. This delineation satisfies MBI Performance Standard "completion of post-construction delineation" from Table D2: Credit Release Schedule, Exhibit D of the MBI (Grette Associates 2021a).

3. Monitoring Methods

All elevations in this report are referenced to the North American Vertical Datum (NAVD) of 1988 (NAVD88).

3.1 Geomorphic Monitoring

Below are the monitoring questions related to geomorphic/structural habitat monitoring and the corresponding performance standard applicable for Growing Season 3. The ACM/OCH zone is defined by the Trustee Council as the area between the ordinary high-water mark (OHWM; +20.1 feet [ft]) and the ordinary low water (OLW) line (+8 ft). Elevation monitoring is designed to ensure these habitat types are retained and that there are no barriers to fish access into the OCH.

3.1.1 A9: Fish Access

Gradients were measured using the topographic survey described above to ensure the Linnton Creek channel gradient does not exceed 4% slope. Jump heights were assessed through a low-tide visual survey, looking for any vertical drops greater than 15 centimeters (~6 inches). Photo points (Attachment 2) throughout the Site are also used to identify vertical drops. In addition to jump heights, visual surveys were conducted to identify areas with the potential for stranding at low tide. In 2020 a potential risk was identified at the upstream mouth of the OCH and since 2021 has been monitored further using a time-lapse camera placed facing the mouth during the late spring and summer months. A second time-lapse camera was placed facing the downstream channel mouth to monitor barriers to passage. A temperature and depth logger are also placed in the side channel and compared to the Willamette River gauge at the Morrison Street bridge.

Linnton Creek discharge was visually checked periodically throughout the year to determine if the channel continues flowing at least through June 30 and begins flowing again by November 1. The Linnton Creek thalweg/channel downstream of the outfall was also visually inspected throughout the year to document the presence of freshwater inputs. Photo point photographs, as well as dissolved oxygen (DO) and temperature data collected from the probe placed in the Linnton Creek plunge pool were used to confirm flow during the dates between visual inspections.

3.1.2 A10: Structural Habitat Elements

All structural elements placed below the 100-year flood elevation were visually surveyed to ensure retention. Volunteer large woody debris (LWD) greater than 18 inches diameter and 30 foot in length were counted as additional elements.

3.2 Vegetation Monitoring (C8 Through C14)

Vegetation performance was assessed by sampling vegetation within established plots, analyzing and interpolating sample results, and comparing these to site performance standards. Pre-determined transects were established in the SSPP and spacing of monitoring plots varies by habitat type (Grette 2018). RestorCap established permanent markers for each monitoring plot within the forested and scrub-shrub habitats (Figures 3 and 4). Within each plot absolute cover of each species was recorded. Assessment differences by habitat type are described below.

After the field assessment, Daubenmire cover classes (Daubenmire 1958) were assigned to cover of each species and used for analyses in each habitat. Within each habitat, species were grouped by native, non-native (non-listed), invasive/noxious (listed[1]) species, and bare ground. The June 2016 version of the Portland Plant List and the Noxious Weed Policy and Classification System 2022 (Oregon Department of Agriculture; ODA) were used to determine invasive classifications. For each habitat, species group (*e.g.*, native, invasive) cover averages were calculated, as well as 80% confidence intervals. Additionally, percent cover and percent frequency for each species were calculated (Coulloudon 1999).

To determine native herbaceous species diversity within each habitat, the number of species were counted across all plots.

3.2.1 Riparian Forested Habitat

Forested zone monitoring plots referenced herein represent a subset of plots monitored as part of the SSPP. To avoid confusion between the two monitoring reports, the original plot number from the SSPP monitoring is used here, resulting in non-sequential numbering for the forest plots.

This zone includes the riparian zone, and the area between the OHWM and +13 ft, as established in the SSPP (Grette 2018). Within this zone, 15 plots (2, 4, 7, 8, 10, 11, 12, 16, 17, 22, 23, 24, 29, 30, and 31) were permanently marked with rebar and locations recorded with GPS (Figure 3). Riparian monitoring plots were initially established every 50 meters along established transects, beginning at a randomly selected starting point (Grette 2021). At each data collection point (n=15), absolute cover and stem count were recorded by species for all trees and shrubs within a 5-meter radius circle. Additionally, absolute cover of herbaceous species was sampled at two 1-square-meter plots within the 5-meter-radius circle. For the herbaceous species cover analysis, cover was averaged by species and then converted into the cover classes listed above.

For stem counts, all stems below 0.5-meter above ground level were counted as individual plants (i.e., a single shrub with multiple stems close to the ground is counted as multiple individuals; SSPP). In areas with high densities of stems, clumps were pin flagged prior to conducting the stem count tally and individual stems within each clump held together to ensure that stems were not double counted.

[1] Invasive species are defined as those found on the ODA noxious weed list or the Portland Plant List, ranks A, B, or C.

3.2.2 Scrub-Shrub Habitat

The established scrub-shrub zone includes the portions of the OCH between approximately +13 ft and +10.5 ft. Within this zone, 16 plots (1S-16S) were permanently marked with rebar and locations recorded with GPS (Figure 3). At each plot (n=16), a three-meter radius plot was used to determine cover and stem counts of woody species. One herbaceous plot was sampled in the middle of the shrub plot.

3.2.3 Emergent Habitat

The Off-Channel emergent zone was defined as the area between +10.5 ft and +8.5 ft. Based on observations in 2021, this zone was monitored later in the season to capture the diversity and cover of species. Plots were established approximately six meters apart along each scrub-shrub transect (Figure 4). These plots were not marked with permanent markers given their location within the ACM. At each plot absolute cover of vegetation was recorded within a one-meter quadrat (n=23). One additional plot was added this year to capture diversity and cover of vegetation within the southern portion of the OCH and compensate for the five plots that are bare due to their locations on the beach and within the portion of the OCH influenced by daily tidal fluctuations. The added plot (11SB) is highlighted in the attached vegetation tables.

3.3 Water Quality Monitoring

Water temperature was measured using Onset HOBO water level data loggers installed at the Site, one near the downstream mouth of the OCH, one in the pool beneath the Linnton Creek outfall, and one within the OCH ("side channel") at the upstream end. The loggers within the side channel and Willamette River also recorded water levels. For 2023, loggers recorded data continuously until November 5th when data were collected for analysis. On-site temperatures were generally recorded every 15 minutes with the installed loggers and are presented as monthly averages. Dissolved oxygen (DO) was collected monthly using an Extech ExStik®II EC400 portable meter rather than continuous probe data. Per the HDP, *DO will be compared to the Oregon Department of Environmental Quality's standard: DO should not be less than 11.0 mg/l (OAR 340-0401-0101 to 340-04100340).*

3.4 Fish and Wildlife Monitoring

3.4.1 Bird Assemblage Monitoring

Per a request from the Trustee Council, bird monitoring along established transects was conducted during the 2023 summer season. Two surveys were conducted, one in early June and one in early July.

Monitoring consisted of point count surveys along five pre-determined transects spaced approximately 100 m apart. The transects run perpendicular to the river and crossed all post-project habitat types (Figure 5). Point count surveys occurred at a maximum of every 50 m along transects, beginning at a random distance (0-50 m) from the end of the transect. Two to three point count surveys were conducted on each transect, depending on length. If high flows prevent access to point survey locations in or through the open water habitat, point surveys will occur as close to the point as possible. Sampling recorded

transect number, all species observed, abundance by species, and use of habitat elements as applicable.

3.5 Wetlands and Waters Delineation

Wetlands were delineated following the methods outlined in *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Corps Manual; Environmental Laboratory 1987), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region – Version 2.0* (WMVC Supplement; Corps 2010). These methods use a three - parameter approach for identifying and delineating wetlands: the presence of field indicators for hydrophytic vegetation, hydric soils, and hydrology. They also include guidance for identifying problematic conditions for each indicator.

Non-wetland waters were aquatic features with an OHWM and less than 5% vegetative cover. The OHWM for the Willamette River and "side channel" in the OCH were determined in the MBI and through Waterways (2016) to be +20.1 ft NAVD88. The OHWM of Linnton Creek was determined using the channel width (as it is a perennial feature) supplemented by *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (Mersel and Lichvar 2014).

RestorCap biologists Kate Allan and Will Ohlenforst performed a delineation of wetlands within the Site on September 25 and 26, and October 26 and 27, 2023. A complete description of the delineation methods and results is presented in Attachment 9.

4. Results

4.1 Geomorphic Monitoring

4.1.1 A9: Fish Access

Based on visual surveys, no physical conditions (*i.e.,* no jump heights above 15 cm) exist that prevent fish access to the OCH via the downstream connection, north of the island. The upstream inlet of the OCH is periodically blocked by a sand berm when water levels in the Willamette do not exceed the berm height. Based on the topographic surveys (Figure 6), the elevation of the apex of the berm is approximately 12.6 ft, an increase from 12.1 ft in 2022. Based on probe data, the average water surface elevation in the side channel was approximately 11.34 ft, down from 12.56 ft last year. Thus, water levels exceeded the 12.6-foot berm apex 20% of the time between March and July (down from 41% last year). Water levels exceeded the 12.6 ft elevation of the berm 26 days in 2023. Exceedances occurred from May 5-28, 2023. Data on water surface elevation was only collected through October 5, 2023.

According to the topographic monitoring data and Digital Surface Model produced by Waterways, the maximum low elevation within the OCH was 10.50 ft (*i.e.,* highest point within the low flow channel), measured just to the south of Linnton Creek on transect V. Water surface elevation measurements within the side channel exceeded this elevation approximately 76% of the time from March through June. Water surface elevations for the side channel and Willamette River probes on Site are included as Attachment 8.

Representative photos of the OCH and the corresponding gauge heights are presented in Attachment 2.

Prior to the implementation of adaptive management in 2023, the depression adjacent to the berm posed a potential fish stranding issue. It was monitored for stranding throughout the year. While it did not deepen, it was observed that the depression occasionally disconnected from the main channel during extreme low water that occurred during hot, late summer days. The connection between the depression and the main channel was tidally influenced as well, so the depression was at times only disconnected for a few hours between the tides. To prevent potential fish stranding, adaptative management was conducted to remediate the depression and connectivity in this portion of the OCH. Following this action, no disconnection or fish stranding issue remained in this portion of the channel. Adaptive management practices are discussed in Section 7.1.

Although the OCH remains accessible to target fish species during the fish passage window (November 1 through June 30), and particularly during the sub-yearling and yearling Chinook peak outmigration (March through June), the OCH channel upstream of the Linnton Creek confluence may not provide egress during late summer months due to the upstream sand berm and the potential fish stranding pond; therefore, **this portion of the performance standard is partially met**.

Site visits throughout the year and monthly DO and temperature monitoring indicate that Linnton Creek was flowing 10 months of the year and remains connected to the Willamette River, allowing ingress and egress for fish beyond the required window (see Section 4.3). DO and temperature monitoring showed that there was no flow at the Linnton Creek Outfall for the months of September and October, but that it flowed from November 1 through August 31. DO and temperature readings are done once a month, so they do not reflect daily conditions in these systems. Photographs of the OCH and Linnton Creek are included in Attachment 2. Linnton Creek flowed continuously throughout the November 1 through June 30 window, thus **this portion of the performance standard was met.**

Based on visual observations, performance **standard A9 was partially met.**

4.1.2 A10: Structural Habitat Elements

All features placed below the 100-year flood elevation were retained from 2021. Since construction, two snags have been reduced by beaver. Performance standard A10 requires at least 80% of features be retained; 97% have been retained, thus this performance **standard was met.** Additionally, approximately six large logs were deposited on the Site during the high-water events.

4.2 Vegetation Monitoring

RestorCap biologists conducted 2023 vegetation monitoring on May 23 to June 1 for the riparian/upland forested habitat, and on September 23-26 in scrub-shrub/emergent habitats. Results are presented below by habitat planting zone. It is important to note that RestorCap has changed the methodology for counting stems from the previous years of

monitoring. Instead of counting individual stems per plant in the monitoring plot, the method now requires each individual plant to count as one stem.

4.2.1 Riparian Forested Habitat

Summary statistics for forested plots are included in Table 3 below; full tables of data are included in Attachment 4.

C8: Native Stem Density

Based on data collected at 15 forested plots, approximately 6,807 native stems per acre were recorded. The C8 performance standard requires at least 1,600 native stems per acre[2], thus, this performance **standard was met**. Per plot, stem counts ranged from 8 to 896 stems, with an average of 258 stems.

C9: Native Species Diversity

Within the forested habitat, this performance standard requires at least three native tree and five native shrub species be present. In total, 24 native woody species were identified, 8 tree and 17 shrub species, and of those, 17 species were present in more than 10% of the plots; thus, this performance **standard was met.**

Table 3. Average cover for herbaceous plots within Riparian Forested habitat

Category		Habitat Average	Standard Error
Cover of Native Herbaceous Species		**45.33**	5.38
	Lower CI (80%)	38.43	
	Upper CI (80%)	52.23	
Cover of Invasive Herbaceous Species		**6.00**	4.20
	Lower CI (80%)	0.61	
	Upper CI (80%)	11.39	
Cover of Non-Native Herbaceous Species		**6.17**	1.72
	Lower CI (80%)	3.96	
	Upper CI (80%)	8.38	
Cover of Native Shrubs and Trees in Herbaceous Plots		**19.67**	4.11
	Lower CI (80%)	39.36	
	Upper CI (80%)	58.64	

C10: Herbaceous Cover

Calculated herbaceous cover within the 30 riparian plots constitutes approximately 45.3% (80% CI 38.4, 52.2), a decrease from 65.5 in 2022. Five noxious species were detected, creeping thistle (*Cirsium arvense*), bird's foot trefoil (Lotus corniculatus), white clover (Trifolium repens), pennyroyal (*Mentha pulegium*), and creeping yellowcress (*Rorippa sylvestris*). An additional 15 non-native, non-listed species were observed within these plots

[2] The DSL permit requires 1,600 stems per acre or 50% coverage for two years before determining the site to be successful.

(Attachment 4). Plots within the forested zone exceed 10% native herbaceous cover and have less than 10% noxious weed cover, therefore **standard C10 was met**.

Percent cover and percent frequency of individual species are included in the attached data tables and are intended to provide additional information related to natural recruitment, species richness, and species diversity within the sampled plots. Three herbaceous species had cover above 5%, including pine bluegrass (Poa secunda), bentgrass (*Agrostis exarata*), soft rush (*Juncus effusus*). Fourteen native species were present in more than 10% of the plots.

4.2.2 Scrub-Shrub Habitat

Summary statistics for scrub-shrub plots are included in Table 4 below; full tables of data are included in Attachment 4.

C11: Native Stem Density

Based on data collected at 16 plots, average native stems per plot was 175, totaling approximately 24,946 stems per acre (Attachment 4). The decline in stem counts within this zone over 2022 monitoring is due to the change in the stem count methodology for vegetation monitoring. The C11 performance standard requires at least 1,600 native stems per acre, thus, this performance **standard was met.**

Table 4. Average cover for herbaceous plots within Scrub-Shrub habitat

Category		Habitat Average	Standard Error
Cover of Native Herbaceous Species		**105.6**	**15.8**
	Lower CI (80%)	85.4	
	Upper CI (80%)	125.9	
Cover of Invasive Herbaceous Species		**12.3**	**3.0**
	Lower CI (80%)	8.5	
	Upper CI (80%)	16.2	
Cover of Non-Native Herbaceous Species		**19.7**	**4.4**
	Lower CI (80%)	14.0	
	Upper CI (80%)	25.4	
Cover of Bare Ground and Moss		**47.7**	**8.0**
	Lower CI (80%)	37.4	
	Upper CI (80%)	57.9	
Cover of Native Trees and Shrubs		**21.7**	**6.4**
	Lower CI (80%)	13.5	
	Upper CI (80%)	29.9	
Average Weighted Prevalence Index (All Strata)		**4.7**	

C12: Native Species Diversity

Diversity within the scrub-shrub zone requires at least five native shrub species. In total, 11 native woody species were identified, five tree and six shrub species and of those, four tree and six shrub species, were present in more than 10% of the plots; thus, this performance **standard was met.**

C13: Herbaceous Cover

Native herbaceous vegetation average cover was approximately 105.6% (80% CI 85.4, 125.9). The increase in cover from 2022 monitoring (75.8%) can be attributed to the later season monitoring within this zone. Six native herbaceous species had cover above 5% and were present in more than 25% of the plots; four additional species had 4% cover. Water purslane (*Ludwigia palustris*) was the most prevalent native herbaceous species on site with a cover of 17.7 % and occurred in 81.3% of the monitoring plots. Marsh cudweed (*Gnaphalium palustre*) was also found in 81.3% of the monitoring plots but contributed to 6.6% of the herbaceous cover.

Within these plots, four invasive species were detected: spotted catsear (*Hypochaeris radicata*), creeping yellowcress, pennyroyal, and water purslane (*Lythrum portula*). Invasive species cover was 12.3% (80% CI 8.5, 16.2).

Performance standard C13 requires >10% native herbaceous cover and <10% invasive cover, thus this **standard was partially met**.

4.2.3 Emergent Habitat

Summary statistics for emergent plots are included in Table 5 below; full tables of data are included in Attachment 4.

Table 5. Average cover for herbaceous plots within Off-Channel Emergent habitat

Category		Habitat Average	Standard Error
Cover of Native Herbaceous Species		**102.7**	**19.3**
	Lower CI (80%)	78.0	
	Upper CI (80%)	127.4	
Cover of Invasive Herbaceous Species		**6.2**	**2.9**
	Lower CI (80%)	2.5	
	Upper CI (80%)	9.9	
Cover of Non-Native Herbaceous Species		**4.7**	**1.5**
	Lower CI (80%)	2.8	
	Upper CI (80%)	6.6	
Cover of Bare Ground and Moss		**46.0**	**8.3**
	Lower CI (80%)	35.3	
	Upper CI (80%)	56.6	
Cover of Native Shrubs and Trees in Herbaceous Plots		**0.5**	**0.2**
	Lower CI (80%)	0.3	
	Upper CI (80%)	0.8	
Average Weighted Prevalence Index		**1.5**	
Count of Native Herbaceous Species		**21**	

C14: At least five native emergent/herbaceous species

Within the emergent zone, 21 native herbaceous species were observed, and plot richness ranged from zero to 10 native species. The most common species was creeping spikerush (*Eleocharis palustris)* with 25.3% cover within this zone and occurred in 65.2% of the

monitoring plots. Six native herbaceous species had 5% cover and were present in more than 10% of the plots: redroot flatsedge (*Cyperus erythrorhizos*), water purslane (*Ludwigia palustris*), creeping spikerush (*Eleocharis palustris),* false pimpernel (*Lindernia dubia*), nodding beggar's tick (*Bidens cernua*), and teal lovegrass (*Eragrostis hypnoides).* This performance standard requires at least five native herbaceous species; therefore, this **standard was met.**

C15: Herbaceous Cover

Within this zone, native herbaceous cover was approximately 102.7% (80% CI 78.0, 127.4), a substantial increase from 2022 (78.9%). Invasive species cover increased from 0.5% (80% CI 0.6, 7.9) in 2022 to 6.2% (80% CI 2.5, 9.9) with one invasive species present within plots: water purslane (*Lythrum portula*). Performance standard C15 requires 30% cover of native herbaceous species and <10% of invasive species; therefore, this **standard was met.**

4.3 Water Quality Monitoring

Monthly average temperatures and DO are included in Tables 6 and 7, respectively. During the single, monthly DO monitoring dates in September and October, no flow in Linnton Creek was recorded; however, this does not mean that there was no flow for the entirety of each month. The temperature of Linnton Creek was cooler than the Willamette River except for the month of May.

No performance standard was established for this parameter.

Table 6. Monthly average temperatures (˚F).

Test Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Upstream Willamette	43.3	42.0	47.3	48.3	62.3	72.0	74.0	75.3	65.3	58.0	45.0
NE Portion of Inlet (South Is.)	38.1	43.8	47.3	46.8	65.8	78.1	79.1	69.6	66.0	61.0	48.7
Linnton Creek Outfall	37.9	42.2	45.3	46.9	65.3	71.2	71.2	64.7	NF	NF	48.0
Inlet NW of Island (North Is.)	39.9	41.9	45.5	47.1	64.8	79.0	80.0	69.2	65.0	60.0	48.8
Unnamed Creek Outfall	41.0	42.6	45.6	46.6	46.6	NF	NF	NF	NF	NF	NF
Downstream Willamette	40.6	41.9	47.1	48.4	61.4	78.3	78.3	75.5	78.3	58.0	45.0

Monthly dissolved oxygen readings are reported in Table 7. Readings were recorded in mg/L.

Table 7. Monthly dissolved oxygen (mg/L) measurements at six testing locations.

Test Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Upstream Willamette	12.0	12.6	11.6	12.0	10.0	7.8	9.1	9.2	10.1	10.1	12.3
NE Portion of Inlet (South Is.)	12.7	12.15	9.7	10.1	9.5	10.5	11.0	9.1	14.6	13.1	10.1
Linnton Creek Outfall	12.7	12.27	12.3	10.3	9.9	7.6	8.8	9.5	NF	NF	9.9
Inlet NW of Island (North Is.)	12.6	12.35	12.4	12.5	11.2	14.1	14.1	9.5	7.9	12.9	10.6
Unnamed Creek Outfall	12.1	12.05	11.3	11.6	11.0	NF	NF	NF	NF	NF	NF

Downstream Willamette	12.0	12.1	11.6	11.9	11.3	7.8	10.3	9.2	7.8	10.3	12.3

NF = No Flow
[1]Mg/L converted from percent saturation

4.4 Fish and Wildlife Monitoring

Incidental observations of wildlife are included in Attachment 5; results of the various required surveys are reported below.

4.4.1 Bird Assemblage Monitoring

Bird surveys that were conducted on June 7, 2023, and July 4, 2023, indicate use of the site by 22 and 24 species, respectively. By comparison, previous surveys conducted at the same time period show a slight increase from 16 species on June 5, 2022, and 17 species on July 2, 2022, observed during Year 3 monitoring. Like previous years, species that utilize the shallow waters, wetlands, and sandy beaches for foraging (e.g., Canada goose (*Branta canadensis*), violet-green swallows (*Tachycineta thalassina*), cliff swallows (*Petrochelidon pyrrhonota*), and killdeer (*Charadrius vociferus*)) were the most prevalent species during this period. Several species including Canada goose, killdeer, spotted sandpiper (*Actitius macularius*), and northern flicker (*Colaptes auratus*) were observed nesting or foraging with chicks on site. Birds of prey, like the bald eagle (*Haliaeetus leucocephalus*) and osprey (*Pandion haliaetus*), were seen flying over the Site. A summary of species detected by date is included as Attachment 6.

4.5 Wetlands and Waters Delineation

Full data forms, photographs, and descriptions of the aquatic resources identified within the Site (potentially jurisdictional and non-jurisdictional) are provided in Attachment 9. A summary of aquatic resource acreages is provided in Table 8.

5. Goals and Performance Standards

The goals and objectives of the project are presented below, with notes regarding if each objective was met or if on track to achieve performance standard. Goals 1, 2, and 3a were met at construction; Goal 4 was met in 2021.

Goal 3: Ensure the long-term success of the restored habitat through monitoring, maintenance, and stewardship.

> *Objective 3b: Implement a site-specific performance plan with performance standards to track the development of the site.*

On track: Ongoing annual monitoring follows methods outlined in SSPP.

> *Objective 3c: Minimize colonization of the site by invasive species, as defined in the performance standards.*

On track: The site was seeded with native species, and on-going monitoring and maintenance is being conducted to prevent colonization of invasive weeds. Adaptive management activities are described below in Section 7. The site passes the performance standards for invasive weed coverage.

Table 8. Extent of Wetlands and Non-wetland Waters in 2023

Feature Type	MBI Credit Type	Acres
Wetlands		
Emergent and Shrub/Scrub Wetland – OCH	Palustrine	3.41
Emergent and Shrub/Scrub Wetland – ACM	Palustrine	1.21
Fringe Seep Wetland	(proposed Palustrine/Wetland)	0.51
Depressional Wetland	N/A	0.07
	Total:	**5.20**
Non-wetland Waters		
Linnton Creek - OCH	Riverine	0.01
Side Channel – OCH	Riverine	0.97
Willamette River – ACM	Riverine	2.09
Willamette River – Shallow Waters	Riverine	5.56
	Total:	**8.63**

Objective 3d: Maintain fish access to the OCH.

On track: Growing Season 3 (2023) monitoring indicates the upstream berm represents an obstruction to fish access during low-water periods, freshwater inputs into the OCH are present year-round, no jump heights greater than 6 inches are present, and the OCH gradient remains less than 4%. However, potential stranding hazards were noted. These are addressed below.

Objective 3e: Identify and rectify obstacles to habitat development or use, as defined in the performance standards.

On track: Objective 3e is being met through implementation of the post-construction performance plan.

Objective 3f: After the Performance Period, implement a long-term stewardship program.

On track: The Long-Term Stewardship Plan has been preliminarily approved and will be implemented after the 10-year monitoring period.

6. Discussion

6.1 Geomorphic/Structural Habitat Elements

6.1.1 A9: Fish Access

There are no physical obstructions that prevent target fish from accessing the Site. There are no jump heights greater than six inches and the slope gradient throughout the OCH is less than 4%. The Linnton Creek culvert discharged cold water into the OCH throughout the year, except for a portion of September and October. Absence of water during these months is expected due to the warm temperatures and dry climate that the region experienced this summer. However, the Linnton Creek outlet supplied cold water from at least November through June, when juvenile target fish are likely present in the Willamette River.

The berm that developed at the upstream inlet of the OCH continues to block fish access from the upstream inlet during a portion of the juvenile Chinook peak outmigration months. Based on transect line AH in the topographic monitoring data for this year, the berm has aggraded to a height of 12.6 ft, up from 12.1 ft last year (Attachment 3). Water surface elevation data for this year showed that the fish had access to the side channel habitat from the upstream end of the channel approximately 20% of the time during peak migration months (March-June). It is important to note that water surface elevations in the side channel were significantly lower than in 2022. The average water surface elevation for the side channel in 2023 was 11.34 ft, down 1.22 ft from last year. According to the Basis of Design Report (Waterways 2016), at typical water levels for the Willamette River, a 12.6-foot elevation should be inundated between 35 and 40% of the time during these months. Thus, we expect the berm at this height to be overtopped closer to 40% of the time in a typical water year. Additionally, the flow-through channel was not intended to remain hydrologically connected to the Willamette River at the upstream inlet for the entirety of the peak outmigration period (Grette 2018b, Waterways 2016).

Although the upstream inlet periodically blocks access, juvenile salmonids can access the entire OCH, including the upper portion, via the downstream inlet. Water surface elevations indicate the upper section of the OCH upstream of the Linnton Creek confluence was connected via the downstream inlet approximately 76% of the time, which is in line with the 75% inundation connectivity design for the Site, despite a year of lower-than-typical water levels. Additionally, fish were able to access the downstream portion of the OCH from the Willamette River 100% of the time from at least March through June.

As mentioned in the 2022 monitoring report, the depression near the berm in the OCH was a concern for fish egress during low water conditions. RestorCap, in coordination with the Trustee Council and IRT, discussed adaptive management actions to remediate the ponding in this area. RestorCap continued to monitor the depression through daily photo, temperature, depth, and DO monitoring. It was rarely completely cut off from the main channel. The remedial action was conducted on September 18, 2023, when the depression was completely dry and disconnected from the main channel in the OCH. The depression was filled with approximately 5 cubic yards of sand that was allocated from the nearby berm. No more than 1 foot of material was removed from any portion

of the berm. For more information and photographs on the adaptive management please refer to the adaptive management letter, Attachment 10.

RestorCap will continue monitoring these areas and will conduct additional surveys to better understand if any impediments and stranding occur in the OCH. In addition to existing monitoring methods, we added LiDAR data and an additional time-lapse camera to our data collection this fall. LiDAR was flown in November during low-water conditions to provide an additional source of information for topographical analysis in the OCH. Adaptive management actions and recommendations are provided in Section 7.1.

6.2 Vegetation Monitoring

As described in Section 3, the methodology of vegetation monitoring has changed from previous years. The new methodology counts individual plants in the monitoring plots as one stem, as opposed to counting all stems on each individual plant in the monitoring plot. This methodology was approved by the Trustee Council. Vegetation monitoring in 2023 was conducted in two surveys timed to reflect the growth period of each specific habitat: riparian/upland forest and lowland shrub/herbaceous. Vegetation monitoring was conducted from May 23 to June 1 for the riparian/upland forested areas and September 23 to 26 in scrub-shrub/herbaceous areas. The Site has no significant sections of die-off due to high water. However, high water has caused erosion to occur on site, particularly along the shoreline of the north hill at approximately 20 ft elevation. Forested plot 4F was buried under the eroding shoreline resulting in low cover and stem counts for that plot. RestorCap will continue to monitor the erosion in that area and will be conducting adaptive management in 2024 to prevent the erosion from occurring. The adaptive management will involve high density planting along the eroded area. Cuttings for the planting will be made on site and will be comprised of cottonwood (*Populus balsamifera* ssp. *trichocarpa*), willow species (*Salix sp.*), Douglas spiraea (*Spiraea douglassii),* and red osier dogwood (*Cornus stolonifera*). The goal is to enhance soil stabilization along the shoreline.

Qualitative observations of recruitment indicate that cottonwood and willows are responding positively to the disturbance and flooding regime within the OCH, contributing to a large increase in seedlings within the shrub zone. Recruits were most prevalent in shrub plots nearest the downstream outlet (e.g., 2S-8S) at elevations of approximately 10 to 12 ft, where regular inundation is more frequent than other parts of the OCH.

Overall, sampling results indicate native vegetation is establishing quickly at the Site and cover of invasive species remains low due to ongoing weed management.

6.2.1 Riparian Forested Habitat

All three performance standards (stem density, species diversity, and herbaceous cover) were met within the forested habitat. Like 2022, stem density within this zone was largely dominated by species in the lower elevation zones including swamp rose (*Rosa pisocarpa*), snowberry (*Symphoricarpos albus*), cottonwood, Douglas spiraea, and Pacific and Sitka willows (*S. lasiandra* and *S. sitchensis*). Cottonwood remains the most common woody species within these plots.

6.2.2 Scrub-Shrub Habitat

The scrub-shrub habitat met its performance standards for stem density and species diversity, while it partially met the performance standard for herbaceous cover. The shrub-scrub habitat partially met its performance standard for herbaceous cover because it exceeded the criteria for invasive cover (<10%) by 2.3%. Monitoring within this zone was again conducted in late September, which has proven to be the optimal timing to identify plant species and assess cover in the scrub-shrub zone. Native water purslane (*Ludwigia palustris*) dominated the lower elevations of the OCH, accounting for nearly 18% cover by individual species. Other prevalent natives in this habitat include false pimpernel, pine bluegrass (*Poa secunda*), Spanish clover (*Acmispon americanus*), and calliopsis (*Coreopsis tinctoria*).

Invasive species cover was 12.3%. Water purslane (*Lythrum portula*) was the most common noxious species present in the shrub-scrub zone, particularly along lower elevations of the OCH. Because this zone is periodically inundated, and because of the size and abundance of the species, management of water purslane is confined to hand-removal and has proven to be a challenge.

Plots located on beach, sand, and mudflat areas (*i.e.*, 15S) had lower cover and fewer species than those within the seep wetland. In the drier, sandy areas, species such as Douglas spiraea, Sitka willow, and Pacific willow were the most abundant.

6.2.3 Emergent Habitat

Herbaceous emergent vegetation cover was markedly higher than in 2022, and the emergent habitat met both performance standards (species diversity and herbaceous cover). Data collection was conducted in late September which is the optimal time for the hydrophytic species to develop. Within these plots, 28 species were recorded. There were 23 native species, 1 invasive species, and 5 non-native species recorded. Cover increased by approximately 24% from last year. Six plots along the OCH inlet (1-2A-F) continue to have zero percent cover because of their location within the active channel and beach areas.

Camas (*Camasia quamash)* blooms were observed in multiple locations in the emergent zone in late April and early May. Broadleaf arrowhead (*Sagittaria latifolia*) plants were observed in flower in late August and with infructescence in September. Native sedges and rushes continue to spread throughout this zone.

Invasive and non-native (non-listed) species covers were low within this zone due to the ongoing mechanical removal. Pennyroyal and water purslane (*Lythrum portula*) were the dominant weeds. Other problematic weeds that were present in this zone include yellow flag iris (*Iris pseudacorus*) and purple loosestrife (*Lythrum salicaria).* Both were removed, including root masses, and disposed of offsite. Adaptive management recommendations are included in Section 7.2.

6.3 Water Quality Monitoring

Per the HDP, the ODEQ water quality standard of 11.0 mg/L DO applies from January to July. Additionally, the statute includes the caveat that "where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/L criteria, DO

levels must not be less than 95% saturation[3]". Although the Linnton Creek outfall location meets this standard in the wet months (January thru March), it fails to meet the standard during the spring and summer months (April thru July). The inlet northwest of the island (the north side of the channel) did meet this performance standard, as this area is more consistently wet than other areas of the OCH. The southern portion of the OCH (the south side of the channel) did not meet this standard due to shallow water ponding, occasional disconnection from the rest of the channel, poor mixing, and rising temperatures in the summer months.

A literature review conducted by USEPA (1986) cites "slight production impairments" for juvenile and adult salmonids at DO concentrations below 6 mg/L and no production impairments at 8 mg/L. Although salmonids can survive when DO concentrations are low, swimming and foraging are adversely affected, especially at temperatures above 20°C (68°F). Various studies indicate juvenile salmonids exhibit varying levels of avoidance in areas with DO below 4.5-6 mg/L (Carter 2005). Generally, DO concentrations need to be highest for embryo and larval stages of salmonid development (11 mg/L for no impairment, 9 mg/L or above for slight impairment), and lower DO as described above (6-8 mg/L) is optimal for juvenile and adult salmonids. As only the juvenile and adult life stages are anticipated to occur within the OCH (no spawning habitat is present in the vicinity), the 6 mg/L or greater is suitable to optimal for salmonids with potential to occur at the Site.

Although portions of the OCH had elevated temperatures and reduced DO during the summer months, it is not likely this had a measurable negative effect on salmonid use of the Site as the inlet on the north side of the island and Linnton Creek maintained DO above 7.6 mg/L. Linnton Creek recorded "no flow" measurements for the months of September and October, both outside of the window when salmonids should be present on site (November 1 thru June 30.) Peak migration for juvenile salmonids is March through June. The average DO in the OCH during this window was 10.8 mg/L and the average temperature was 58.6°F. Averages were taken at the three sampling locations in the OCH: south of the island, Linnton Creek outfall, and north of the island. The DO measurements are above the limits where habitat avoidance and production impairments to juvenile salmonids are known to occur. Temperature measurements during the salmonid window were well below the 68°F threshold where swimming and foraging are adversely affected, except for the months June and July when average temperatures in the OCH averaged 76.1°F and 76.8°F, respectively. Temperature in the OCH during these months was likely attributed to the low water levels we experienced this year. Temperatures and DO were generally optimal for salmonid use of the OCH during the period from January to July.

6.4 Wildlife Monitoring

A variety of birds were documented using the Site in all three habitat communities: riparian/upland forested, scrub-shrub, and emergent. Birds were observed using the habitat structures and snags in the riparian/upland forest habitat. Bald eagles and osprey

[3] OAR 340-041-0016 (1)(b)

were seen perched atop the snags, loafing and presumably foraging over the Site and Willamette River. The rapid growth of vegetation in the shrub-scrub habitat provides refuge for nesting birds and opportunity to prey on insects and larvae throughout the OCH. Birds like killdeer, spotted sandpiper, and Canada goose utilize the shoreline along the Willamette River and the emergent zones for foraging. These birds also utilize the mudflats at the north inlet/outlet of the OCH at low tide conditions. The diverse habitat structure of the Site provides birds with an abundance of food and shelter for local birds or birds that are flying through on their migration routes.

6.5 Credit Ledger

A copy of the current credit ledger is included herein as Attachment 7. Linnton Water Credits has currently set aside $361,711 for long-term stewardship based on the credit release schedule.

6.6 Wetlands and Waters Delineation

The purpose of delineating wetlands and waters at the Site was to determine the actual acres of wetlands and non-wetland waters created through the restoration project. Earthwork for the project was completed in 2019. The uplift achieved will determine the quantity of 404 Credits available at the mitigation bank.

The quantity and distribution of wetlands and waters at the Site have expanded since the completion of construction. This is largely due to the addition of seep wetlands located along the fringe of the side channel in the OCH, which account for 0.51 acre of additional wetland (palustrine habitat) that was not accounted for in the Site design. This wetland supports the greatest vegetative cover/density on the site, and it is dominated by hydrophytic vegetation. It is fed by perennial seep hydrology, and both saturation and inundation are present year-round. The source of hydrology appears to be subsurface inputs originating west of Highway 30 in Forest Park. Based on the land use restrictions of the City park, no development or other changes that may change the seep hydrology at the Site are anticipated.

The other minor shifts in the quantities of riverine and palustrine habitats compared to the as-built report are likely due to erosion along the hillside, particularly in the seep area where perennial flow likely moves sediment. Shifts may also be the result of changes in vegetative growth since the as-built survey. RTK surveys are fairly accurate in vegetated areas; however, because the largest deviation from the previous OHW line occurs in the most densely vegetated area, this may account for some of the changes. Additionally, 0.01 acre of palustrine habitat was moved to riverine because Linnton Creek was previously considered palustrine, but delineated as a channel in the 2023 delineation.

As noted above, changes in wetlands and waters acreages will affect credit accounting for the Site. We assume that before the Linnton credit ledger is updated, a verification of the wetland delineation will be performed by the Corps.

7. Adaptive Management

As outlined in the SSPP, the adaptive management framework provides a plan for acting if it is determined the restoration site is not on track to meet interim performance standards, or if contingency actions are needed to respond to physical or biological conditions. As monitoring data are collected, they will be evaluated relative to performance standards, and if necessary, consultation between the Trustee Council, IRT, and RestorCap will determine if ongoing monitoring or remedial action is necessary.

7.1 Off-Channel Habitat

As planned in the Year 3 Monitoring Report, RestorCap completed adaptive management of the ponded area in the OCH in 2023. The action was completed using sand from on-site during the in-water work window (July 1 through October 31), though conditions were completely dry in this portion of the OCH at the time work was completed. The depression causing the ponding was filled with approximately 5 cubic yards of sand from the nearby berm. No more than 1 foot of sand was extracted from any portion of the berm. All work was conducted using hand tools, and no heavy machinery was required. This action appears to have eliminated the potential fish stranding issue that was previously identified at this location. A complete description with photographs of the actions was provided to the Trustee Council and IRT on October 4, 2023, and is provided here as Attachment 9. RestorCap will continue to monitor this area and the entire Site for potential fish stranding issues, using a combination of camera traps, visual inspections, water level and temperature loggers, DO monitoring, topographic surveys, and LiDAR.

Following the adaptive management action which took place September 18, 2023, the Trustee Council pointed out what they believe may be a separate fish stranding issue. The Trustee Council highlighted that there is a slight elevational difference in the OCH channel just upstream of its confluence with Linnton Creek. The concern is that this elevational change prevents egress from the portion of side channel upstream of Linnton Creek in extreme low water conditions, and that fish may be stranded here for periods of time. RestorCap is monitoring this section of the OCH to determine whether there is a fish stranding issue, and if so, which adaptive management strategy is feasible for the system as it continues to move toward equilibrium. The Trustee Council organized site visits with experts in fish passage from ODFW and NOAA, as well as a geomorphologist and biologists from the USFWS, and RestorCap is awaiting feedback. A wildlife camera was mounted on a nearby habitat structure to provide imagery on how water moves in this section of the OCH, and LiDAR was flown in November to produce a 2D model of surface elevations throughout the OCH. RestorCap also plans to add a topographic transect through the thalweg in this section for the Year 5 monitoring report.

RestorCap continues to monitor aggradation at both channel inlets for potential impediments to fishes accessing the OCH. The downstream inlet remains connected to the OCH year-round, even during low-water conditions, through inputs from Linnton Creek, the hillside seep, and tidal waters. At the upstream inlet of the OCH, the berm remains an impediment to fish passage for a portion of the fish window. Although it was assumed this berm's height was stable when the height stayed the same between 2021 and 2022, it aggraded by approximately 5 inches at the apex in 2023. As per our September

25, 2023 Site visit summary notes from the IRT, the OCH and ACM are highly dynamic systems which have yet to reach equilibrium. The IRT notes also state that they do not recommend adaptive management of the inlets at this point. RestorCap is awaiting feedback from the Trustee Council, ODFW, and USFWS. RestorCap will continue to monitor both channel inlets using a combination of camera traps, visual inspections, water level and temperature loggers, DO monitoring, topographic surveys, and LiDAR. Additional transects will be added to the yearly topographic monitoring to better understand how aggradation is impacting the inlets.

LiDAR was flown in November 2023 and a Digital Surface Model was produced for the entire Site. Additionally, the Trustee Council provided EPA LiDAR of the Site from 2021 which will allow comparison of Site changes. Additional topographic transects throughout the OCH and gathering elevational data in the run of the thalweg will help to better understand fish passage concerns and the complex dynamics of the OCH. This data will be the foundation to determine adaptive management strategies in the future. RestorCap will continue discussions with the Trustee Council to determine whether a 2D flow model should be conducted for the Site.

7.2 Vegetation

The Site has achieved the majority of its vegetation performance criteria in the riparian/upland forested, scrub-shrub, and emergent herbaceous habitats. The plugs, bareroots, cuttings, and poles that were planted in the OCH have established quite rapidly and now provide additional habitat structure for species that utilize that zone. First Nation species camas (*Camasia quamash)* and broadleaf arrowhead were observed in bloom in numerous locations in the OCH. Vegetation growth in the riparian/upland forested habitat is relatively slow, as these habitats experience poor soil conditions and intense exposure to the sun. RestorCap will continue to monitor the succession of the plantings throughout the Site and will propose additional plantings in areas where there is considerable die-off.

7.2.1 Vegetation Management

Vegetation maintenance and management was conducted to assist in the establishment of the native plantings and to control invasives species from persisting on the Site, ensuring that the Site is meeting its performance criteria. Similar to 2022, the large Oregon white oak and Pacific madrone (*Arbutus menziesii*) plantings were watered weekly during the hot, dry months of summer as they continued to show heat and draught stress throughout summer. Additionally in 2023, compost and mulch rings were placed around the trunks of the oaks to enhance water retention and nutrient uptake in the nutrient-poor soil. This treatment will continue in 2024.

Restorcap worked diligently to control invasive species from persisting on site. Methods include mechanical treatments (either by hand pulling, digging, mowing, or weed whacking), herbicide applications, or a combination of the two. In the riparian/upland forested and scrub-shrub habitats, RestorCap staff performed multiple herbicide applications on a variety of different species. A fabaceae-selective herbicide (Transline) prescription was used to treat white and yellow sweetclovers (*Melilotus sp.*), vetch species (*Vicia sp.*) and other non-native clover species like birds-foot trefoil. Nonselective herbicide prescriptions of Rodeo (glyphosate), Garlon (triclopyr), or a combination of the

two were used to control invasive grasses like reed canary grass and velvet grass (*Holcus lanatus*) and invasive woody vegetation like Himalayan blackberry (*Rubus armeniacus*). All spray treatments were performed on dry days with little wind to reduce runoff and chemical drift. No herbicide applications were conducted within inundated areas of the OCH; RestorCap staff relied on mechanical and hand-pulling treatments in these areas. Mechanical treatments using a weed wrench and/or a shovel were used to remove woody species like scotch broom (*Cytisus scoparius*) and butterfly bush (*Buddleja davidii*) and deep-rooted species like yellow flag iris. Hand removal was most used in the scrub-shrub and emergent herbaceous habitat areas where water is present. Species controlled by hand included floating primrose (*Ludwigia peploides*), pennyroyal and trefoil, and many of the semi-aquatic species mentioned above. Individuals known to regenerate from fragments or tissue left behind were placed in contractor bags and removed off-site during each treatment.

RestorCap will plant additional native sedges and rushes in the shrub-scrub habitat to address the exceedance of invasive species cover in that zone. The adult, one-gallon container plants will provide additional competition to the invasive species that contribute to the 2.3% exceedance. Once established, the sedges and rushes will shade out the smaller invasive species like water purslane. A more concerted management effort will be placed on invasive species in this zone that are easier to remove by hand, like pennyroyal and water plantain. We expect this effort to bring invasive cover down below 10%. Ongoing vegetation management will address additional occurrences, as necessary, in 2024.

7.3 Shoreline Erosion

In early 2023, RestorCap identified some erosion areas along the shoreline on the north portion of the Site. Adaptive management work was conducted on the shoreline of the north hill where erosion continues to pose a problem. The erosion is caused by the flow of the Willamette River at high water and by wave energy from ships entering and exiting the port. It may also be a result of pile removal in the ACM, where piles likely contributed to the stabilization of the shoreline along the Site. The erosion is occurring just where the shoreline curves north out of the OCH and runs parallel to the Willamette River at approximately 18-21 ft elevation, at vegetation sample plot 4F. In early 2023, RestorCap planted roughly 200 cuttings of black cottonwood and willow species in this area. The goal was to increase soil stabilization and reduce the wave energy from impacting this area of the Site. In 2024, RestorCap will conduct high density planting along this portion of the shoreline to enhance these efforts. Cuttings of the same species, along with other shrub species like Douglas spirea and red osier dogwood, will be planted in a 1 ft by 1 ft grid. The grid will begin on the shoreline and continue up the hillside.

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ATTACHMENT 1. FIGURES

FIGURE 1

Location Map

Linnton Bank Boundary

Linnton Mill Restoration Site
Portland, Oregon

Data Source(s): RestorCap, Grette and Associates, Waterways Consulting, Inc.
Base Source: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Google, County of Clark, WA, Oregon Metro, Oregon State Parks, State of Oregon GEO, WA State Parks GIS, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of

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FIGURE 2

Linnton Habitat Types

Linnton Mill Restoration Site
Portland, Oregon

Habitats within Project Area

- Upland / Forested (4.98 ac)
- Riparian (9.37 ac)
- Off-Channel (4.45 ac)
- Active Channel Margin (3.19 ac)
- Shallow (5.57 ac)

Data Source(s): RestorCap, Grette and Associates
Base Source: Maxar, Microsoft, Esri Community Maps Contributors, County of Clark, WA, Oregon Metro, Oregon State Parks, State of Oregon GEO, WA State Parks GIS, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, Google
11/30/2022 1:49 PM

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Path: C:\Users\KariDupler\Restorcap\Projects - Documents\Linnton\Graphics\GIS\Linnton\Linnton.aprx

FIGURE 3

Vegetation Monitoring Plots

Linnton Mill Restoration Site
Portland, Oregon

Linnton Bank Boundary

Plot Type

Forest

Scrub-shrub

Data Source(s): RestorCap, Grette and Associates
Base Source: Google
12/27/2022 3:36 PM

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FIGURE 4

Off-Channel Emergent Monitoring Plots

Linnton Mill Restoration Site

Portland, Oregon

Linnton Bank Boundary

Off-Channel (4.45 ac)

Plot Type

Herbaceous

Data Source(s): RestorCap, Grette and Associates
Base Source: © 2023 Microsoft Corporation © 2023 Maxar ©CNES (2023)
Distribution Airbus DS
4/4/2023 12:14 PM

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FIGURE 5

Bird Monitoring Transects

Legend

- Bird Monitoring Transects
- Linnton Bank Boundary

Linnton Mill Restoration Site
Portland, Oregon

Data Source(s): RestorCap, Waterways
Base Source: © 2023 Microsoft Corporation © 2023 Maxar ©CNES (2023) Distribution Airbus DS, Google
12/15/2023 11:18 AM

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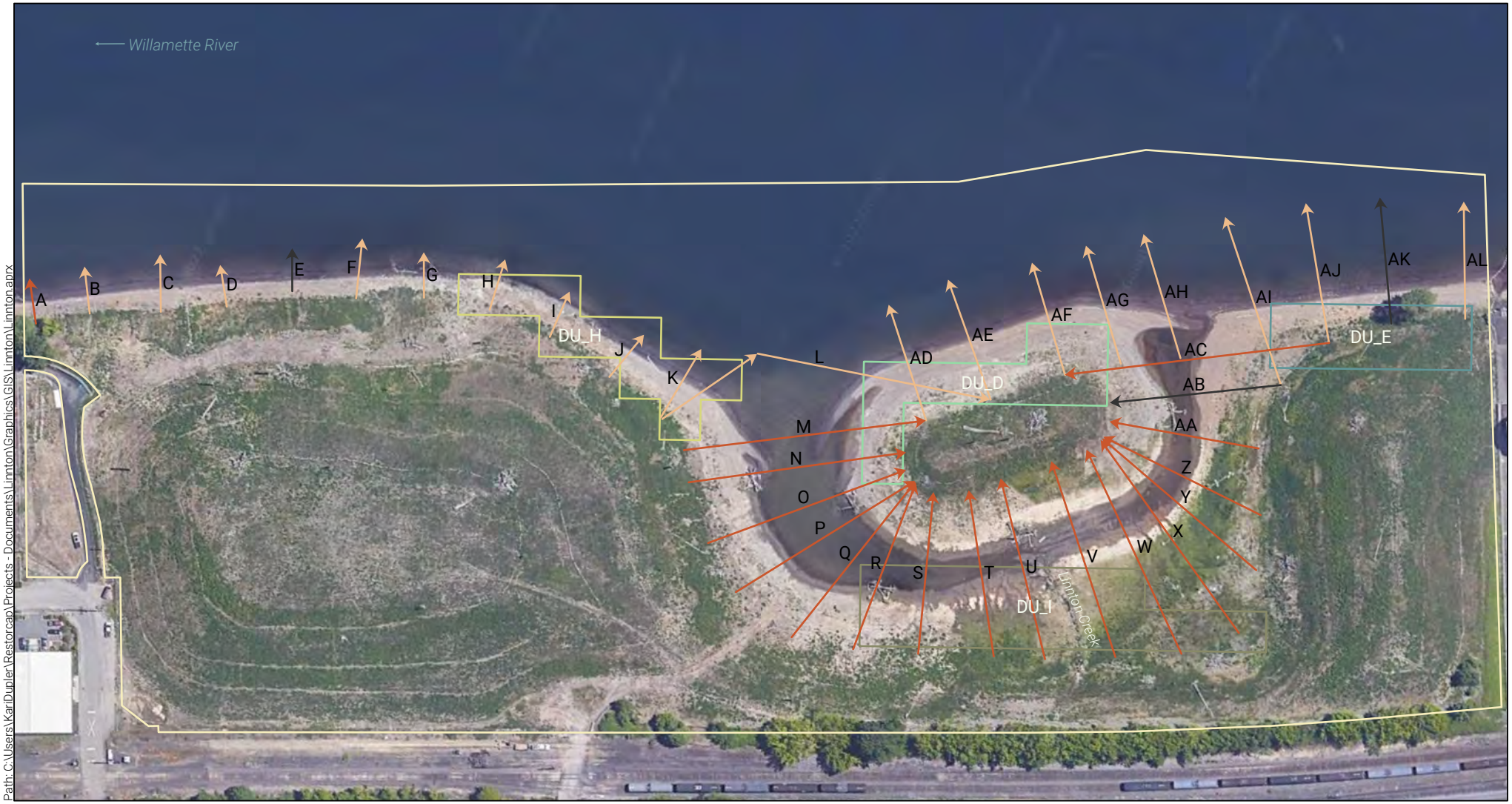

Path: C:\Users\KariDupler\Restorcap\Projects - Documents\Linnton\Graphics\GIS\Linnton\Linnton.aprx

FIGURE 6

Topographic Monitoring Transects

Linnton Mill Restoration Site
Portland, Oregon

Survey Results

Linnton Bank Boundary

Off-Channel Monitoring

- Decrease
- Increase
- No Change

Decision Unit Boundary

- D
- E
- H
- I

Data Source(s): RestorCap, Grette and Associates, Waterways Consulting, Inc.
Base Source: Google
12/6/2022 2:31 PM

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ATTACHMENT 2. PHOTO POINT PHOTOGRAPHS

Photographs 1-4. Photo Monitoring Point 1, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 5-8. Photo Monitoring Point 2, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 9-12. Photo Monitoring Point 3, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 13-16. Photo Monitoring Point 4, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 17-20. Photo Monitoring Point 5, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 21-24. Photo Monitoring Point 6, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 25-28. Photo Monitoring Point 7, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 29-32. Photo Monitoring Point 8, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 33-36. Photo Monitoring Point 9, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 37-40. Photo Monitoring Point 10, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 41-44. Photo Monitoring Point 11, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 45-48. Photo Monitoring Point 12, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 49-52. Photo Monitoring Point 13, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 53-56. Photo Monitoring Point 14, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 57-60. Photo Monitoring Point 15, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 61-64. Photo Monitoring Point 16, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 65-68. Photo Monitoring Point 17, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 69-72. Photo Monitoring Point 18, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 73-76. Photo Monitoring Point 19, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 77-80. Photo Monitoring Point 20, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 81-84. Photo Monitoring Point 21, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 85-88. Photo Monitoring Point 22, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 85-88. Photo Monitoring Point 23, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 93-96. Photo Monitoring Point 24, photos taken June 21, 2023.

View looking north.

View looking south.

View looking east.

View looking west.

Photographs 97-100. Photo Monitoring Point 25, photos taken June 21, 2023.

View looking north.

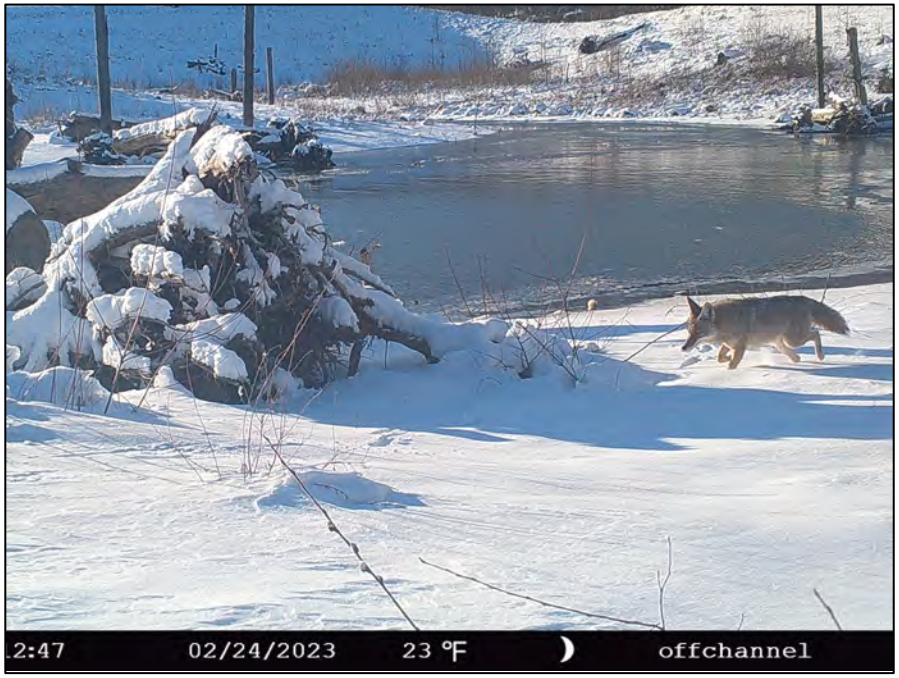
View looking south.

View looking east.

View looking west.

Photographs 101-104. Wildlife captured on mink and beaver monitoring cameras in 2023.

Photographs 105-108. Wildlife captured on mink and beaver monitoring cameras in 2023.



Photographs 109-112. Plant and wildlife species photographed on Site in 2023.

Photographs 113-116. Plant species photographed on Site in 2023, including *Camassia quamash*, a First Nations plant of significance.

Photographs 117-120. Off-Channel Upstream Photo Monitoring and Willamette River (14211720) USGS Gauge Data Converted to NAVD88

Water surface elevation 7.63 ft

Water surface elevation 7.27 ft

Water surface elevation 13.59 ft

May 4, 2023 9:54AM, water surface elevation 14.50 ft

Photographs 121-124. Off-Channel Downstream Photo Monitoring and Willamette River (14211720) USGS Gauge Data Converted to NAVD88

March 15, 2023 10:59AM, water surface elevation 10.51 ft

May 4, 2023 9:10AM, water surface elevation 14.55 ft

Water surface elevation 10.42 ft

Water surface elevation 7.15 ft

Attachment 3. Topographic Monitoring

WILLAMETTE RIVER

N

1001 1002 1003 1004 1005

LEGEND

- 75 / 70 — 2019 RECORD SURVEY CONTOURS (5' INTERVAL)
- 75 / 70 — PRE-CONSTRUCTION SURVEY CONTOURS (5' INTERVAL)
- Δ^2 — SURVEY CONTROL POINT
- 2023 MONITORING VEGETATION LINE

ANNUAL MONITORING SITE PLAN

SCALE: 1" = 120'

SECTION AND DETAIL CONVENTION

SECTION OR DETAIL IDENTIFICATION (NUMBER OR LETTER) — A / 1.3 — FIGURE REFERENCE

NOTES:

1. PRE-CONSTRUCTION SURVEY PREPARED BY AKS ENGINEERING AND FORESTRY IN 2013.
2. RECORD SURVEY FOR PROJECT CONSTRUCTION COMPLETED BY WATERWAYS CONSULTING, INC. IN JANUARY 2020.
3. YEAR 1 CROSS SECTION MONITORING COMPLETED BY WATERWAYS CONSULTING, INC. IN OCTOBER 2020.
4. YEAR 2 CROSS SECTION MONITORING COMPLETED BY WATERWAYS CONSULTING, INC. IN JUNE 2021.
5. YEAR 3 CROSS SECTION MONITORING COMPLETED BY WATERWAYS CONSULTING, INC. IN JULY 2022.
6. YEAR 4 CROSS SECTION MONITORING COMPLETED BY WATERWAYS CONSULTING, INC. IN NOVEMBER 2023

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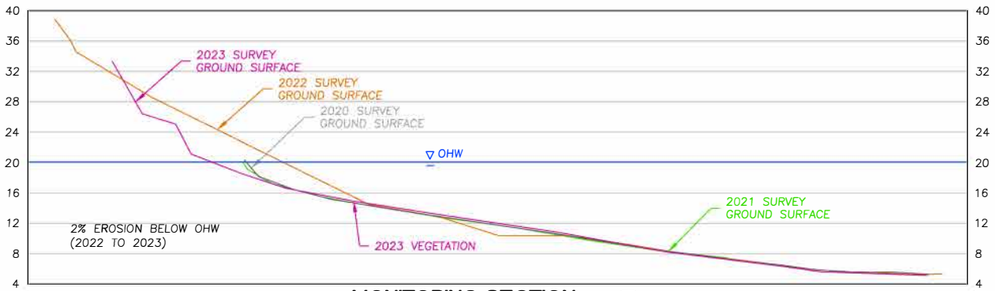
LINNTON MITIGATION PROJECT
TOPOGRAPHIC CROSS SECTION MONITORING PLAN
2023

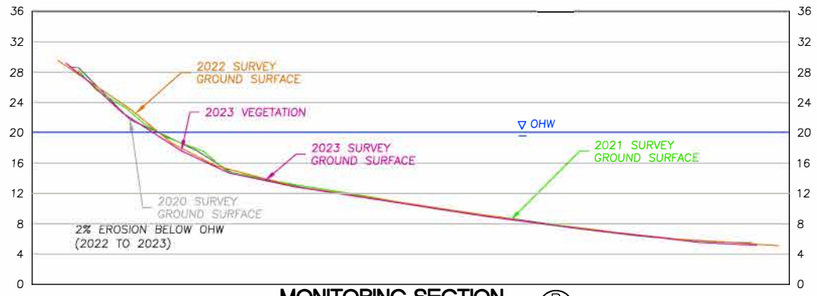
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

0 1"

FIGURE
1.0



MONITORING SECTION A 1.0
SCALE: 1" = 20'



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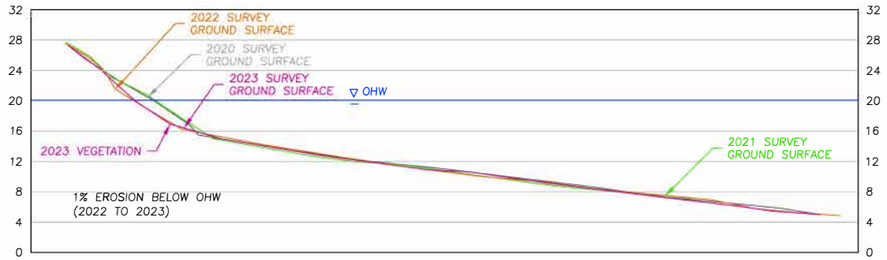

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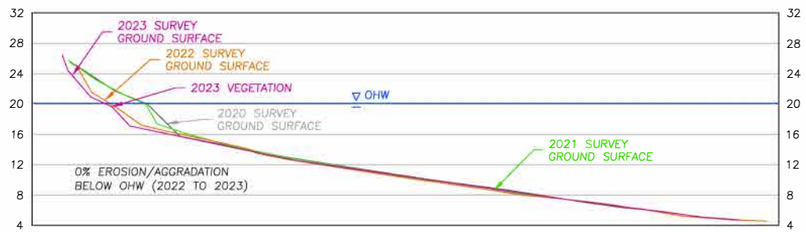

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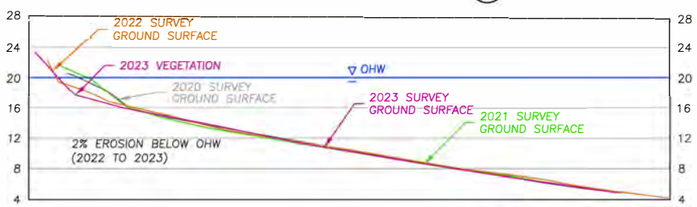

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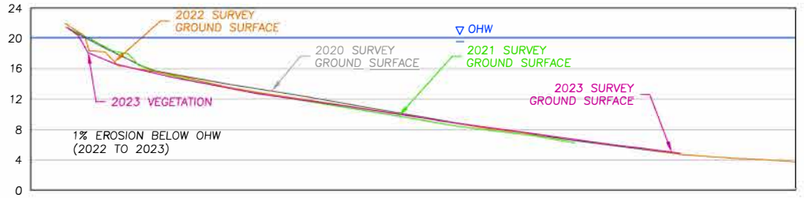

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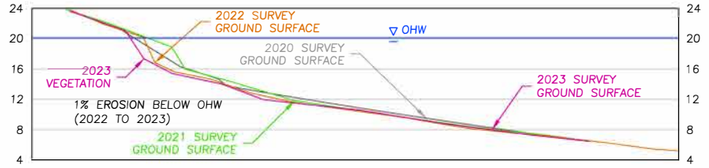

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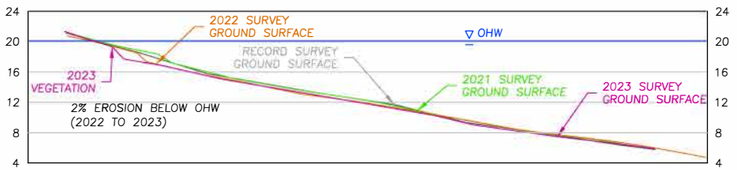

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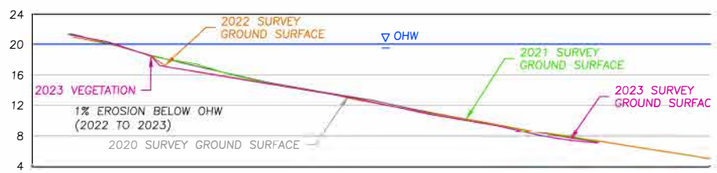

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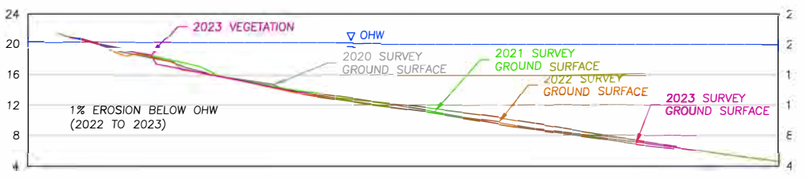

MONITORING SECTION J 1.0
SCALE: 1" = 20'

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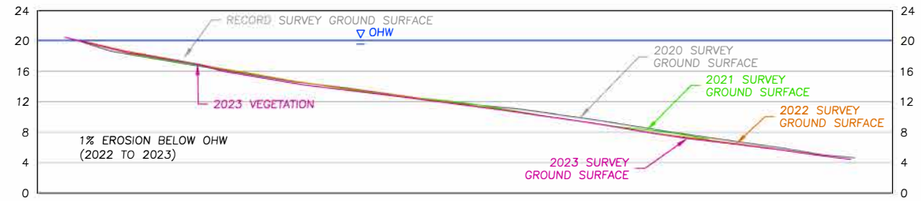
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS
0 1"

FIGURE
1.1



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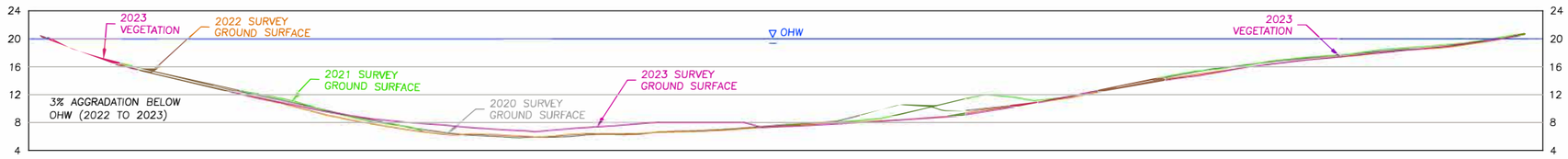
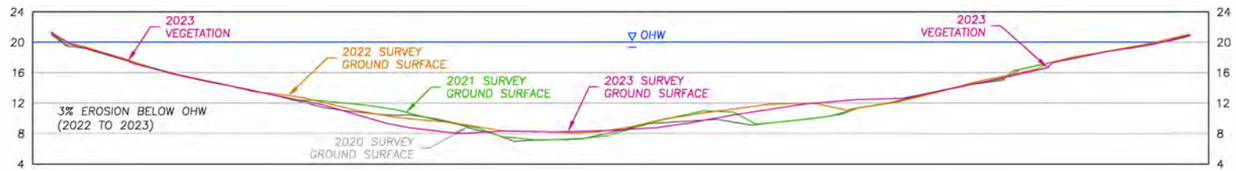


MONITORING SECTION L 1.0
SCALE HORZ: 1" = 40' VERT: 1" = 20'



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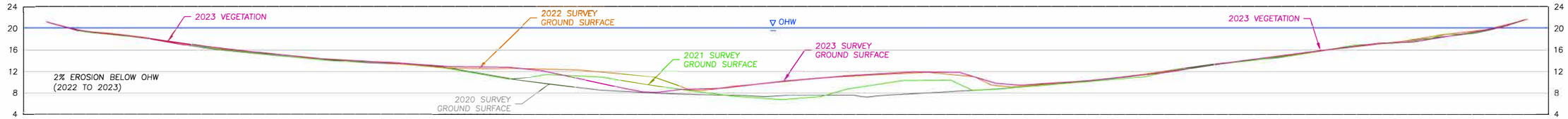

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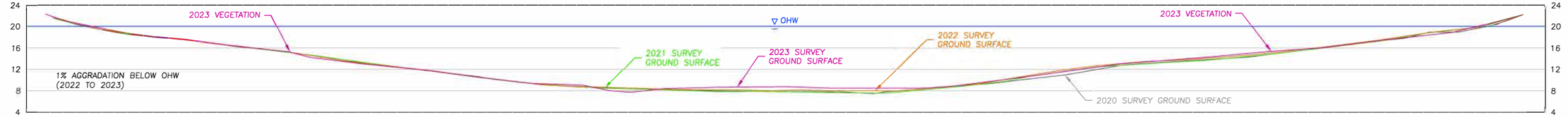

MONITORING SECTION O 1.0
SCALE: 1" = 20'

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2023

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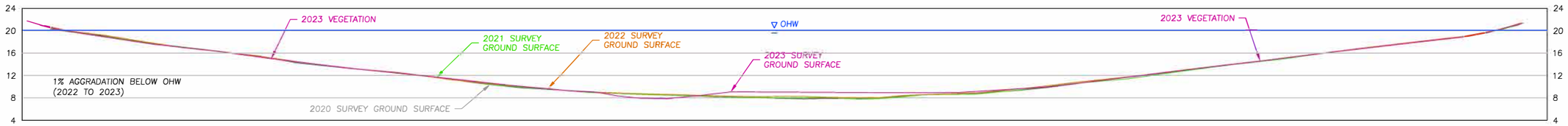
0 1"

FIGURE
1.2



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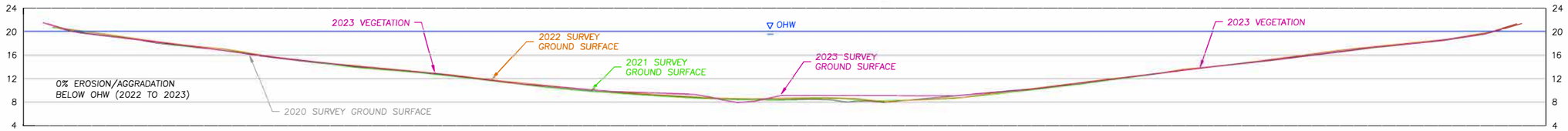

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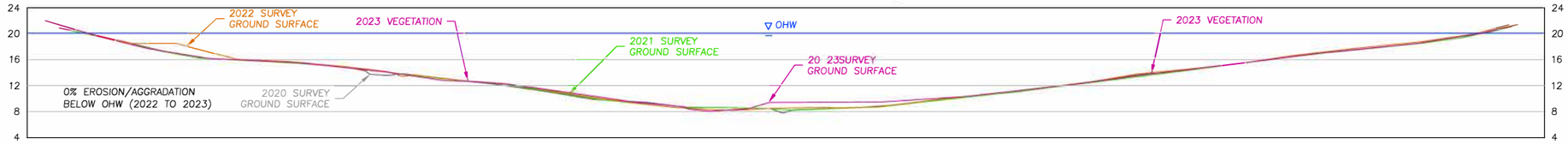

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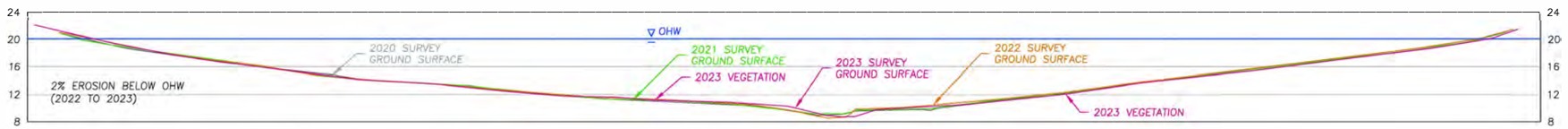
SCALE: 1" = 20'

MONITORING SECTION S 1.0
SCALE: 1" = 20'



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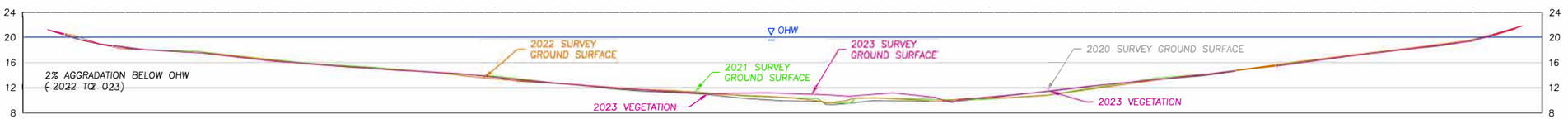

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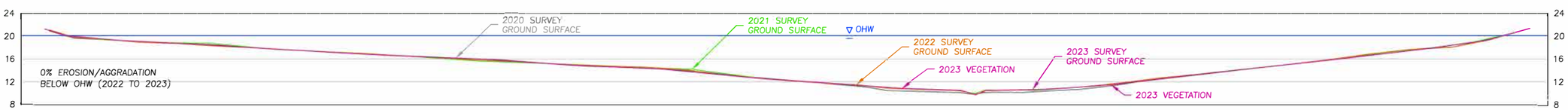

MONITORING SECTION V 1.0
SCALE: 1" = 20'

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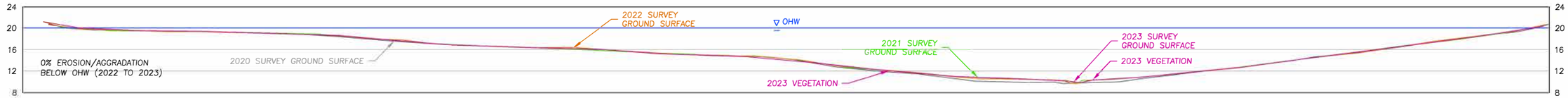
0 1"

FIGURE
1.3



MONITORING SECTION W 1.0
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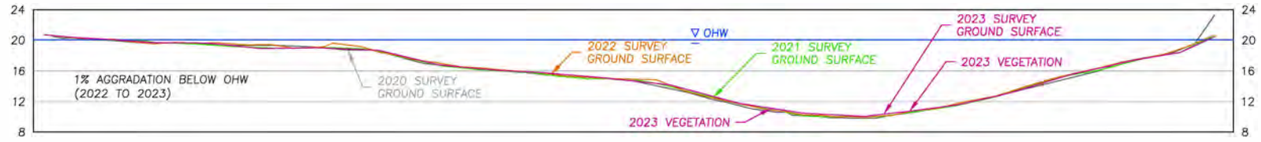
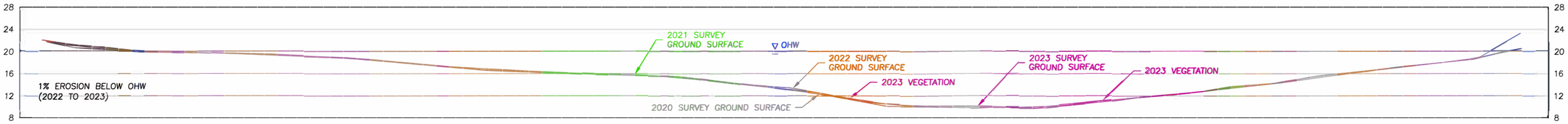


MONITORING SECTION X 1.0
HORZ SCALE: 1" = 40' VERT: 1" = 20'



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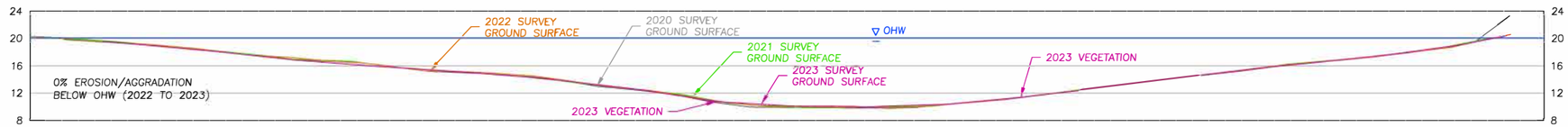

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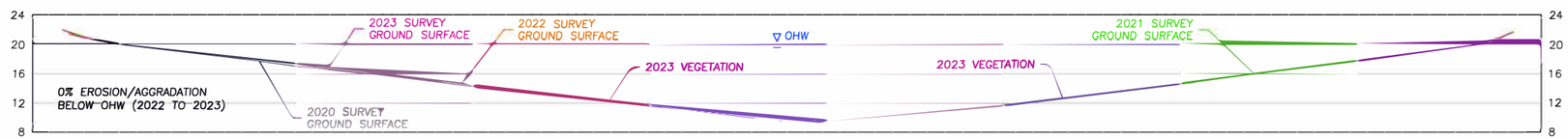

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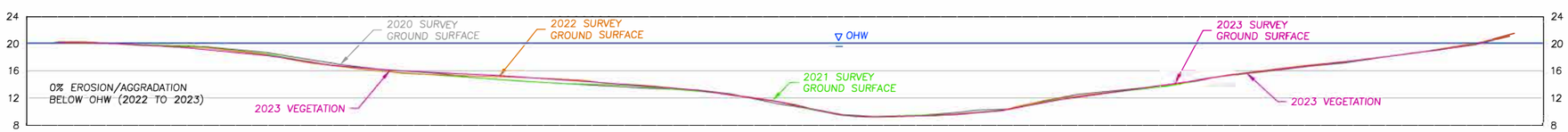

MONITORING SECTION AB 1.0
SCALE: 1" = 20'

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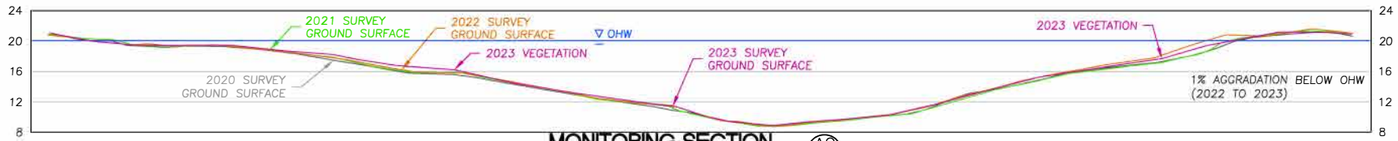
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS
0 1"

FIGURE
1.4



MONITORING SECTION (AC 1.0)
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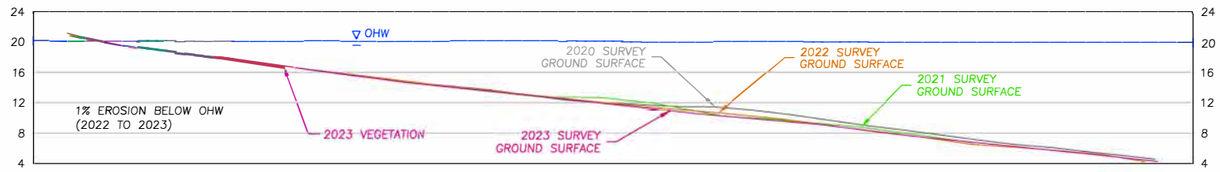
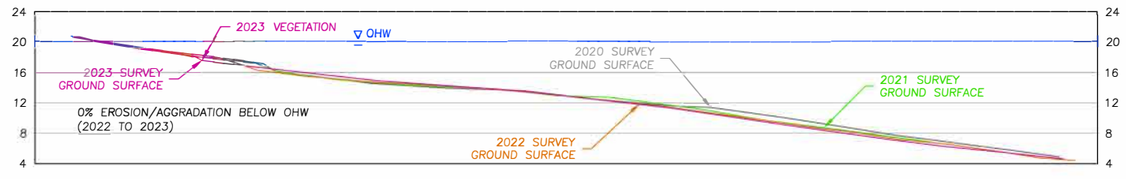


MONITORING SECTION (AD 1.0)
SCALE: 1" = 20'



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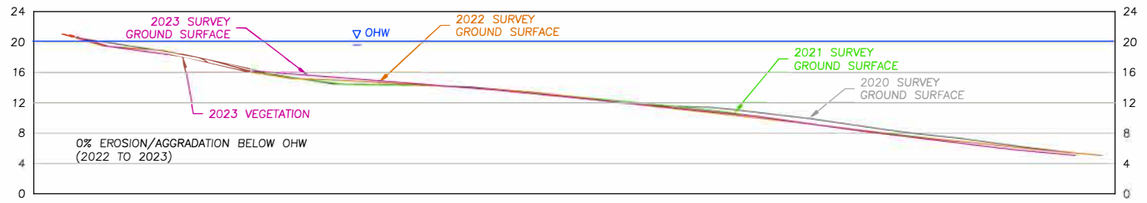

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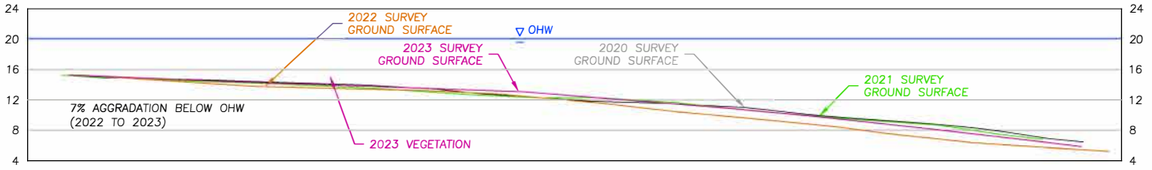

MONITORING SECTION (AG 1.0)
SCALE: 1" = 20'

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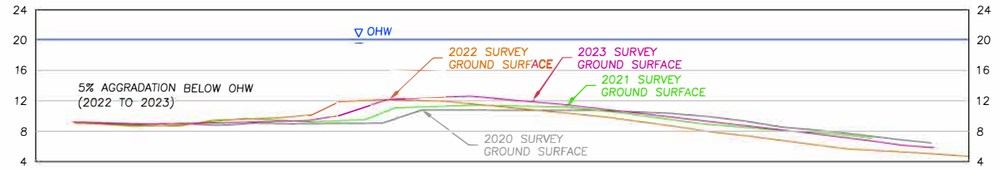
LINNTON MITIGATION PROJECT
TOPOGRAPHIC CROSS SECTION MONITORING PLAN 2023

BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS
0 1"

FIGURE
1.5



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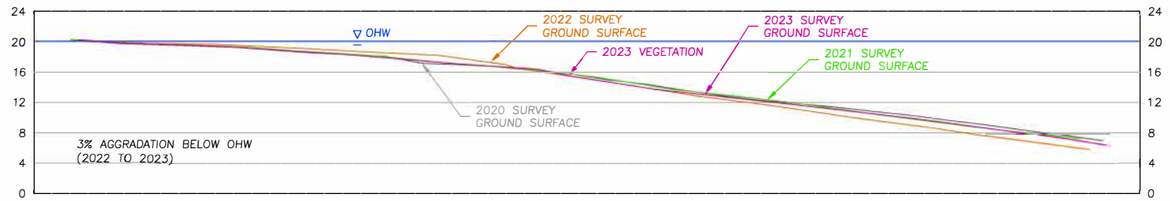
SCALE: 1" = 20'



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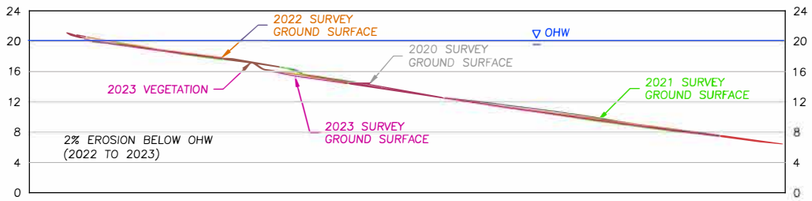

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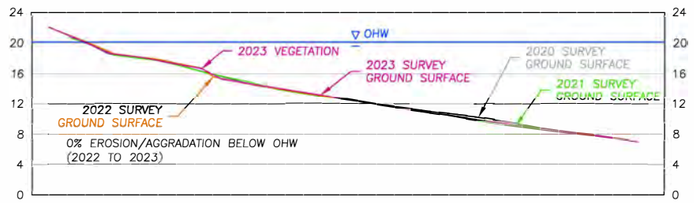

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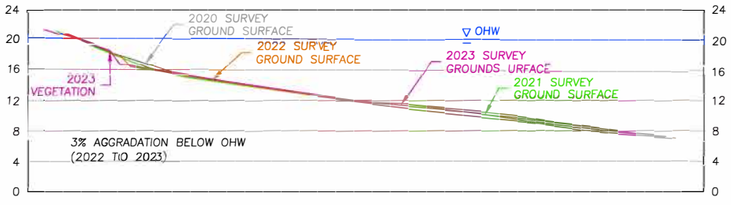
SCALE: 1" = 20'



MONITORING SECTION (AL 1.0)
SCALE: 1" = 20'

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LINNTON MITIGATION PROJECT
TOPOGRAPHIC CROSS SECTION MONITORING PLAN
2023

BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS
0 1"

FIGURE
1.6

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WILLAMETTE RIVER

N

1001 1002 1003 1004 1005

LEGEND

- 75 / 70 — 2019 RECORD SURVEY CONTOURS (5' INTERVAL)
- 75 / 70 — PRE-CONSTRUCTION SURVEY CONTOURS (5' INTERVAL)
- Δ^2 — SURVEY CONTROL POINT
- 2023 MONITORING VEGETATION LINE
- 2020 MONITORING SURVEY OFF-CHANNEL/ACM HABITAT
- 2023 MONITORING SURVEY OFF-CHANNEL/ACM HABITAT

ANNUAL MONITORING SITE PLAN

SCALE: 1" = 120'

SECTION AND DETAIL CONVENTION

SECTION OR DETAIL IDENTIFICATION (NUMBER OR LETTER) — A / 1.3 — FIGURE REFERENCE

NOTES:

1. PRE-CONSTRUCTION SURVEY PREPARED BY AKS ENGINEERING AND FORESTRY IN 2013.
2. RECORD SURVEY FOR PROJECT CONSTRUCTION COMPLETED BY WATERWAYS CONSULTING, INC. IN JANUARY 2020.
3. YEAR 1 CROSS SECTION MONITORING COMPLETED BY WATERWAYS CONSULTING, INC. IN OCTOBER 2020.
4. YEAR 2 CROSS SECTION MONITORING COMPLETED BY WATERWAYS CONSULTING, INC. IN JUNE 2021.
5. YEAR 3 CROSS SECTION MONITORING COMPLETED BY WATERWAYS CONSULTING, INC. IN JULY 2022.
6. YEAR 4 CROSS SECTION MONITORING COMPLETED BY WATERWAYS CONSULTING, INC. IN NOVEMBER 2023

LINNTON MITIGATION PROJECT
TOPOGRAPHIC CROSS SECTION MONITORING PLAN
2023

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BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS (0 — 1")

FIGURE 1.0

WILLAMETTE RIVER

N

1001
1004
1005
1006

LEGEND

- 2019 RECORD SURVEY CONTOURS (5' INTERVAL)
- PRE-CONSTRUCTION SURVEY CONTOURS (5' INTERVAL)
- SURVEY CONTROL POINT
- 2023 MONITORING VEGETATION LINE
- 2019 RECORD SURVEY 50% INUNDATION LEVEL
- 2023 MONITORING SURVEY 50% INUNDATION LEVEL

ANNUAL MONITORING SITE PLAN

SCALE: 1" = 120'

SECTION AND DETAIL CONVENTION

SECTION OR DETAIL IDENTIFICATION (NUMBER OR LETTER) — A / 1.3 — FIGURE REFERENCE

NOTES:

1. PRE-CONSTRUCTION SURVEY PREPARED BY AKS ENGINEERING AND FORESTRY IN 2013.
2. RECORD SURVEY FOR PROJECT CONSTRUCTION COMPLETED BY WATERWAYS CONSULTING, INC. IN JANUARY 2020.
3. YEAR 1 CROSS SECTION MONITORING COMPLETED BY WATERWAYS CONSULTING, INC. IN OCTOBER 2020.
4. YEAR 2 CROSS SECTION MONITORING COMPLETED BY WATERWAYS CONSULTING, INC. IN JUNE 2021.
5. YEAR 3 CROSS SECTION MONITORING COMPLETED BY WATERWAYS CONSULTING, INC. IN JULY 2022.
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LINNTON MITIGATION PROJECT
TOPOGRAPHIC CROSS SECTION MONITORING PLAN
2023

BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

0 1"

FIGURE
1.0

ATTACHMENT 4. VEGETATION MONITORING TABLES

Riparian Forest Plot - Native Stem Counts

Species	Common Name	Form	Forest Plot														% of Plots
			2F	4F	7F	8F	10F	11F	12F	16F	17F	22F	23F	24F	29F	30F	31F	
Alnus rubra	red alder	tree	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	6.7%
Amelanchier alnifolia	serviceberry	shrub	0	7	6	0	0	0	1	0	0	0	0	0	0	2	0	26.7%
Arbutus menziesii	Pacific madrone	shrub	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	26.7%
Baccharis pilularis	coyote brush	shrub	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	6.7%
Cornus stolonifera	red osier dogwood	shrub	0	0	23	0	0	5	0	0	0	3	0	15	2	1	0	40.0%
Crataegus douglasii	Douglas' hawthorn	tree	0	12	3	2	0	3	0	6	1	0	0	0	4	1	0	53.3%
Crataegus monogyna	English hawthorn	tree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Frangula purshiana	cascara	shrub	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	6.7%
Fraxinus latifolia	Oregon ash	tree	0	0	1	14	0	4	0	2	0	3	0	1	7	0	0	46.7%
Holodiscus discolor	oceanspray	shrub	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	6.7%
Lonicera involucrata	coast twinberry	shrub	0	0	0	0	0	2	0	2	2	3	3	0	0	0	0	33.3%
Malus fusca	western crabapple	tree	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	6.7%
Populus trichocarpa	black cottonwood	tree	0	1	2	11	8	1	3	823	7	96	330	0	0	1	0	73.3%
Rosa pisocarpa	swamp rose	shrub	0	0	32	0	0	19	0	16	3	0	14	0	7	0	0	40.0%
Rubus parviflorus	thimbleberry	shrub	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	6.7%
Rubus spectabilis	salmonberry	shrub	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	6.7%
Rubus ursinus	trailing blackberry	shrub	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	13.3%
Salix fluviatilis	Columbia willow	shrub	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	6.7%
Salix hookeriana	Hooker's willow	shrub	0	1	0	0	0	0	0	0	0	0	0	0	7	0	0	13.3%
Salix lasiandra (var. lasiandra)	Pacific willow	tree	1	11	1	0	9	1	0	4	0	2	0	2	7	2	12	73.3%
Salix prolixa	Mackenzie's willow	shrub	2	0	11	2	0	0	0	0	0	2	6	2	5	0	0	46.7%
Salix scouleriana	Scouler willow	tree	0	11	5	3	2	0	0	0	1	0	0	1	0	5	0	46.7%
Salix sitchensis	Sitka willow	tree	0	0	0	5	1	0	0	15	3	15	17	0	15	3	65	60.0%
Sambucus racemosa	red elderberry	shrub	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	13.3%
Spiraea douglasii	Douglas spiraea	shrub	0	0	0	0	4	6	0	17	5	1	48	9	4	0	0	53.3%
Symphoricarpos albus	common snowberry	shrub	4	1	5	14	0	6	5	9	3	0	0	0	0	2	0	60.0%
	Total Stems		**333**	**130**	**777**	**484**	**648**	**342**	**87**	**2554**	**436**	**830**	**996**	**334**	**1363**	**377**	**630**	

Native Riparian Forest Statistics	
Total Native Tree Species	8
Total Native Shrub Species	17
Average native stems per riparian plot	129
Acre per Plot	0.019
Approximate native stems per riparian acre	**6,807**

Scrub-Shrub Plot - Native Stem Counts

Species	Common Name	Form	Scrub-Shrub Plot															
			1S	2S	3S	4S	5S	6S	7S	8S	9S	10S	11S	12S	13S	14S	15S	16S
Alnus rubra	red alder	tree	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cornus stolonifera	red osier dogwood	shrub	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Fraxinus latifolia	Oregon ash	tree	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
Lonicera involucrata	coast twinberry	shrub	0	2	0	1	0	0	0	0	11	1	0	0	0	0	1	0
Populus trichocarpa	black cottonwood	tree	15	269	139	177	156	292	42	64	17	1	2	5	17	0	2	0
Salix fluviatilis	Columbia willow	shrub	0	70	18	33	5	9	0	5	0	0	0	0	1	0	0	0
Salix hookeriana	Hooker's willow	shrub	0	0	0	0	0	2	3	2	0	0	0	0	1	0	0	0
Salix lasiandra (var. lasiandra)	Pacific willow	tree	6	384	93	328	143	114	53	44	0	0	20	2	13	0	0	3
Salix prolixa	Mackenzie's willow	shrub	0	7	8	3	4	0	0	0	0	0	0	0	2	0	0	0
Salix scouleriana	Scouler willow	tree	5	0	0	2	3	0	0	0	3	0	0	0	0	0	0	0
Salix sitchensis	Sitka willow	tree	0	0	3	1	11	10	36	6	2	0	11	4	11	1	0	8
Spiraea douglasii	Douglas spiraea	shrub	0	3	1	0	9	2	0	2	4	1	1	4	2	29	18	4
	Total Stems		**1324**	**1099**	**273**	**591**	**582**	**711**	**1163**	**994**	**294**	**99**	**994**	**224**	**814**	**1020**	**443**	**1580**

% of Plots
6%
13%
13%
31%
88%
44%
25%
75%
31%
25%
75%
81%

Native Scrub-Shrub Statistics	
Total Native Tree Species	6
Total Native Shrub Species	6
Average native stems per shrub plot	175
Acre per Plot	0.007
Approximate native stems per shrub acre	**24,946**

Riparian Vegetation Cover Monitoring Statistics

Species	Common Name	Family	PPL Rank	ODA Rank	Wetland Status	Riparian Herbaceous Monitoring Plot															Percent Cover	Percent Frequency
						2F	4F	7F	8F	10F	11F	12F	16F	17F	22F	23F	24F	29F	30F	31F		
Native																						
Achillea millefolium	yarrow	Asteraceae	--	--	FACU		15	15	2.5		2.5	2.5									2.5	**33.3**
Elymus glaucus	blue wildrye	Poaceae	--	--	FACU		2.5														0.2	6.7
Festuca roemeri	Roemer's fescue	Poaceae	--	--	-		15		2.5		2.5	2.5									1.5	**26.7**
Acmispon parviflorus	Spanish clover	Fabaceae	--	--	-		2.5						2.5			2.5					0.5	**20.0**
Lupinus polyphyllus	bog lupine (large-leaved lupine)	Fabaceae	--	--	FAC+			15			2.5										1.2	**13.3**
Poa secunda	pine bluegrass	Poaceae	--	--	-			15		15			15	37.5	15	37.5					**9.0**	**40.0**
Festuca occidentalis	western fescue	Poaceae	--	--	-	15		15	2.5												2.2	**20.0**
Agrostis exarata	bentgrass	Poaceae	--	--	FACW	2.5		15	62.5		37.5	37.5			2.5			2.5			**10.7**	**46.7**
Lupinus bicolor	miniature lupine	Fabaceae	--	--	-				2.5		2.5	2.5									0.5	**20.0**
Grindelia integrifolia	Puget Sound gumweed	Asteraceae	--	--	FACW										2.5	2.5					0.3	**13.3**
Epilobium ciliatum	Slender willowherb	Onagraceae	--	--	FACW-							2.5					2.5	15			1.3	**20.0**
Veronica americana	American brooklime	Plantaginaceae	--	--	OBL													2.5	62.5		4.3	**13.3**
Juncus effusus	soft rush	Juncaceae	-	-	FACW							2.5					62.5	15	15	2.5	**6.5**	**33.3**
Glyceria X occidentalis	western mannagrass	Poaceae	-	-	OBL												2.5	15	2.5		1.3	**20.0**
Epilobium brachycarpum	tall willowherb	Onagraceae	--	--	UPL															15	1.0	6.7
Xanthium strumarium	rough cocklebur	Asteraceae	--	--	FAC					15											1.0	6.7
Juncus bufonius	toad rush	Juncaceae	--	--	FACW								15	2.5							1.2	**13.3**
Persicaria punctata	dotted smartweed	Polygonaceae	-	-	-											2.5					0.2	6.7
Invasive																						
Trifolium repens	white clover	Fabaceae	C	--	FAC*		2.5														0.2	6.7
Lotus corniculatus	bird's foot trefoil	Fabaceae	C	--	FAC						2.5	15								62.5	**5.3**	**20.0**
Cirsium arvense	creeping thistle	Asteraceae	C	B	FACU+							2.5									0.2	6.7
Mentha pulegium	pennyroyal	Lamiaceae	C	--	OBL								2.5								0.2	6.7
Rorippa sylvestris	creeping yellowcress	Brassicaceae	-	B	OBL								2.5								0.2	6.7
Non-Native																						
Vicia hirsuta	hairy vetch	Fabaceae	--	--	-	2.5	2.5				2.5	2.5									0.7	**26.7**
Trifolium dubium	lesser trefoil	Fabaceae	--	--	UPL		2.5						2.5								0.3	**13.3**
Vicia sativa	common vetch	Fabaceae	D	--	UPL			2.5													0.2	6.7
Bellardia viscosa	yellow glandweed	Orobanchaceae	--	--	-				2.5												0.2	6.7
Veronica anagallis-aquatica	water speedwell	Plantaginaceae	--	--	OBL														15		1.0	6.7
Poa palustris	fowl blue grass	Poaceae	-	-	FAC							2.5									0.2	6.7
Melilotus officinalis	yellow sweetclover	Fabaceae	W	--	FACU				2.5												0.2	6.7
Euphorbia maculata	spotted spurge	Euphorbiaceae	--	--	UPL								2.5		2.5						0.3	**13.3**
Dysphania ambrosioides	Mexican tea	Amaranthaceae	-	-	-								2.5				2.5				0.3	**13.3**
Plantago major	broadleaf plantain	Plantaginaceae	--	--	FACU+								2.5								0.2	6.7

Riparian Vegetation Cover Monitoring Statistics

Species	Common Name	Family	PPL Rank	ODA Rank	Wetland Status	Riparian Herbaceous Monitoring Plot														Percent Cover	Percent Frequency
						2F	4F	7F	8F	10F	11F	12F	16F	17F	22F	23F	24F	29F	30F	31F	
Chenopodium album	common lamb's-quarters	Chenopodiaceae	--	--	FAC								2.5								0.2	6.7
Hypericum calycinum	creeping St. Johns wort	Hypericaceae	-	-	-									2.5		2.5					0.3	**13.3**
Trees and Shrubs																						
Baccharis pilularis	coyote brush	Asteraceae	--	--	-		2.5														0.2	6.7
Symphoricarpos albus	common snowberry	Caprifoliaceae	--	--	FACU	15															1.0	6.7
Lonicera involucrata	coast twinberry	Caprifoliaceae	--	--	FAC+*										2.5						0.2	6.7
Cornus stolonifera	red osier dogwood	Cornaceae	--	--	FACW			2.5									2.5				0.3	**13.3**
Spiraea douglasii	Douglas spiraea	Rosaceae	--	--	FACW											2.5					0.2	6.7
Amelanchier alnifolia	serviceberry	Rosaceae	--	--	FACU														2.5		0.2	6.7
Rosa pisocarpa	swamp rose	Rosaceae	--	--	FAC			15													1.0	6.7
Salix prolixa	Mackenzie's willow	Salicaceae	-	-	FACW+											2.5	2.5	15			1.3	**20.0**
Fraxinus latifolia	Oregon ash	Oleaceae	--	--	FACW													2.5			0.2	6.7
Populus trichocarpa	black cottonwood	Salicaceae	--	--	FAC								2.5		15				15		2.2	**20.0**
Salix scouleriana	Scouler willow	Salicaceae	--	--	FAC			2.5						2.5				15	15	15	3.3	**33.3**
Salix sitchensis	Sitka willow	Salicaceae	--	--	FACW				2.5										2.5		0.3	**13.3**
Bare ground		-	-	-	-	85	62.5	37.5	37.5	85	37.5	62.5	62.5	85	85	37.5	2.5	37.5	15	2.5	**49.0**	**100.0**

Riparian Vegetation Cover Monitoring Statistics																	**Habitat Average**	**SE**
Cover of Native Herbaceous	**17.5**	**35**	**75**	**72.5**	**30**	**47.5**	**50**	**32.5**	**40**	**20**	**45**	**67.5**	**50**	**80**	**17.5**	**45.33**	**5.38**
Lower CI (80%)																38.43	
Upper CI (80%)																52.23	
Cover of Invasive Herbaceous Species	**0**	**2.5**	**0**	**0**	**0**	**2.5**	**17.5**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**62.5**	**6.00**	**4.20**
Lower CI (80%)																0.61	
Upper CI (80%)																11.39	
Cover of Non-Native Herbaceous Species	17.5	20	2.5	5	0	5	5	12.5	2.5	2.5	2.5	2.5	0	15	0	6.17	1.72
Lower CI (80%)																3.96	
Upper CI (80%)																8.38	
Cover of Native Tree and Shrub Species	15	2.5	35	15	52.5	17.5	0	22.5	2.5	2.5	32.5	5	22.5	30	40	19.67	4.11
Lower CI (80%)																14.40	
Upper CI (80%)																24.94	
Bare Substrate	85	62.5	37.5	37.5	85	37.5	62.5	62.5	85	85	37.5	2.5	37.5	15	2.5	49.00	7.52
Lower CI (80%)																39.36	
Upper CI (80%)																58.64	

Upland / Riparian Forest Plot - Native Stem Counts

Species	Common Name	Form	Forest Plot																															
			1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F	22F	23F	24F	25F	26F	27F	28F	29F	30F	31F	32F
Abies grandis	grand fir	tree	1	0	0	12	0	0	3	2	0	0	3	0	6	0	0	6	1	0	0	0	2	0	0	0	0	0	0	0	4	1	0	0
Acer circinatum	vine maple	shrub	2	0	0	11	0	0	5	3	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	5	0	0
Acer macrophyllum	bigleaf maple	tree	20	1	0	11	0	0	1	0	0	9	1	0	0	0	0	4	0	0	0	0	0	2	0	2	0	0	0	0	7	2	12	0
Alnus rubra	red alder	tree	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Amelanchier alnifolia	serviceberry	shrub	24	0	1	1	10	0	2	11	0	8	1	3	0	0	0	823	7	0	0	0	0	96	330	0	0	16	0	1	0	1	0	1
Arbutus menziesii	Pacific madrone	shrub	1	1	0	1	0	0	1	0	2	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0
Baccharis pilularis	coyote brush	shrub	7	0	1	1	2	2	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cornus stolonifera	red osier dogwood	shrub	0	0	2	7	0	0	6	0	0	0	0	1	0	0	0	0	0	12	0	0	15	0	0	0	0	1	0	8	0	2	0	4
Crataegus douglasii	Douglas' hawthorn	tree	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0
Frangula purshiana	cascara	shrub	20	4	8	1	0	0	5	14	23	0	6	5	0	12	0	9	3	12	0	1	21	0	0	0	2	0	0	3	0	2	0	0
Fraxinus latifolia	Oregon ash	tree	13	0	0	0	0	0	23	0	0	0	5	0	0	0	0	0	0	0	0	0	0	3	0	15	0	0	0	0	2	1	0	0
Holodiscus discolor	oceanspray	shrub	0	0	0	0	0	0	32	0	0	0	19	0	0	0	0	16	3	0	0	0	0	0	14	0	0	0	0	0	7	0	0	0
Lonicera involucrata	coast twinberry	shrub	0	0	0	0	0	0	1	14	36	0	4	0	0	0	0	2	0	0	0	0	0	3	0	1	0	0	0	0	7	0	0	0
Mahonia aquifolium	tall Oregon grape	shrub	0	2	0	0	0	0	11	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6	2	0	0	0	0	5	0	0	0
Malus fusca	western crabapple	tree	5	0	1	0	0	0	8	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	13	0	0	0	0
Oemleria cerasiformis	Indian plum	shrub	0	0	0	0	3	7	0	0	0	0	0	0	0	1	3	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
Philadelphus lewisii	wild mock orange	shrub	0	0	0	0	0	9	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Pinus ponderosa	yellow pine	tree	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	1	0	2	0	0	0	0	0	0	10	0	0	0	0
Populus trichocarpa	black cottonwood	tree	0	0	2	0	3	7	0	0	0	0	0	0	1	8	1	0	0	3	1	7	2	0	0	0	2	2	6	2	0	0	0	2
Prunus emarginata	bitter cherry	tree	0	0	0	0	0	2	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prunus virginiana var. demissa	western choke cherry	shrub	0	0	0	0	4	1	0	0	0	0	0	0	4	2	0	0	0	1	3	0	0	0	0	0	2	0	0	0	0	0	0	1
Pseudotsuga menziesii	Douglas fir	tree	0	0	0	0	6	0	0	0	1	0	0	0	11	10	0	0	0	3	2	1	5	0	0	0	0	13	0	0	0	0	0	0
Quercus garryana	Oregon white oak	tree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Ribes sanguineum	flowering currant	shrub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
Rosa nutkana	Nootka rose	shrub	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	3	0	0	1	0	0	0	0	0	0	10	0	0	0	0
Rosa pisocarpa	swamp rose	shrub	7	0	0	0	0	0	0	5	0	1	0	0	0	0	0	15	3	0	0	0	0	15	17	0	0	0	0	0	15	3	65	0
Rubus parviflorus	thimbleberry	shrub	0	0	0	0	5	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Rubus spectabilis	salmonberry	shrub	5	0	0	0	0	0	0	0	7	0	0	0	5	1	0	0	0	0	4	1	0	0	0	0	0	6	10	0	0	0	0	0
Rubus ursinus	trailing blackberry	shrub	2	0	0	0	9	0	0	0	0	0	0	0	0	3	0	1	0	0	1	2	0	3	0	0	1	3	1	0	0	0	0	0
Salix fluviatilis	Columbia willow	shrub	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Salix hookeriana	Hooker's willow	shrub	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Salix lasiandra (var. lasiandra)	Pacific willow	tree	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Salix prolixa	Mackenzie's willow	shrub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Salix scouleriana	Scouler willow	tree	0	0	0	0	0	0	0	0	0	4	6	0	0	0	0	17	5	0	15	0	0	1	48	9	0	1	0	0	4	0	0	0
Salix sitchensis	Sitka willow	tree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	6	0	0	0	0
Sambucus caerulea	blue elderberry	shrub	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	0	0	0	0	3	3	0	0	0	0	1	0	0	0	0
Sambucus racemosa	red elderberry	shrub	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spiraea douglasii	Douglas spiraea	shrub	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Symphoricarpos albus	common snowberry	shrub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thuja plicata	western redcedar	tree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	Total Stems		**117**	**8**	**18**	**47**	**43**	**29**	**98**	**51**	**70**	**24**	**48**	**11**	**30**	**43**	**11**	**896**	**25**	**41**	**28**	**13**	**52**	**129**	**419**	**30**	**7**	**44**	**18**	**55**	**58**	**19**	**77**	**10**

Native Upland / Riparian Forest Statistics

Total Native Tree Species	15
Total Native Shrub Species	25
Average native stems per forest plot	80
Acre per Plot	0.019
Approximate native stems per forest acre	**4,225**

Scrub-Shrub Plot - Native Stem Counts

			Scrub-Shrub Plot															
Species	**Common Name**	**Form**	**1S**	**2S**	**3S**	**4S**	**5S**	**6S**	**7S**	**8S**	**9S**	**10S**	**11S**	**12S**	**13S**	**14S**	**15S**	**16S**
Salix lasiandra (var. lasiandra)	Pacific willow	tree	6	384	93	328	143	114	53	44	0	0	20	2	13	0	0	3
Salix sitchensis	Sitka willow	tree	0	0	3	1	11	10	36	6	2	0	11	4	11	1	0	8
Spiraea douglasii	Douglas spiraea	shrub	0	3	1	0	9	2	0	2	4	1	1	4	2	29	18	4
Populus trichocarpa	black cottonwood	tree	15	269	139	177	156	292	42	64	17	1	2	5	17	0	2	0
Salix fluviatilis	Columbia willow	shrub	0	70	18	33	5	9	0	5	0	0	0	0	1	0	0	0
Salix hookeriana	Hooker's willow	shrub	0	0	0	0	0	2	3	2	0	0	0	0	1	0	0	0
Salix prolixa	Mackenzie's willow	shrub	0	7	8	3	4	0	0	0	0	0	0	0	2	0	0	0
Lonicera involucrata	coast twinberry	shrub	0	2	0	1	0	0	0	0	11	1	0	0	0	0	1	0
Fraxinus latifolia	Oregon ash	tree	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0
Cornus stolonifera	red osier dogwood	shrub	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Salix scouleriana	Scouler willow	tree	5	0	0	2	3	0	0	0	3	0	0	0	0	0	0	0
Alnus rubra	red alder	tree	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total Stems	**26**	**736**	**262**	**545**	**331**	**429**	**137**	**123**	**40**	**3**	**34**	**15**	**47**	**30**	**21**	**15**

Native Scrub-Shrub Statistics	
Total Native Tree Species	6
Total Native Shrub Species	6
Average native stems per shrub plot	175
Acre per Plot	0.007
Approximate native stems per shrub acre	**24,946**

Upland / Riparian Vegetation Cover Monitoring Statistics

Species	Common Name	Family	PPL Rank	ODA Rank	Wetland Status	Forest Herbaceous Monitoring Plot																														Percent Cover	Percent Frequency
						1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F	22F	23F	24F	25F	26F	27F	28F	29F	30F	31F	32F		
Native																																					
Achillea millefolium	yarrow	Asteraceae	--	--	FACU			15	15	2.5	37.5	15	2.5	2.5		2.5	2.5	2.5	15	15			15	15	2.5	15				37.5	15	15	2.5				15	**8.1**	**65.6**
Elymus glaucus	blue wildrye	Poaceae	--	--	FACU			15	2.5	15	2.5							15	2.5	15				15		2.5				2.5	15	15	2.5				2.5	3.8	**43.8**
Festuca roemeri	Roemer's fescue	Poaceae	--	--	-	2.5			15	37.5	37.5		2.5	2.5		2.5	2.5	15	37.5	15			15		15	15				15	62.5	37.5	62.5					**12.3**	**56.3**
Acmispon parviflorus	Spanish clover	Fabaceae	--	--	-				2.5										2.5		2.5					2.5		2.5										0.4	**15.6**
Lupinus polyphyllus	bog lupine (large-leaved lupine)	Fabaceae	--	--	FAC+					37.5		15				2.5		2.5	15	15				2.5		2.5					15	37.5	15					**5.0**	**34.4**
Poa secunda	pine bluegrass	Poaceae	--	--	-							15			15						15	37.5					15	37.5			2.5							4.3	**21.9**
Festuca occidentalis	western fescue	Poaceae	--	--	-		15					15	2.5											15													15	2.0	**15.6**
Agrostis exarata	bentgrass	Poaceae	--	--	FACW		2.5	37.5		2.5	15	15	62.5	37.5		37.5	37.5	37.5	2.5	15				15	2.5	37.5	2.5							2.5			15	**11.8**	**56.3**
Lupinus bicolor	miniature lupine	Fabaceae	--	--	-			15			15		2.5			2.5	2.5		2.5	2.5			2.5		15					2.5	2.5		2.5					2.1	**37.5**
Grindelia integrifolia	Puget Sound gumweed	Asteraceae	--	--	FACW						2.5								2.5	15			15	2.5	15	15	2.5	2.5		2.5	2.5							2.4	**34.4**
Acmispon americanus	Spanish clover	Fabaceae	--	--	-						2.5							2.5		2.5				15	15						2.5	2.5						1.3	**21.9**
Danthonia californica	California oatgrass	Poaceae	--	--	FACU*														2.5				2.5		15	2.5				2.5		2.5						0.9	**18.8**
Deschampsia elongata	tufted hairgrass	Poaceae	--	--	FACW-	2.5				2.5								2.5					15	15								2.5	2.5				15	1.8	**25.0**
Epilobium ciliatum	Slender willow herb	Onagraceae	--	--	FACW-												2.5						2.5	2.5					2.5				15			2.5	0.9	**18.8**
Veronica americana	American brooklime	Plantaginaceae	--	--	OBL																												2.5	62.5			2.0	6.3
Juncus effusus	soft rush	Juncaceae	-	-	FACW												2.5											62.5					15	15	2.5		3.0	**15.6**
Glyceria X occidentalis	western mannagrass	Poaceae	-	-	OBL																							2.5					15	2.5			0.6	9.4
Equisetum hyemale	common scouring rush	Equisetaceae	--	--	FACW	37.5																															1.2	3.1
Agrostis scabra	rough hairgrass	Poaceae	-	-	FAC	2.5																															0.1	3.1
Galium aparine	cleavers	Rubiaceae	--	--	-	2.5																								2.5							0.2	6.3
Hordeum brachyantherum	meadow barley	Poaceae	-	-	FACW-*					2.5														2.5														0.2	6.3
Elymus trachycaulus	bluebunch wheatgrass	Poaceae	--	--	-																		15															0.5	3.1
Epilobium brachycarpum	tall willowherd	Onagraceae	--	--	UPL																				2.5											15		0.5	6.3

Upland / Riparian Vegetation Cover Monitoring Statistics

Species	Common Name	Family	PPL Rank	ODA Rank	Wetland Status	Forest Herbaceous Monitoring Plot																															Percent Cover	Percent Frequency
						1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F	22F	23F	24F	25F	26F	27F	28F	29F	30F	31F	32F		
Erythranthe guttata	yellow monkeyflower	Phrymaceae	--	--	OBL																				2.5													0.1	3.1
Calystegia atriplicifolia	night-blooming morning glory	Convolvulaceae	-	-	-	2.5																																0.1	3.1
Leymus triticoides	bearded lyme grass	Poaceae	-	-	-																				2.5													0.1	3.1
Xanthium strumarium	rough cocklebur	Asteraceae	--	--	FAC										15																							0.5	3.1
Juncus bufonius	toad rush	Juncaceae	--	--	FACW																15	2.5																0.5	6.3
Persicaria punctata	dotted smartweed	Polygonaceae	-	-	-																							2.5										0.1	3.1
Invasive																																							
Trifolium repens	white clover	Fabaceae	C	--	FAC*				2.5	2.5								2.5	2.5						15	2.5												0.9	**18.8**
Trifolium pratense	red clover	Fabaceae	C	--	FACU			2.5			2.5								2.5	2.5																		0.3	**12.5**
Trifolium arvense	rabbitsfoot clover	Fabaceae	C	--	-			15																														0.5	3.1
Phalaris arundinacea	reed canarygrass	Poaceae	C	--	FACW	2.5																																0.1	3.1
Lotus corniculatus	bird's foot trefoil	Fabaceae	C	--	FAC											2.5	15						15													62.5		3.0	**12.5**
Cirsium vulgare	bull thistle	Asteraceae	C	B	FACU																		2.5															0.1	3.1
Daucus carota	wild carrot	Apiaceae	C	--	-																								2.5									0.1	3.1
Cirsium arvense	creeping thistle	Asteraceae	C	B	FACU+												2.5																					0.1	3.1
Hypochaeris radicata	spotted catsear	Asteraceae	C	--	FACU														2.5						2.5													0.2	6.3
Mentha pulegium	pennyroyal	Lamiaceae	C	--	OBL																2.5																	0.1	3.1
Rorippa sylvestris	creeping yellowgrass	Brassicaceae	--	B	OBL																2.5																	0.1	3.1
Non-Native (non-listed)																																						
Vulpia myuros	rat-tail six-weeks grass	Poaceae	--	--	FAC			15	15	37.5	15			2.5					15	37.5			37.5		2.5				15	15	15	15					7.4	40.6
Vicia hirsuta	hairy vetch	Fabaceae	--	--	-		2.5		2.5	2.5	15					2.5	2.5	2.5	2.5	2.5			2.5						2.5	2.5	15	2.5				2.5	2.0	46.9
Trifolium dubium	least hop clover	Fabaceae	--	--	UPL			15	2.5												2.5								2.5								0.7	12.5
Vicia sativa	common vetch	Fabaceae	--	--	UPL			2.5				2.5																				2.5					0.2	9.4
Trifolium hybridum	Alsike clover	Fabaceae	--	--	-						2.5																										0.1	3.1
Vicia villosa var. villosa	smooth tare	Fabaceae	C	--	-						2.5									2.5			2.5								2.5					2.5	0.4	15.6

Upland / Riparian Vegetation Cover Monitoring Statistics

Species	Common Name	Family	PPL Rank	ODA Rank	Wetland Status	Forest Herbaceous Monitoring Plot																																Percent Cover	Percent Frequency
						1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F	22F	23F	24F	25F	26F	27F	28F	29F	30F	31F	32F		
Bellardia viscosa	yellow glandweed	Orobanchaceae	--	--	-			2.5		2.5	2.5		2.5	2.5				2.5	2.5	2.5					2.5	2.5					2.5	2.5						0.9	37.5
Crataegus monogyna	English hawthorne	Rosaceae	C	B	FACU+																																	0.0	0.0
Holcus lanatus	velvet grass	Poaceae	--	--	FAC	15													2.5					2.5		2.5												0.7	12.5
Geranium dissectum	cut-leaf crane's-bill	Geraniaceae	--	--	-																					2.5						2.5						0.2	6.3
Cerastium glomeratum	sticky mouse-ear chickweed	Caryophyllaceae	--	--	-	2.5													2.5							2.5												0.2	9.4
Bromus hordeaceus	soft chess	Poaceae	--	--	-					2.5						2.5							2.5		2.5	2.5					2.5	2.5						0.5	21.9
Bromus sterilis	poverty brome	Poaceae	--	--	-	15																														2.5	0.5	6.3
Festuca perennis	Italian ryegrass	Poaceae	--	--	-																	2.5	2.5															0.2	6.3
Veronica anagallis-aquatica	blue water speedwell	Plantaginaceae	--	--	OBL																														15			0.5	3.1
Medicago polymorpha	toothed medic	Fabaceae	--	--	-																									2.5								0.1	3.1
Poa palustris	fowl bluegrass	Poaceae	--	--	FAC												2.5							2.5															0.2	6.3
Aira caryophyllea	silver hairgrass	Poaceae	--	--	-																				2.5					37.5								1.3	6.3
Plantago lanceolata	English plantain	Plantaginaceae	--	--	-																									2.5								0.1	3.1
Hieracium sp.	hawkweed	Asteraceae	--	--	-																									2.5								0.1	3.1
Melilotus officinalis	yellow sweet-clover	Fabaceae	--	--	FACU								2.5	2.5																								0.2	6.3
Rumex acetosella	common sheep sorrel	Polygonaceae	--	--	FACU+														2.5																			0.1	3.1
Rumex obtusifolius	bitter dock	Polygonaceae	--	--	FAC														2.5																			0.1	3.1
Medicago lupulina	hop clover	Fabaceae	--	--	FAC																				2.5							15						0.5	6.3
Bromus tectorum	cheatgrass	Poaceae	C	--	-		15																															0.5	3.1
Euphorbia maculata	sandmat	Euphorbiaceae	--	--	UPL																2.5						2.5											0.2	6.3
Dysphania ambrosioides	Mexican tea	Amaranthaceae	--	--	-																2.5							2.5										0.2	6.3
Plantago major	nippleseed	Plantaginaceae	--	--	FACU+																2.5																	0.1	3.1
Chenopodium album	lambsquarters	Amaranthaceae	--	--	FAC																2.5																	0.1	3.1
Hypericum calycinum	rose-of-sharon	Hypericaceae	--	--	-																	2.5						2.5										0.2	6.3
Trees and Shrubs																																							
Crataegus douglasii	Douglas hawthorne	Rosaceae	--	--	FAC				2.5																													0.1	3.1
Salix scouleriana	Scouler willow	Salicaceae	--	--	FAC																														15			0.5	3.1
Baccharis pilularis	coyote brush	Asteraceae	--	--	-																																	0.0	0.0
Populus trichocarpa	black cottonwood	Salicaceae	--	--	FAC																15						2.5											0.5	6.3

Upland / Riparian Vegetation Cover Monitoring Statistics

Species	Common Name	Family	PPL Rank	ODA Rank	Wetland Status	Forest Herbaceous Monitoring Plot																															Percent Cover	Percent Frequency
						1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F	22F	23F	24F	25F	26F	27F	28F	29F	30F	31F	32F		
Symphoricarpos albus	snowberry	Caprifoliaceae	--	--	FACU	2.5	15							15					2.5							2.5												1.2	**15.6**
Cornus stolonifera	red osier dogwood	Cornaceae	--	--	FACW	2.5						2.5																	2.5									0.2	9.4
Rosa pisocarpa	swamp rose	Rosaceae	--	--	FAC							15																15										0.9	6.3
Fraxinus latifolia	Oregon ash	Oleaceae	--	--	FACW									2.5																				2.5				0.2	6.3
Salix prolixa	Mackenzie's willow	Salicaceae	-	-	FACW+							15																2.5	2.5					15				1.1	**12.5**
Rubus parviflorus	thimbleberry	Rosaceae	-	-	OBL							2.5														2.5							15					0.6	9.4
Pinus ponderosa	ponderosa pine	Pinaceae	--	--	FACU-																																	0.0	0.0
Ribes sanguineum	red-flowering currant	Grossulariaceae	--	--	-																																	0.0	0.0
Acer macrophyllum	bigleaf maple	Sapindaceae	--	--	FACU																																	0.0	0.0
Quercus garryana	Oregon white oak	Fagaceae	-	-	-																		2.5	2.5														0.2	6.3
Prunus virginiana var. demissa	common chokecherry	Rosaceae	-	-	FACU													2.5																				0.1	3.1
Prunus emarginata	bitter cherry	Rosaceae	--	--	FACU*																																	0.0	0.0
Mahonia aquifolium	tall Oregon grape	Berberidaceae	-	-	-					2.5				2.5																	2.5							0.2	9.4
Thuja plicata	Western red cedar	Cupressaceae	--	--	FAC																																	0.0	0.0
Rubus spectabilis	salmonberry	Rosaceae	--	--	FAC+																																	0.0	0.0
Frangula purshiana	cascara	Rhamnaceae	-	-	-																		2.5															0.1	3.1
Salix sitchensis	Sitka willow	Salicaceae	--	--	FACW								15		37.5						2.5	2.5												2.5	15	37.5		3.5	**21.9**
Oemleria cerasiformis	Indian plum	Rosaceae	--	--	FACU																																	0.0	0.0
Philadelphus lewisii	mockorange	Hydrangeaceae	--	--	-																				2.5							15					0.5	6.3
Rubus ursinus	Pacific blackberry	Rosaceae	--	--	FACU																			2.5														0.1	3.1
Salix fluviatilis	Columbia River willow	Salicaceae	--	--	OBL																																	0.0	0.0
Rosa nutkana	Nootka rose	Rosaceae	-	-	FAC																																	0.0	0.0
Abies grandis	grand fir	Pinaceae	--	--	FACU-*																																	0.0	0.0
Spiraea douglasii	Douglas spirea	Rosaceae	--	--	FACW											15					2.5							15						2.5				1.1	**12.5**
Acer circinatum	vine maple	Sapindaceae	--	--	FAC-																																	0.0	0.0
Lonicera involucrata	coast twinberry	Caprifoliaceae	--	--	FAC+*											2.5																						0.1	3.1
Sambucus racemosa	red elderberry	Adoxaceae	--	--	FACU																																	0.0	0.0

Upland / Riparian Vegetation Cover Monitoring Statistics

Species	Common Name	Family	PPL Rank	ODA Rank	Wetland Status	Forest Herbaceous Monitoring Plot																															Percent Cover	Percent Frequency
						1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F	17F	18F	19F	20F	21F	22F	23F	24F	25F	26F	27F	28F	29F	30F	31F	32F		
Pseudotsuga menziesii	Douglas fir	Pinaceae	--	--	FACU*																																	0.0	0.0
Salix lasiandra (var. lasiandra)	Pacific willow	Salicaceae	-	-	FACW+	2.5									15																					2.5		0.6	9.4
Sambucus caerulea	blue elderberry	Adoxaceae	-	-	FACU																																	0.0	0.0
Alnus rubra	red alder	Betulaceae	--	--	-																2.5																	0.1	3.1
Malus fusca	Oregon crabapple	Rosaceae	--	--	FACW																																	0.0	0.0
Bare Ground																																						
Bare ground	-	-	-	-	-	62.5	85	15	62.5	15	37.5	37.5	37.5	37.5	85	37.5	62.5	37.5	15	15	62.5	85	15	37.5	37.5	62.5	85	37.5	2.5	15	37.5	15	15	37.5	15	2.5	62.5	**39.6**	**100**

Upland / Riparian Vegetation Cover Monitoring Statistics																																					**Habitat Average**	**SE**
Cover of Native Herbaceous	**50**	**17.5**	**82.5**	**35**	**100**	**113**	**75**	**72.5**	**42.5**	**30**	**47.5**	**50**	**77.5**	**82.5**	**95**	**32.5**	**40**	**82.5**	**100**	**87.5**	**92.5**	**20**	**45**	**67.5**	**62.5**	**120**	**113**	**87.5**	**50**	**80**	**17.5**	**65**	**66.6**	**5.1**
Lower CI (80%)																																					60.0	
Upper CI (80%)																																					73.2	
Cover of Invasive Herbaceous Species	**2.5**	**0**	**17.5**	**2.5**	**2.5**	**2.5**	**0**	**0**	**0**	**0**	**2.5**	**17.5**	**2.5**	**7.5**	**2.5**	**5**	**0**	**17.5**	**0**	**17.5**	**2.5**	**0**	**0**	**0**	**2.5**	**0**	**0**	**0**	**0**	**0**	**62.5**	**0**	**5.2**	**2.1**
Lower CI (80%)																																					2.5	
Upper CI (80%)																																					7.9	
Cover of Non-Native (Non-Listed) Herbaceous Species	32.5	17.5	35	20	45	37.5	2.5	5	7.5	0	5	5	5	30	45	12.5	2.5	47.5	7.5	12.5	12.5	2.5	2.5	2.5	62.5	25	55	20	0	15	0	7.5	18.1	3.2
Lower CI (80%)																																					14.0	
Upper CI (80%)																																					22.2	
Cover of Native Tree and Shrub Species within Herbaceous Plots	7.5	15	0	2.5	2.5	0	35	15	20	52.5	17.5	0	2.5	2.5	0	22.5	2.5	5	5	2.5	5	2.5	32.5	5	0	2.5	15	15	22.5	30	40	0	11.9	2.4
Lower CI (80%)																																					8.8	
Upper CI (80%)																																					15.0	
Cover of Bare Substrate and Moss	62.5	85	15	62.5	15	37.5	37.5	37.5	37.5	85	37.5	62.5	37.5	15	15	62.5	85	15	37.5	37.5	62.5	85	37.5	2.5	15	37.5	15	15	37.5	15	2.5	62.5	39.6	4.4
Lower CI (80%)																																					33.9	
Upper CI (80%)																																					45.3	

Scrub-Shrub Vegetation Cover Monitoring Statistics

Species	Common Name	Family	PPL Rank	ODA Rank	Wetland Status	Scrub-Shrub Herbaceous Monitoring Plot															Percent Cover	Percent Frequency
						1S	2S	3S	4S	5S	6S	7S	8S	9S	10S	11S	12S	13S	14S	15S	16S	
Native																						
Acmispon americanus	Spanish clover	Fabaceae	--	--	-	0	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9	12.5
Acmispon parviflorus	Spanish clover	Fabaceae	--	--	-	0	0	0	0	0	62.5	0	0	15	37.5	0	0	0	2.5	0	2.5	**7.5**	31.3
Agrostis exarata	bentgrass	Poaceae	--	--	FACW	0	0	0	0	0	0	0	0	15	0	0	0	15	0	0	0	1.9	12.5
Bidens cernua	nodding beggar's tick	Asteraceae	-	-	FACW+	15	2.5	15	2.5	15	2.5	0	2.5	0	0	2.5	0	0	0	0	0	3.6	50.0
Bidens frondosa	leafy beggar's tick	Asteraceae	-	-	FACW+	0	0	0	0	0	0	0	0	0	15	0	0	0	15	0	0	1.9	12.5
Carex aperta	Columbia sedge	Cyperaceae	--	--	FACW	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0.9	6.3
Carex obnupta	Slough sedge	Cyperaceae	--	--	OBL	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0.9	6.3
Carex scoparia	Scotch broom	Cyperaceae	--	--	-	0	0	0	0	0	0	0	0	0	0	0	15	15	0	0	0	1.9	12.5
Carex stipata	Sawbeak sedge	Cyperaceae	--	--	-	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0.9	6.3
Conyza canadensis	horseweed	Asteraceae	-	-	FACU	0	0	0	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0.2	6.3
Coreopsis tinctoria	Calliopsis	Asteraceae	--	--	FACU	0	0	0	0	0	0	0	0	0	37.5	0	15	0	37.5	0	2.5	**5.8**	25.0
Crassula aquatica	wrinkle-seed pygmyweed	Crassulaceae	-	-	OBL	15	15	0	2.5	15	0	0	0	0	0	0	0	0	0	0	0	3.0	25.0
Cyperus erythrorhizos	redroot flatsedge	Cyperaceae	--	--	OBL	15	2.5	0	2.5	15	0	0	2.5	0	0	0	0	0	0	0	2.5	2.5	37.5
Distichlis spicata	alkaline grass	Poaceae	-	-	FACW	0	0	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	6.3
Eleocharis obtusa	blunt spikesedge	Cyperaceae	-	-	OBL	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0.9	6.3
Eleocharis palustris	creeping spikerush	Cyperaceae	-	-	OBL	15	2.5	0	2.5	15	0	0	0	0	0	0	2.5	0	0	0	0	2.3	31.3
Epilobium ciliatum	Slender willow herb	Onagraceae	--	--	FACW-	0	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0.2	6.3
Equisetum hyemale	common scouring ruse	Equisetaceae	--	--	FACW	0	0	0	0	2.5	0	0	0	0	0	0	0	0	0	0	0	0.2	6.3
Eragrostis hypnoides	teal lovegrass	Poaceae	--	--	OBL	0	2.5	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0	0.3	12.5
Eragrostis pectinacea var. pectinacea	purple eragrostis	Poaceae	-	-	FAC	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0.9	6.3
Euphorbia glyptosperma	rib seed sandmat	Euphorbiaceae	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0.9	6.3
Glyceria X occidentalis	Western mannagrass	Poaceae	-	-	OBL	0	0	0	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0.2	6.3
Gnaphalium palustre	marsh cudweed	Asteraceae	--	--	FAC+	0	2.5	2.5	0	2.5	2.5	0	0	0	15	0	0	0	0	0	0	1.6	31.3
Juncus acuminatus	sharp-fruited rush	Juncaceae	--	--	OBL	0	2.5	0	0	15	0	15	0	0	0	2.5	0	0	0	0	0	2.2	25.0
Juncus articulatus	jointed rush	Juncaceae	-	-	-	2.5	2.5	0	0	15	0	0	0	0	0	15	0	0	0	0	0	2.2	25.0
Juncus bufonius	toad rush	Juncaceae	--	--	FACW	0	0	15	15	2.5	37.5	0	0	0	0	0	0	0	0	0	0	4.4	25.0
Juncus effusus	soft rush	Juncaceae	-	-	FACW	0	0	0	0	0	0	37.5	0	0	15	0	0	0	0	0	0	3.3	12.5
Juncus oxymeris	pointed rush	Juncaceae	-	-	FACW+	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0.9	6.3
Juncus patens	common rush	Juncaceae	--	--	FACW	0	0	0	0	15	0	0	0	0	0	0	15	0	0	0	0	1.9	12.5
Juncus tenuis	slender rush	Juncaceae	--	--	FACW-	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0.9	6.3
Leersia oryzoides	rice cutgrass	Poaceae	--	--	OBL	0	0	0	0	15	0	0	0	0	0	37.5	15	0	0	0	0	4.2	18.8
Limosella aquatica	mudwort	Scrophulariaceae	--	--	OBL	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	6.3
Lindernia dubia	false pimpernel	Linderniaceae	--	--	OBL	15	15	2.5	15	62.5	2.5	0	37.5	0	2.5	0	0	0	0	0	0	**9.5**	50.0
Ludwigia palustris	water purslane	Onagraceae	--	--	OBL	37.5	62.5	15	37.5	37.5	15	15	2.5	2.5	0	37.5	15	2.5	2.5	0	0	**17.7**	81.3
Lycopus americanus	common rush	Lamiaceae	--	--	OBL	0	0	0	0	15	0	37.5	0	0	0	0	0	0	0	0	0	3.3	12.5
Panicum capillare	cut-leaved bugleweed	Poaceae	--	--	FACU+	0	2.5	0	2.5	0	2.5	0	0	0	15	0	15	0	0	0	0	2.3	31.3
Persicaria amphibia	longroot smartweed	Polygonaceae	--	--	OBL	2.5	2.5	2.5	2.5	2.5	0	0	0	0	0	0	2.5	0	0	0	0	0.9	37.5
Persicaria punctata	dotted smartweed	Polygonaceae	-	-	-	0	0	0	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0.2	6.3
Poa secunda	pine bluegrass	Poaceae	--	--	-	0	0	0	0	0	0	0	0	62.5	37.5	0	15	0	37.5	0	0	**9.5**	25.0

Scrub-Shrub Vegetation Cover Monitoring Statistics

Species	Common Name	Family	PPL Rank	ODA Rank	Wetland Status	Scrub-Shrub Herbaceous Monitoring Plot															Percent Cover	Percent Frequency
						1S	2S	3S	4S	5S	6S	7S	8S	9S	10S	11S	12S	13S	14S	15S	16S	
Rumex salicifolius	willow dock	Polygonaceae	--	--	FACW	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0	2.5	0.3	12.5
Sagittaria latifolia	broadleaf arrowhead	Alistamaceae	--	--	OBL	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0.9	6.3
Scutellaria lateriflora	mad-dog skullcap	Lamiaceae	-	-	FACW	0	0	0	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0.2	6.3
Veronica americana	American brooklime	Plantaginaceae	--	--	OBL	0	0	0	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0.2	6.3
Invasive																							
Hypochaeris radicata	spotted cat's ear	Asteraceae	C	--	FACU	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0.9	6.3
Lythrum portula	water purslane	Lythraceae	B	--	NI	37.5	15	15	15	15	15	0	0	0	0	0	2.5	0	0	0	0	**7.2**	43.8
Mentha pulegium	pennyroyal	Lamiaceae	C	--	OBL	0	0	2.5	2.5	15	15	0	0	0	2.5	2.5	2.5	2.5	2.5	0	15	3.9	62.5
Rorippa sylvestris	creeping yellowcress	Brassicaceae	-	B	OBL	0	0	0	0	0	0	0	0	0	2.5	0	0	0	0	0	2.5	0.3	12.5
Non-native (non-listed)																							
Digitaria ischaemum	smooth crabgrass	Poaceae	-	-	FACU	0	2.5	0	2.5	0	0	0	0	0	0	0	2.5	0	0	0	0	0.5	18.8
Dysphania ambrosioides	Mexican tea	Amaranthaceae	-	-	-	0	0	0	0	2.5	0	2.5	0	0	0	0	0	0	0	0	2.5	0.5	18.8
Echinochloa crus-galli	barnyard grass	Poaceae	-	-	-	2.5	0	0	0	0	2.5	0	0	0	0	0	0	0	0	0	2.5	0.5	18.8
Euphorbia maculata	spotted spurge	Euphorbiaceae	--	--	UPL	0	0	0	0	0	0	0	0	15	0	0	15	15	15	0	0	3.8	25.0
Euphorbia prostrata	prostrate spurge	Euphorbiaceae	-	-	-	0	0	0	0	0	15	0	15	0	0	0	0	0	0	0	0	1.9	12.5
Gnaphalium uliginosum	marsh cudweed	Asteraceae	-	-	-	2.5	15	2.5	2.5	15	2.5	0	2.5	2.5	2.5	2.5	2.5	37.5	0	0	15	**6.6**	81.3
Kickxia elatine	sharp-leaved fluellen	Plantaginaceae	-	-	UPL	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0	0.2	6.3
Plantago major	broadleaf plantain	Plantaginaceae	--	--	FACU+	2.5	2.5	2.5	37.5	2.5	37.5	0	2.5	0	0	0	2.5	0	0	0	2.5	**5.8**	56.3
Trifolium hirtum	rose clover	Fabaceae	--	--	-	0	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	6.3
Trees and Shrubs																							
Lonicera involucrata	coast twinberry	Caprifoliaceae	--	--	FAC+*	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0.9	6.3
Populus trichocarpa	black cottonwood	Salicaceae	--	--	FAC	2.5	15	2.5	2.5	2.5	2.5	2.5	0	15	0	0	0	0	0	0	0	2.8	50.0
Salix fluviatilis	Columbia willow	Salicaceae	--	--	OBL	0	2.5	2.5	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0.5	18.8
Salix lasiandra (var. lasiandra)	Pacific willow	Salicaceae	-	-	FACW+	37.5	0	0	2.5	15	2.5	15	0	0	0	0	0	0	0	0	0	4.5	31.3
Salix prolixa	Mackenzie's willow	Salicaceae	-	-	FACW+	0	15	0	2.5	0	0	0	0	0	0	0	0	0	0	0	0	1.1	12.5
Salix scouleriana	Scouler willow	Salicaceae	--	--	FAC	62.5	0	0	2.5	0	0	0	0	0	0	0	0	0	0	0	0	4.1	12.5
Salix sitchensis	Sitka willow	Salicaceae	--	--	FACW	0	0	0	0	0	0	15	37.5	0	0	37.5	0	15	0	0	0	**6.6**	25.0
Spiraea douglasii	Douglas spiraea	Rosaceae	--	--	FACW	0	0	0	0	2.5	0	0	0	0	0	0	2.5	0	15	0	0	1.3	18.8
Bare Ground																							
Bare Ground			-	-	-	15	15	85	15	37.5	62.5	37.5	62.5	15	37.5	37.5	85	0	62.5	97.5	97.5	**47.7**	93.8

Scrub-Shrub Vegetation Cover Monitoring Statistics																		Habitat Average	SE
Cover of Native Herbaceous	**120**	**130**	**70**	**85**	**260**	**125**	**137.5**	**62.5**	**97.5**	**175**	**150**	**125**	**32.5**	**95**	**0**	**25**	**105.6**	**15.8**
Lower CI (80%)																	85.4	
Upper CI (80%)																	125.9	
Cover of Invasive Herbaceous Species	**37.5**	**15**	**17.5**	**17.5**	**30**	**30**	**0**	**0**	**15**	**5**	**2.5**	**5**	**2.5**	**2.5**	**0**	**17.5**	**12.3**	3.0

Scrub-Shrub Vegetation Cover Monitoring Statistics

Species	Common Name	Family	PPL Rank	ODA Rank	Wetland Status	Scrub-Shrub Herbaceous Monitoring Plot															Percent Cover	Percent Frequency
						1S	2S	3S	4S	5S	6S	7S	8S	9S	10S	11S	12S	13S	14S	15S	16S	
					Lower CI (80%)																	8.5	
					Upper CI (80%)																	16.2	
					Non-Native (Non-Listed) Herbaceous Species	7.5	22.5	5	42.5	20	57.5	2.5	22.5	17.5	2.5	2.5	22.5	52.5	15	0	22.5	19.7	4.4
					Lower CI (80%)																	14.0	
					Upper CI (80%)																	25.4	
					Cover of Native Tree and Shrub Species within Herbaceous Plots	102.5	32.5	5	12.5	20	5	32.5	37.5	30	0	37.5	2.5	15	15	0	0	21.7	6.4
					Lower CI (80%)																	13.5	
					Upper CI (80%)																	29.9	
					Cover of Bare Substrate and Moss	15	15	85	15	37.5	62.5	37.5	62.5	15	37.5	37.5	85	0	62.5	97.5	97.5	47.7	8.0
					Lower CI (80%)																	37.4	
					Upper CI (80%)																	57.9	
					Weighted Prevalence Index All Strata	2.2	3.0	6.7	3.0	2.4	4.8	3.2	4.9	4.6	4.9	3.0	6.0	4.0	6.3	0	11.1	4.7	

Off-Channel Emergent Herbaceous Vegetation Cover Monitoring Statistics

Species	Common Name	Family	PPL Rank	ODA Rank	Wetland Status	Herbaceous Monitoring Plot																						Percent Cover	Percent Frequency
						1-2A	1-2B	1-2C	1-2D	1-2E	1-2F	2-3A	2-3B	2-3C	2-3D	2-3E	5-6A	5-6B	5-6C	7-8A	7-8B	9-10A	9-10B	11-12A	11-12B	13-14A	13-14B	15-16A		
Native																													
Bidens cernua	nodding beggar's tick	Asteraceae	-	-	FACW+	0	0	0	0	0	0	0	0	0	2.5	0	0	2.5	0	15	15	37.5	37.5	62.5	62.5	15	15	0	**11.5**	43.5
Callitriche sp.	water starwort	Plantaginaceae	-	-	OBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0.7	4.3
Carex obnupta	Slough sedge	Cyperaceae	--	--	OBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37.5	0	0	0	0	0	0	1.6	4.3
Crassula aquatica	wrinkle-seed pygmyweed	Crassulaceae	-	-	OBL	0	0	0	0	0	0	0	0	0	0	2.5	0	0	15	2.5	2.5	2.5	0	0	0	0	0	2.5	1.2	26.1
Cyperus erythrorhizos	redroot flatsedge	Cyperaceae	--	--	OBL	0	0	0	0	0	0	15	0	2.5	0	15	0	37.5	15	37.5	2.5	37.5	0	62.5	15	15	0	0	**11.1**	**47.8**
Eleocharis acicularis	needle spikerush	Cyperaceae	-	-	OBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0.7	4.3
Eleocharis palustris	creeping spikerush	Cyperaceae	-	-	OBL	0	0	0	0	0	0	2.5	15	0	2.5	15	0	37.5	2.5	62.5	37.5	37.5	37.5	85	62.5	85	85	15	**25.3**	**65.2**
Elodea canadensis	common waterweed	Hydrocharitaceae	--	--	OBL	0	0	0	0	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0	0	0	2.5	0.2	8.7
Eragrostis hypnoides	teal lovegrass	Poaceae	--	--	OBL	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5	15	15	37.5	85	0	0	0	0	0	**6.7**	21.7
Gnaphalium palustre	marsh cudweed	Asteraceae	--	--	FAC+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5	2.5	0	0	0	0	0	0	0.2	**8.7**
Juncus acuminatus	sharp-fruited rush	Juncaceae	--	--	OBL	0	0	0	0	0	0	0	0	0	0	0	0	2.5	0	2.5	0	0	0	0	0	0	0	0	0.2	8.7
Juncus articulatus	jointed rush	Juncaceae	-	-	-	0	0	0	0	0	0	2.5	0	0	0	15	0	2.5	2.5	2.5	0	15	0	0	0	0	0	0	1.7	26.1
Juncus bufonius	toad rush	Juncaceae	--	--	FACW	0	0	0	0	0	0	15	0	0	0	0	2.5	0	0	0	0	0	0	0	0	0	0	0	0.8	8.7
Leersia oryzoides	rice cutgrass	Poaceae	--	--	OBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5	0	15	0	15	15	15	37.5	2.5	4.5	30.4
Limosella aquatica	mudwort	Scrophulariaceae	--	--	OBL	0	0	0	0	0	0	2.5	0	0	0	2.5	0	0	2.5	0	2.5	0	0	0	0	0	0	0	0.4	17.4
Lindernia dubia	false pimpernel	Linderniaceae	--	--	OBL	0	0	0	0	0	0	15	0	0	0	2.5	0	2.5	15	15	0	0	15	15	15	37.5	37.5	0	**7.4**	43.5
Ludwigia palustris	water purslane	Onagraceae	--	--	OBL	0	0	0	0	0	0	85	85	37.5	62.5	37.5	2.5	85	37.5	0	0	15	37.5	0	62.5	0	15	0	**24.5**	52.2
Panicum capillare	witch grass	Poaceae	--	--	FACU+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0.1	**4.3**
Persicaria amphibia	longroot smartweed	Polygonaceae	--	--	OBL	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0	2.5	2.5	0	2.5	2.5	0	15	2.5	0	1.3	**30.4**
Persicaria punctata	dotted smartweed	Polygonaceae	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0.7	4.3
Sagittaria latifolia	broadleaf arrowhead	Alistamaceae	--	--	OBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	15	15	0	2.0	13.0
Invasive																													
Lythrum portula	water purslane	Lythraceae	B	--	NI	0	0	0	0	0	0	15	15	0	15	15	0	15	62.5	2.5	2.5	0	0	0	0	0	0	0	**6.2**	34.8
Non-native (non-listed)																													
Digitaria ischaemum	smooth crabgrass	Poaceae	-	-	FACU	0	0	0	0	0	0	0	0	0	0	2.5	0	0	0	0	2.5	0	0	0	0	0	0	0	0.2	8.7
Echinochloa crus-galli	barnyard grass	Poaceae	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	2.5	0	0	2.5	2.5	0	2.5	0	2.5	15	15	1.8	30.4
Gnaphalium uliginosum	marsh cudweed	Asteraceae	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5	15	15	15	2.5	2.5	0	0	0	0	2.3	26.1
Plantago major	broadleaf plantain	Plantaginaceae	--	--	FACU+	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5	2.5	0	2.5	0	0	0	0	0	0	0.3	13.0
Trees and Shrubs																													
Populus trichocarpa	black cottonwood	Salicaceae	--	--	FAC	0	0	0	0	0	0	0	0	0	0	0	0	2.5	0	2.5	0	0	0	0	0	0	0	0	0.2	8.7
Salix lasiandra (var. lasiandra)	Pacific willow	Salicaceae	-	-	FACW+	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5	0	2.5	2.5	0	0	0	0	0	0	0.3	13.0
Bare ground	-	-	-	-	-	97.5	97.5	97.5	97.5	97.5	97.5	15	2.5	62.5	37.5	15	97.5	15	37.5	15	15	37.5	2.5	2.5	2.5	15	15	85	**46.0**	100.0

*Plot 11-12B was added in the upstream off-channel habitat in 2022

Herbaceous / Emergent Vegetation Cover Monitoring Statistics																								Habitat Average	SE
Cover of Native Herbaceous	**0**	**0**	**0**	**0**	**0**	**0**	**140**	**100**	**40**	**67.5**	**90**	**7.5**	**170**	**92.5**	**173**	**82.5**	**238**	**215**	**257.5**	**232.5**	**212.5**	**207.5**	**37.5**	**102.7**	**19.3**
Lower CI (80%)																								78.0	
Upper CI (80%)																								127.4	

Species	Common Name	Family	PPL Rank	ODA Rank	Wetland Status	Herbaceous Monitoring Plot																					Percent Cover	Percent Frequency
						1-2A	1-2B	1-2C	1-2D	1-2E	1-2F	2-3A	2-3B	2-3C	2-3D	2-3E	5-6A	5-6B	5-6C	7-8A	7-8B	9-10A	9-10B	11-12A	11-12B	13-14A	13-14B	15-16A		
Cover of Invasive Herbaceous Species						**0**	**0**	**0**	**0**	**0**	**0**	**15**	**15**	**0**	**15**	**15**	**0**	**15**	**62.5**	**2.5**	**2.5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6.2**	2.9
Lower CI (80%)																												2.5	
Upper CI (80%)																												9.9	
Cover of Non-Native (Non-Listed) Herbaceous Species						0	0	0	0	0	0	0	0	0	0	2.5	0	2.5	5	17.5	20	20	2.5	5	0	2.5	15	15	4.7	1.5
Lower CI (80%)																												2.8	
Upper CI (80%)																												6.6	
Cover of Native Tree and Shrub Species within Herbaceous Plots						0	0	0	0	0	0	0	0	0	0	0	0	2.5	2.5	2.5	2.5	2.5	0	0	0	0	0	0	0.5	0.2
Lower CI (80%)																												0.3	
Upper CI (80%)																												0.8	
Cover of Bare Substrate and Moss						97.5	97.5	97.5	97.5	97.5	97.5	15	2.5	62.5	37.5	15	97.5	15	37.5	15	15	37.5	2.5	2.5	2.5	15	15	85	46.0	8.3
Lower CI (80%)																												35.3	
Upper CI (80%)																												56.6	
Weighted Prevalence Index All Strata												1.5	1.5	1.0	1.8	2.2	1.3	1.5	2.7	1.6	2.1	2.0	1.2	1.3	1.3	1.4	1.3	2.1	**1.6**	

ATTACHMENT 5. FLORA AND FAUNA SPECIES LISTS

Scientific Name	Common Name	Family	Origin	Form	Portland Plant Native list	Portland Plant Noxious Rank	ODA Rank	Wetland Status (Oregon)
(Calystegia sp.)	bindweed	Convulvulaceae	non-native	perennial forb	No	--	--	-
Achillea millefolium	yarrow	Asteraceae	native	perennial forb	Y	--	--	FACU
Acmispon americanus	Spanish clover	Fabaceae	native	annual forb	Y (var)	--	--	-
Acmispon parviflorus	Spanish clover	Fabaceae	native	perennial forb	Y	--	--	-
Adiantum jordanii	maiden hair fern	Pteridaceae	native	perennial fern	No	--	--	-
Agrostis capillaris	colonial bentgrass	Poaceae	non-native	perennial grass	No	D	-	-
Agrostis exarata	bentgrass	Poaceae	native	perennial grass	Y	--	--	FACW
Agrostis scabra	rough hairgrass	Poaceae	native	perennial grass	Y	-	-	FAC
Agrostis sp.	bentgrass	Poaceae	not counted	grass	No	--	--	-
Agrostis stolonifera	creeping bentgrass	Poaceae	non-native	perennial grass	No	D	-	FAC*
Aira caryophyllea	silver hairgrass	Poaceae	non-native	annual grass	No	-	-	-
Alisma lanceolatum	lanceleaf water plantain	Alistamaceae	non-native	aquatic forb	No	--	--	OBL
Alisma triviale	northern water plantain	Alistamaceae	native	aquatic forb	No	--	--	OBL
Alliaria petiolata	garlic mustard	Brassicaceae	invasive	forb	No	B	B	NI
Anagallis arvensis	scarlet pimpernel	Primulaceae	non-native	forb	No	--	--	-
Arctium lappa	greater burdock	Asteraceae	non-native	biennial forb	No	--	--	-
Azolla filiculoides	mosquito fern	Salviniaceae	native	aquatic forb	Y	--	--	OBL
Beckmannia syzigachne	sloughgrass	Poaceae	native	perennial grass	Y	-	-	OBL
Bellardia viscosa	yellow glandweed	Orobanchaceae	non-native	annual forb	No	--	--	-
Bidens cernua	nodding beggar's tick	Asteraceae	native	forb	Y	-	-	FACW+
Bidens frondosa	leafy beggar's tick	Asteraceae	native	forb	Y	-	-	FACW+
Bromus hordeaceus	soft chess	Poaceae	non-native	annual grass	No	-	-	-
Bromus sterilis	poverty brome	Poaceae	non-native	annual grass	No	-	-	-
Bromus tectorum	cheatgrass	Poaceae	non-native	annual grass	No	C	-	-
Callitriche sp.	water starwort	Plantaginaceae	native	aquatic forb	-	-	-	OBL
Calystegia atriplicifolia	night-blooming morning glory	Convolvulaceae	native	forb	No	-	-	-
Camassia quamash	small camas	Liliaceae	native	forb	Y	-	-	-
Cardamine flexuosa	wavy bittercress	Brassicaceae	non-native	forb	No	-	-	-
Cardamine pensylvanica	Pennsylvania bittercress	Brassicaceae	native	aquatic forb	Y	-	-	FACW
Cardamine sp.	tansy	Brassicaceae	non-native	forb	No	--	--	-
Carex aperta	Columbia sedge	Cyperaceae	native	perennial grasslike herb	Y	--	--	FACW
Carex cusickii	Cusick's sedge	Cyperaceae	native	perennial grasslike herb	Y	--	--	OBL
Carex densa	dense sedge	Cyperaceae	native	perennial grasslike herb	Y	--	--	OBL
Carex obnupta	Slough sedge	Cyperaceae	native	perennial grasslike herb	Y	--	--	OBL
Carex pachystachya	Thick headed sedge	Cyperaceae	native	perennial grasslike herb	No	--	--	FAC

(Calystegia sp.)	bindweed	Convulvulaceae	non-native	perennial forb	No	--	--	-
Carex scoparia	Scotch broom	Cyperaceae	native	perennial grasslike herb	No	--	--	-
Carex stipata	Sawbeak sedge	Cyperaceae	native	perennial forb	Y	--	--	-
Carex unilateralis	one-sided sedge	Cyperaceae	native	perennial grasslike herb	Y	--	--	FACW
Centaurium erythraeea	common centaury	Gentianaceae	non-native	forb	No	--	--	-
Cerastium glomeratum	sticky mouse ear chickweed	Caryophyllaceae	non-native	forb	No	--	--	-
Chamaenerion (Epilobium) angustifolium	fireweed	Onagraceae	native	perennial forb	Y	-	-	FACU+
Chenopodium album	common lamb's-quarters	Chenopodiaceae	non-native	annual forb	No	--	--	FAC
Chondrilla juncea	skeletonweed	Asteraceae	invasive	forb	No	B	B	-
Cirsium arvense	creeping thistle	Asteraceae	invasive	annual forb	No	C	B	FACU+
Cirsium vulgare	bull thistle	Asteraceae	invasive	annual forb	No	C	B	FACU
Clarkia amoena	farewell to Spring	Onagraceae	native	forb	Y	--	--	-
Conyza canadensis	horseweed	Asteraceae	native	annual forb	No	-	-	FACU
Coreopsis tinctoria	Calliopsis	Asteraceae	native	annual forb	(var. atkinsoniana)	--	--	FACU
Crassula aquatica	wrinkle-seed pygmyweed	Crassulaceae	native	forb	Y	-	-	OBL
Cryptantha intermedia	clearwater cryptantha	Boraginaceae	native	forb	Y	--	--	-
Cyperus erythrorhizos	redroot flatsedge	Cyperaceae	native	perennial grasslike herb	Y	--	--	OBL
Cyperus sp.	flatsedge	Cyperaceae	native	grasslike herb	Y	--	--	-
Danthonia californica	California oatgrass	Poaceae	native	perennial grass	Y	--	--	FACU*
Daucus carota	wild carrot	Apiaceae	invasive	annual forb	No	C	--	-
Delphinium trolliifolium	Columbian Larkspur	Ranunculaceae	native	forb	No	--	--	-
Deschampsia cespitosa	tufted hairgrass	Poaceae	native	perennial grass	Y	--	--	FACW
Deschampsia elongata	hairgrass	Poaceae	native	perennial grass	Y	--	--	FACW-
Digitaria ischaemum	smooth crabgrass	Poaceae	non-native	perennial grass	No	-	-	FACU
Dipsacus laciniatus	wild teasel	Caprifoliaceae	invasive	biennial forb	No	-	B	-
Distichlis spicata	alkaline grass	Poaceae	native	perennial grass	No	-	-	FACW
Downingia elegans	Californian lobelia	Campanulaceae	native	aquatic forb	Y	--	--	-
Dysphania ambrosioides	Mexican tea	Amaranthaceae	non-native	forb	No	-	-	-
Echinochloa crus-galli	barnyard grass	Poaceae	non-native	annual grass	No	-	-	-
Echinops sphaerocephalus	glandular globe-thistle	Asteraceae	non-native	forb	No	--	--	-
Eleocharis acicularis	needle spikerush	Cyperaceae	native	aquatic forb	Y	-	-	OBL
Eleocharis macrostachya	creeping spikerush	Cyperaceae	native	aquatic forb	No	-	-	OBL
Eleocharis obtusa	blunt spikesedge	Cyperaceae	native	aquatic forb	Y	-	-	OBL
Eleocharis palustris	creeping spikerush	Cyperaceae	native	aquatic forb	Y	-	-	OBL
Elodea canadensis	common waterweed	Hydrocharitaceae	native	aquatic forb	No	--	--	OBL
Elymus elymoides	bottlebrush	Poaceae	native	perennial grass	No	--	--	-
Elymus glaucus	blue wildrye	Poaceae	native	perennial grass	Y ssp	--	--	FACU

(Calystegia sp.)	bindweed	Convulvulaceae	non-native	perennial forb	No	--	--	-
Elymus trachycaulus	bluebunch wheatgrass	Poaceae	native	perennial grass	Y	--	--	-
Epilobium brachycarpum	tall willowherb	Onagraceae	native	forb	No	--	--	UPL
Epilobium ciliatum	Slender willow herb	Onagraceae	native	aquatic forb	Y (var)	--	--	FACW-
Epilobium densiflorum	dense-flowered willow herb	Onagraceae	native	perennial forb	No	-	-	-
Epilobium minutum	little willowforb	Onagraceae	native	annual forb	No	--	--	-
Equisetum arvense	field horsetail	Equisetaceae	native	perennial forb	Y	--	--	FAC
Equisetum hyemale	common scouring rush	Equisetaceae	native	perennial forb	Y	--	--	FACW
Eragrostis hypnoides	teal lovegrass	Poaceae	native	perennial grass	No	--	--	OBL
Eragrostis pectinacea var. pectinacea	purple eragrostis	Poaceae	native	annual grass	No	-	-	FAC
Eriophyllum lanatum	Oregon sunshine	Asteraceae	native	annual forb	Yes	-	-	-
Erythranthe guttata	yellow monkeyflower	Phrymaceae	native	perennial forb	No	--	--	OBL
Erythranthe moschata	musk monkeyflower	Phrymaceae	native	forb	No	--	--	OBL
Eschscholzia californica	California poppy	Papaveraceae	native	perennial forb	Y	--	--	-
Euphorbia glyptosperma	rib seed sandmat	Euphorbiaceae	native	forb	No	-	-	-
Euphorbia maculata	spotted spurge	Euphorbiaceae	non-native	forb	No	--	--	UPL
Euphorbia prostrata	prostrate spurge	Euphorbiaceae	non-native	forb	No	-	-	-
Euthamia occidentalis	western goldenrod	Asteraceae	native	forb	No	-	-	-
Festuca idahoensis	blue fescue	Poaceae	native	perennial grass	No	--	--	FACU
Festuca occidentalis	western fescue	Poaceae	native	perennial grass	Y	--	--	-
Festuca perennis	Italian ryegrass	Poaceae	non-native	annual grass	No	-	-	-
Festuca roemeri	Roemer's fescue	Poaceae	native	perennial bunchgrass	Y	--	--	-
Galium aparine	cleavers	Rubiaceae	native	forb	Y	--	--	-
Galium trifidum	three-petal bedstraw	Rubiaceae	native	forb	Y	--	--	-
Geranium dissectum	common wild geranium	Geraniaceae	non-native	annual forb	No	--	--	-
Geranium lucidum	shiny geranium	Geraniaceae	invasive	annual forb	No	C	B	-
Geranium oreganum	western Geranium	Geraniaceae	native	forb	No	--	--	-
Geranium purpurum	little-robin	Geriaceae	non-native	annual forb	No	--	--	-
Geum macrophyllum	large-leaved geum	Rosaceae	native	forb	Y	--	--	FACW-*
Gilia capitata	bluehead gilia	Polemoniaceae	native	forb	Y	--	--	-
Glyceria elata	tall mannagrass	Poaceae	native	perennial bunchgrass	Y	--	--	FACW+
Glyceria x occidentalis	western mannagrass	Poaceae	native	perennial bunchgrass	Y	-	-	OBL
Gnaphalium palustre	marsh cudweed	Asteraceae	native	forb	Y	--	--	FAC+
Gnaphalium uliginosum	marsh cudweed	Asteraceae	non-native	forb	No	-	-	-
Grindelia integrifolia	Puget Sound gumweed	Asteraceae	native	forb	Y	--	--	FACW
Helenium autumnale	common sneezeweed	Asteraceae	native	forb	No	-	-	FACW
Hieracium sp.	hawkweed	Asteraceae	non-native	forb	Y	--	--	-
Hirschfeldia incana	shortpod mustard	Brassicaceae	non-native	forb	No	--	--	-
Holcus lanatus	common velvetgrass	Poaceae	non-native	perennial grass	No	--	--	-

(Calystegia sp.)	bindweed	Convulvulaceae	non-native	perennial forb	No	--	--	-
Honckenya peploides	creeping thistle	Caryophyllaceae	native	perennial forb	No	--	--	-
Hordeum brachyantherum	meadow barley	Poaceae	native	perennial grass	Y	-	-	FACW-*
Hydrocotyle ranunculoides	floating pennywort	Araliaceae	native	aquatic forb	No	-	--	OBL
Hypericum calycinum	creeping St. Johns wort	Hypericaceae	non-native	forb	No	-	-	-
Hypochaeris radicata	spotted cat's ear	Asteraceae	invasive	forb	Yes	C	--	FACU
Impatiens capensis	spotted jewelweed	Balsaminaceae	invasive	aquatic forb	No	C	--	FACW
Isoetes howellii	Howell's quillwort	Isoetaceae	native	aquatic forb	No	-	-	OBL
Juncus acuminatus	sharp-fruited rush	Juncaceae	native	perennial grasslike herb	Y	--	--	OBL
Juncus articulatus	jointed rush	Juncaceae	native	perennial forb	Y	-	-	-
Juncus articulatus ssp. articulatus	jointed rush	Juncaceae	native	grasslike herb	No	--	--	OBL
Juncus bufonius	toad rush	Juncaceae	native	perennial grasslike herb	Y	--	--	FACW
Juncus effusus	soft rush	Juncaceae	native	perennial grasslike herb	No	-	-	FACW
Juncus ensifolius	sword-leaved rush	Juncaceae	native	perennial grasslike herb	Y	--	--	FACW
Juncus oxymeris	pointed rush	Juncaceae	native	perennial grasslike herb	Yes	-	-	FACW+
Juncus patens	common rush	Juncaceae	native	perennial grasslike herb	Y	--	--	FACW
Juncus sp.	California goldenrod	Juncaceae	native	grasslike herb	No	--	--	-
Juncus tenuis	slender rush	Juncaceae	native	perennial grasslike herb	Y	--	--	FACW-
Kickxia elatine	sharp-leaved fluellen	Plantaginaceae	non-native	forb	No	-	-	UPL
Lactuca serriola	Prickly lettuce	Asteraceae	invasive	annual forb	No	C	--	FACU
Lathyrus latifolius	broad-leaved sweet pea	Fabaceae	non-native	perennial vine	No	W	B	-
Leersia oryzoides	rice cutgrass	Poaceae	native	perennial grass	Y	--	--	OBL
Lemna minor	common duckweed	Araceae	native	aquatic forb	Y	--	--	OBL
Lepidium virginicum	least pepperwort	Brassicaceae	native	forb	No	-	-	FACU
Leymus triticoides	bearded lyme grass	Poaceae	native	perennial grass	No	-	-	-
Limosella aquatica	mudwort	Scrophulariaceae	native	aquatic forb	Y	--	--	OBL
Lindernia dubia	false pimpernel	Linderniaceae	native	aquatic forb	Y	--	--	OBL
Lotus corniculatus	bird's foot trefoil	Fabaceae	invasive	perennial forb	No	C	--	FAC
Ludwigia hexapetala	Six petal water primrose	Onagraceae	invasive	perennial forb	No	A	B	-
Ludwigia palustris	water purslane	Onagraceae	native	aquatic forb	Y	--	--	OBL
Ludwigia peploides	Marsh purslane	Onagraceae	invasive	perennial forb	No	-	B	-
Lupinus bicolor	miniature lupine	Fabaceae	native	annual forb	Y	--	--	-
Lupinus polyphyllus	bog lupine (large-leaved lupine)	Fabaceae	native	perennial forb	Y	--	--	FAC+
Lycopus americanus	cut-leaved bugleweed	Lamiaceae	native	aquatic forb	Y	--	--	OBL
Lycopus europaeus	European water-horehound	Lamiaceae	non-native	perennial forb	No	--	--	-

(Calystegia sp.)	bindweed	Convulvulaceae	non-native	perennial forb	No	--	--	-
Lycopus uniflorus	northern bugleweed	Lamiaceae	native	aquatic forb	Y	--	--	OBL
Lysimachia nummularia	creeping jenny	Primulaceae	non-native	forb	No	W	-	-
Lythrum portula	water purslane	Lythraceae	invasive	perennial forb	No	B	--	NI
Lythrum salicaria	purple loosestrife	Lythraceae	invasive	aquatic forb	No	B	B	FACW+
Malva sylvestris	common mallow	Malvaceae	non-native	perennial forb	No	--	--	-
Malvella leprosa	alkali mallow	Malvaceae	native	perennial forb	No	--	--	FACU
Matricaria discoidea	pineappleweed	Asteraceae	non-native	forb	No	--	--	-
Matricaria recutita	German chamomile	Asteraceae	non-native	annual forb	No	--	--	-
Medicago lupulina	black medic	Fabaceae	non-native	forb	No	--	--	FAC
Medicago polymorpha	toothed medic	Fabaceae	non-native	forb	No	--	--	-
Melilotus albus	white sweetclover	Fabaceae	non-native	forb	No	-	-	-
Melilotus officinalis	yellow sweetclover	Fabaceae	non-native	annual forb	No	W		FACU
Mentha pulegium	pennyroyal	Lamiaceae	invasive	aquatic forb	No	C	--	OBL
Mollugo verticillata	carpetweed	Molluginaceae	native	forb	No	--	--	FAC
Montia fontana	water chickweed	Montiaceae	native	aquatic forb	Y	--	--	OBL
Navarretia intertexta	needle-leaf navarretia	Polemoniaceae	native	aquatic forb	Yes	-	-	FACW
Oenanthe sarmentosa	water parsley	Apiaceae	native	aquatic forb	Y	--	--	OBL
Oenothera biennis	evening primrose	Onagraceae	native	forb	Y	-	-	-
Panicum capillare	witch grass	Poaceae	native	annual grass	Y	--	--	FACU+
Panicum dichotomiflorum	fall panicgrass	Poaceae	non-native	perennial grass	No	--	--	FACW
Persicaria amphibia	longroot smartweed	Polygonaceae	native	aquatic forb	Y	--	--	OBL
Persicaria hydropiperoides	water pepper	Polygonaceae	native	aquatic forb	No	--	--	-
Persicaria lapathifolia	dock-leaf smartweed	Polygonaceae	native	forb	No	--	--	-
Persicaria maculosa	spotted lady's thumb	Polygonaceae	non-native	aquatic forb	No	--	--	FACW
Persicaria punctata	dotted smartweed	Polygonaceae	native	aquatic forb	No	-	-	-
Phacelia tanacetifolia	lacy phacelia	Boraginaceae	native	annual forb	No	--	--	-
Phalaris arundinacea	reed canarygrass	Poaceae	invasive	perennial grass	No	C	--	FACW
Plagiobothrys nothofulvus	rusty popcornflower	Boraginaceae	native	annual forb	No	--	--	FAC
Plagiobothrys scouleri	Scouler's popcornflower	Boraginaceae	native	aquatic forb	No	--	--	FACW
Plantago lanceolata	ribwort	Plantaginaceae	non-native	perennial forb	No	--	--	FAC
Plantago major	broadleaf plantain	Plantaginaceae	non-native	forb	No	--	--	FACU+
Poa palustris	fowl blue grass	Poaceae	non-native	perennial grass	No	-	-	FAC
Poa secunda	pine bluegrass	Poaceae	native	perennial grass	Y	--	--	-
Polygonum aviculare	doorweed	Polygonaceae	native	aquatic forb	Y	-	-	-
Polypogon monspeliensis	rabbitsfoot grass	Poaceae	non-native	annual grass	No	--	--	FACW
Polystichum munitum	western sword fern	Dryopteridaceae	native	perennial fern	Y	--	--	FACU
Potamogeton crispus	curly-leaf pondweed	Potamogetonaceae	invasive	aquatic herb	No	C	-	OBL
Potentilla gracilis	slender cinquefoil	Rosaceae	native	forb	Y var	--	--	FAC
Prunella vulgaris	self heal	Lamiaceae	native	perennial forb	Y	--	--	-
Pseudognaphalium stramineum	cotton batting cudweed	Asteraceae	native	forb	No	-	-	-
Ranunculus muricatus	creeping buttercup	Ranunculaceae	non-native	aquatic forb	No	--	--	FACW

(Calystegia sp.)	bindweed	Convulvulaceae	non-native	perennial forb	No	--	--	-
Ranunculus sceleratus	cursed buttercup	Ranunculaceae	native	aquatic forb	No	-	-	OBL
Reynoutria sachalinensis (Fallopia sachalinensis)	giant knotweed	Polygonaceae	non-native	forb	No	-	-	-
Rorippa palustris	bog yellowcress	Brassicaceae	native	aquatic forb	No	-	-	OBL
Rorippa sylvestris	creeping yellowcress	Brassicaceae	invasive	aquatic forb	No	-	B	OBL
Rumex acetosella	common sheep sorrel	Polygonaceae	non-native	forb	No	-	-	FACU+
Rumex crispus	curled dock	Polygonaceae	non-native	forb	No	--	--	FAC+
Rumex obtusifolius	bitter dock	Polygonaceae	non-native	perennial forb	No	-	-	FAC
Rumex salicifolius	willow dock	Polygonaceae	native	aquatic forb	No	--	--	FACW
Sagina procumbens	bird-eye pearlwort	Caryophyllaceae	non-native	aquatic forb	No	--	--	FAC
Sagittaria latifolia	broadleaf arrowhead	Alistamaceae	native	aquatic forb	Y	--	--	OBL
Schoenoplectus tabernaemontani	soft-stemmed bulrush	Cyperaceae	native	aquatic forb	No	--	--	OBL
Scutellaria lateriflora	mad-dog skullcap	Lamiaceae	native	aquatic forb	No	-	-	FACW
Sedum album	white stonecrop	Crassulaceae	native	perennial forb	No	--	--	-
Sisyrinchium idahoense	blue-eyed Grass	Iridaceae	native	perennial forb	No	--	--	FACW
Solidago canadensis	California goldenrod	Asteraceae	native	forb	No	--	--	FACU
Sparganium emersum	simplestem bur-reed	Typhaceae	native	aquatic forb	Yes	--	--	OBL
Stachys cooleyae	hedge-nettle	Lamiaceae	native	forb	Y	--	--	FACW
(Aster subspicatus)	Douglas aster	Asteraceae	native	forb	Y	-	-	-
Tanacetum vulgare	tansy	Asteraceae	invasive	perennial forb	No	C	--	NI
Taxacum officinale	common dandelion	Asteraceae	non-native	perennial forb	No	-	-	-
Trifolium arvense	rabbitsfoot clover	Fabaceae	invasive	forb	No	C	--	-
Trifolium campestre	Oregon sunshine	Fabaceae	non-native	annual forb	No	--	--	-
Trifolium dubium	lesser trefoil	Fabaceae	non-native	annual forb	No	--	--	UPL
Trifolium hirtum	rose clover	Fabaceae	non-native	annual forb	No	--	--	-
Trifolium hybridum	Alsike clover	Fabaceae	non-native	forb	No	-	-	FAC
Trifolium incarnatum	crimson clover	Fabaceae	non-native	annual forb	No	--	--	-
Trifolium pratense	red clover	Fabaceae	invasive	forb	No	C	--	FACU
Trifolium repens	white clover	Fabaceae	invasive	forb	No	C	--	FAC*
Trifolium sp.	clover	Fabaceae	non-native	forb	No	-	--	-
Typha angustifolia	narrow-leaf cattail	Typhaceae	native	aquatic forb	Y	-	-	OBL
Typha latifolia	broad-leaf cattail	Typhaceae	native	aquatic forb	Y	-	-	OBL
Unknown chenopod	crimson clover	Amaranthaceae	not counted	forb	No	--	--	-
Unknown grass	grass	Poaceae	not counted	grass	No	--	--	-
Urtica dioica	stinging nettle	Urticaceae	native	forb	No	--	--	FAC+
Verbascum blattaria	moth mullein	Scrophulariaceae	invasive	biennial forb	No	C	--	UPL
Verbascum thapsus	great mullein	Scrophulariaceae	invasive	biennial forb	No	C	-	-
Veronica americana	American brooklime	Plantaginaceae	native	forb	Y	--	--	OBL
Veronica anagallis-aquatica	water speedwell	Plantaginaceae	non-native	aquatic forb	No	--	--	OBL
Veronica peregrina	American speedwell	Plantaginaceae	native	aquatic forb	No	--	--	OBL

(Calystegia sp.)	bindweed	Convulvulaceae	non-native	perennial forb	No	--	--	-
Veronica peregrina var. peregrina	purselane speedwell	Plantaginaceae	non-native	aquatic forb	No	--	--	OBL
Vicia hirsuta	hairy vetch	Fabaceae	non-native	forb	No	--	--	-
Vicia sativa	common vetch	Fabaceae	non-native	annual forb	No	D		UPL
Vicia tetrasperma	slender vetch	Fabaceae	non-native	annual forb	No	--	--	-
Vicia villosa var. villosa	hairy vetch	Fabaceae	non-native	annual forb	No	--	--	-
Vulpia myuros	[Festuca] rat-tail six-weeks grass	Poaceae	non-native	annual grass	No	--	--	FAC
Xanthium strumarium	rough cocklebur	Asteraceae	native	perennial forb	No	--	--	FAC

Scientific Name	Common Name
Corvus brachyrhynchos	American Crow
Spinus tristis	American goldfinch
Falco sparverius	American kestrel
Turdus migratorius	American robin
Calypte anna	Anna's hummingbird
Haliaeetus leucocephalus	bald eagle
Tyto alba	barn owl
Hirundo rustica	barn swallow
Megaceryle alcyon	belted kingfisher
Thryomanes bewickii	Bewick's wren
Sayornis nigricans	black phoebe
Poecile atricapillus	black-capped chickadee
Molothrus ater	brown-headed cowbird
Calipepla californica	California quail
Branta canadensis	Canada goose
Bombycilla cedrorum	Cedar waxwing
Petrochelidon pyrrhonota	cliff swallow
Mergus merganser	common merganser
Corvus corax	common raven
Geothlypis trichas	common yellowthroat
Junco hyemalis	dark-eyed junco
Picoides pubescens	downy woodpecker
Streptopelia decaocto	Eurasian collared dove
Sturnus vulgaris	European starling
Ardea herodias	great blue heron
Bubo virginianus	great horned owl
Butorides virescens	green heron
Haemorhous mexicanus	house finch
Passer domesticus	house sparrow
Charadrius vociferus	killdeer
Spinus psaltria	lesser goldfinch
Anas platyrhynchos	mallard
Zenaida macroura	mourning dove
Colaptes auratus	Northern flicker
Stelgidopteryx serripennis	northern rough-winged swallow
Vermivora celata	orange-crowned warbler
Pandion haliaetus	osprey
Falco peregrinus	peregrine falcon
Podilymbus podiceps	pied-billed grebe
Progne subis	purple martin
Buteo jamaicensis	Red-tailed hawk

Agelaius phoeniceus	red-winged blackbird
Regulus calendula	ruby-crowned kinglet
Passerculus sandwichensis	savannah sparrow
Melospiza melodia	song sparrow
Actitis mascularius	spotted sandpiper
Pipilo maculatus	spotted towhee
Cyanocitta stelleri	Stellar's jay
Tachycineta bicolor	tree swallow
Cathartes aura	turkey vulture
Chaetura vauxi	Vaux's swift
Tachycineta thalassina	violet-green swallow
Tyrannus verticalis	western kingbird
Aphelocoma californica	western scrub jay
Piranga ludoviciana	western tanager
Contopus sordidulus	western wood-pewee
Zonotrichia leucophrys	white-crowned sparrow
Setophaga petechia	yellow warbler
Acipenser transmontanus	white sturgeon
Fundulus diaphanus	banded killifish
Gambusia affinis	mosquitofish
Gasterosteus aculeatus	threespine stickleback
Misgurnus anguilicaudatus	oriental weatherfish
Oncorhynchus tshawytscha	Chinook salmon
Canis latrans	coyote
Castor canadensis	American beaver
Lontra canadensis	river otter
Mephitis mephitis	striped skunk
Mustela frenata	long-tailed weasel
Myodes californicus	western red-backed vole
Odocoileus hemionus	black-tailed deer
Phoca vitulina	harbor seal
Procyon lotor	raccoon
Spermophilus beecheyi	California ground squirrel
Zalophus californianus	California sea lion
-	Unknown turtle
Lithobates catesbeianus	bullfrog
Pseudacris regilla	Pacific chorus frog
Scleoporus occidentalis	western fence lizard
Thamnophis atratus hydrophilus	Oregon garter snake

Thamnophis sirtalis concinnus	red-spotted garter snake

ATTACHMENT 6. BIRD MONITORING REPORT

Attachment 6. Year 4 (2023) Bird Monitoring Results Transect Summary

Species Common Name	6/7/23	7/4/23	Total
American Crow		2	**2**
American Goldfinch	2	2	**4**
American Kestral	1		**1**
American Robin	1	2	**3**
Bald Eagle	2	1	**3**
Barn Swallow	11	7	**18**
Brown-headed Cowbird		2	**2**
California Scrub Jay		1	**1**
Canada Goose		14	**14**
Cliff Swallow		50	**50**
Common Raven	1		**1**
Common Yellow-throat	3		**3**
European Starling	205	4	**209**
House Finch	3	1	**4**
House Sparrow	4	2	**6**
Killdeer	5	11	**16**
Lesser Goldfinch		5	**5**
Mourning Dove	1		**1**
Northern Flicker		11	**11**
Northern Rough-winged Swallow		1	**1**
Osprey	3	2	**5**
Purple Martin		6	**6**
Red-tailed Hawk	2	1	**3**
Red-winged Blackbird	2		**2**
Song Sparrow	5	7	**12**
Spotted Sandpiper	4	7	**11**
Swallow sp.	3		**3**
Tree Swallow	2		**2**
Turkey Vulture		2	**2**
Vaux's Swift		1	**1**
Violet-green Swallow	7	19	**26**
White-crowned Sparrow	11	15	**26**
Wilson's Warbler	1		**1**
Totals	**279**	**174**	**453**

ATTACHMENT 7. CREDIT LEDGER

Linnton Water Credits - Credit Ledger

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4/5/2023

Credit Type	Max Approved	Credits Released to Date		Credits Currently Available		Credits Sold to Date	
			404 Approved		404 Approved		404 Approved
NRD Only	148.91	147.81		47.22		100.59	
Dual-Purpose Riverine	216.10	52.35	43.22	50.34	41.21	2.01	2.01
Dual-Purpose Palustrine	137.50	52.34	27.5	52.34	27.5	0	0
Total	**502.51**	**252.5**	**70.72**	**149.9**	**68.71**	**102.6**	**2.01**

Date	Transaction Type (Release/ Sale/ Deduction)	Credit Type	Serial No.	Purchaser Credit Need (404/NRD/Cut Fill)	Purchaser / Permittee	Purchaser Address / Phone	Credit Reduced	Credit Add	Notes
5/1/2019	Release	NRD-Only	LWC-NRD-001 through LWC-NRD-077(.62)	-	-	-		76.62	Release 1 - 4/25/19 letter from Portland Harbor NRD Trustee Council authorizing Release 1; 15% of the total. 404 credits not approved yet
5/2/2019	Sale	NRD-Only	LWC-NRD-001 through LWC-NRD-077(.62)	NRD	-	-	76.62		Sale of all available NRD single-purpose credits
8/20/2020	Release	NRD-Only	LWC-NRD-077 (.38) through LWC-NRD-147.81	-	-	-		79.48	Release 2 - 8/20/20 letter from Portland Harbor NRD Trustee Council authorizing Release 2; 35% of the total, NRD serial numbers adjusted to reflect the November 2020 updated total from Trustee Council and "adjustments" below. 404 credits not approved yet.
8/20/2020	Release	Dual-Purpose Riverine	LWC-Riverine-001 through LWC-Riverine-042.21	-	-	-		42.21	
8/20/2020	Release	Dual-Purpose Palustrine	LWC-Palustrine-001 through LWC-Palustrine-042.22	-	-	-		42.22	
8/27/2020	Sale	NRD-Only	LWC-NRD-077 (.38) through LWC-NRD-099	NRD	-	-	22.38		Sale of remainder of 99 single-purpose credits per agreement dated 7/31/2018
10/8/2020	Sale	NRD-Only	LWC-NRD-099 through LWC-NRD-099 (.75)	No-net-fill	Foss Maritime Company	9030 NW St. Helens Rd, Portland OR, 97231	0.75		Sale of flood storage volume for Land Use Review number LUR 20-195001 GW AD, per agreement dated 8/30/20.
11/2/2020	Adjustment	NRD-Only	N/A	-	(MRFSCV)	-	8.29		Adjusts relative allocation to three credit categories to match final total credits approved by Trustees' modified revised forecast settlement credit value (502.51), dated 11/2/20, and leaving the previous dual-purpose credit estimates unchanged. Final adjustment of relative totals to occur following MBI approval of dual-purpose credit totals.
11/2/2020	Release	Dual-Purpose Riverine	LWC-Riverine-042.21 through LWC-Riverine-052.35	-	(MRFSCV)	-		10.14	
11/2/2020	Release	Dual-Purpose Palustrine	LWC-Palustrine-042.22 through LWC-Palustrine-052.34	-	(MRFSCV)	-		10.12	
4/8/2021	Sale	NRD-Only	LWC-NRD-099.75 through LWC-NRD-100.35	NRD	Port of Portland	-	0.6		
10/20/2021	Sale	NRD-Only	LWC-NRD-100.35 through LWC-NRD-100.45	No-net-fill	NW Natural	-	0.1		Sale of flood storage volume for Land Use Review number LUR 20-195001 GW
9/30/2021	Release	Dual-Purpose Riverine	LWC-Riverine-001 through LWC-Riverine-043.22	-	-	-		43.22	September 30, 2021 letters from DSL and Army Corps releasing a total of 70.72 dual-purpose credits
9/30/2021	Adjustment	Dual-Purpose Riverine	-	-	-	-	43.22		Adjustment used to account for dual approval ledger calculation

Linnton Water Credits - Credit Ledger

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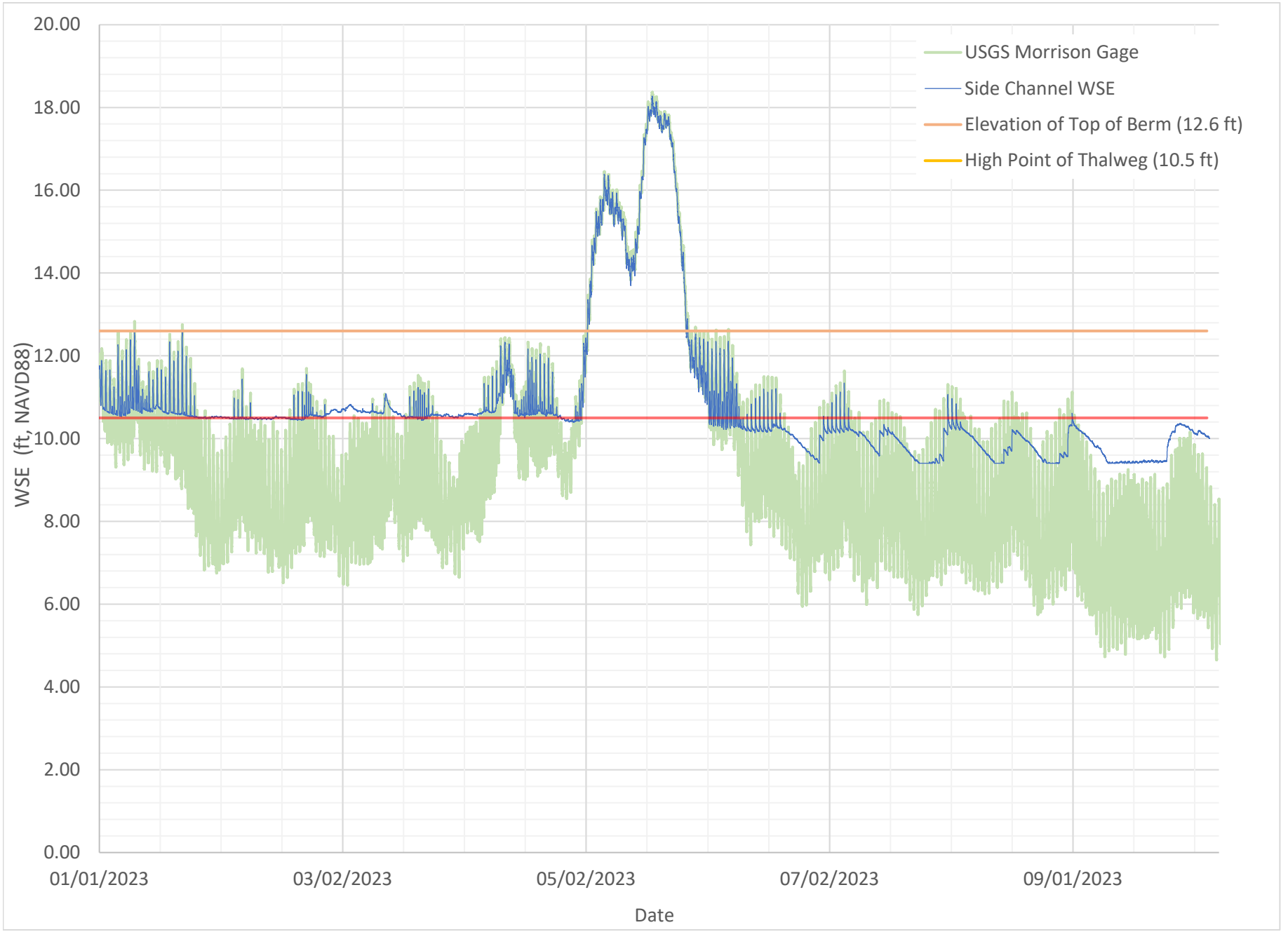
Connecting Capital with Nature

Date	Transaction Type (Release/ Sale/ Deduction)	Credit Type	Serial No.	Purchaser Credit Need (404/NRD/Cut Fill)	Purchaser / Permittee	Purchaser Address / Phone	Credit Reduced	Credit Add	Notes
9/30/2021	Release	Dual-Purpose Palustrine	LWC-Palustrine-001 through LWC-Palustrine-027.50	-	-	-		27.5	September 30, 2021 letters from DSL and Army Corps releasing a total of 70.72 dual-purpose credits
9/30/2021	Adjustment	Dual-Purpose Palustrine	-	-	-	-	27.5		Adjustment used to account for dual approval ledger calculation
10/14/2021	Sale	Dual-Purpose Riverine	LWC-Riverine-001 through LWC-Riverine-002	404	SeaPort Midstream Partners	-	2		DSL Permit #60800-RF, NWP-2006-946-3, HUC 1709001203
12/29/2021	Sale	NRD-Only	LWC-NRD-100.45 through LWC-NRD-100.58	No-net-fill	Northwest Natural		0.13		Sale of flood storage volume for City of Portland permit number PR 18-257210
3/1/2022	Sale	NRD-Only	LWC-NRD-100.58 through LWC-NRD-100.59	No-net-fill	Northwest Natural		0.01		Sale of flood storage volume for City of Portland permit number PR 18-257210
8/8/2022	Sale	Dual-Purpose Riverine	LWC-Riverine	404	Philips 66 Company		0.01		DSL Permit #63706, Portland Terminal Maintenance Project, 10 square feet of fill

ATTACHMENT 8. WATER SURFACE ELEVATIONS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18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
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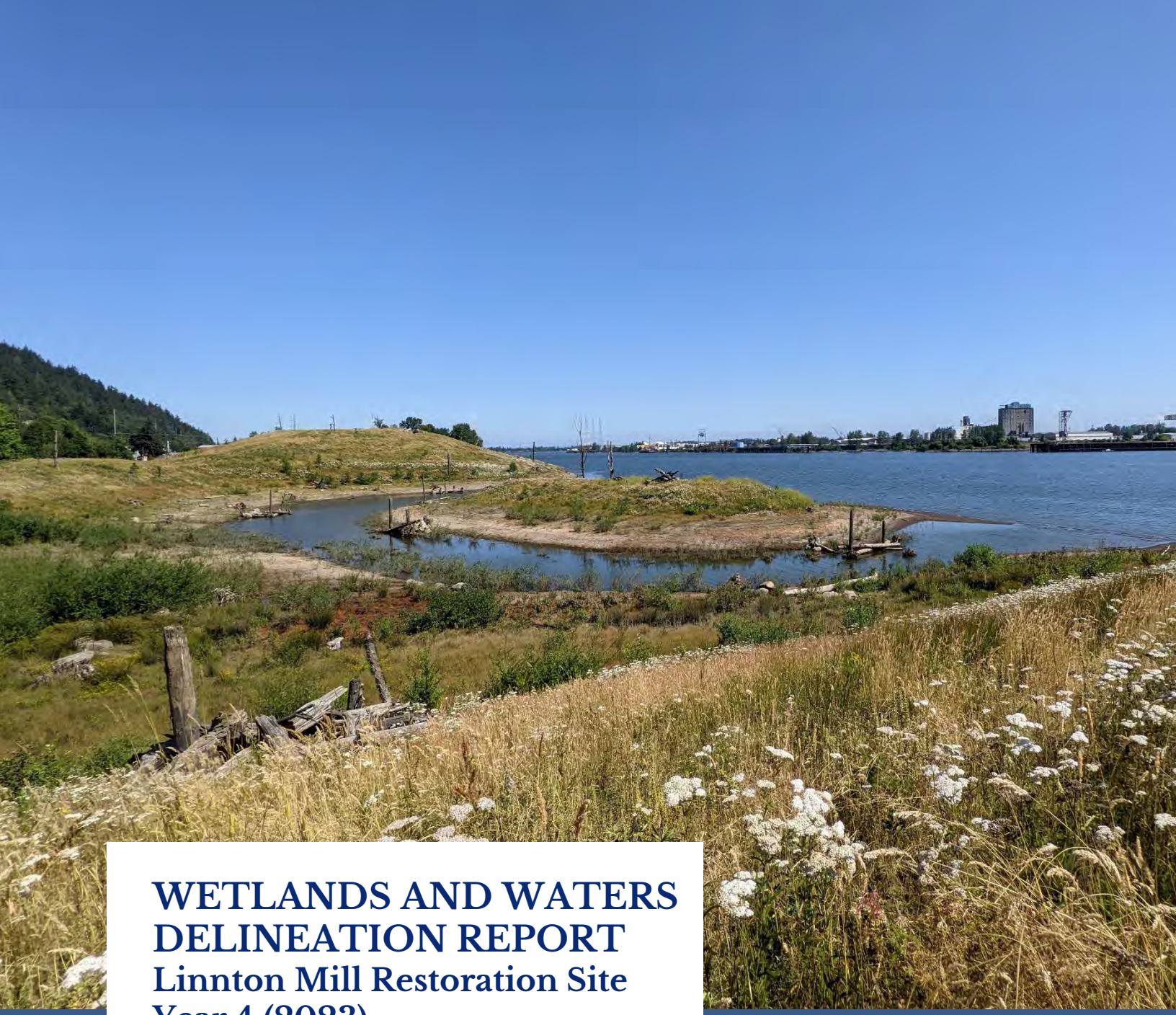
WSE (ft, NAVD88)
01/01/2023
03/02/2023
05/02/2023
07/02/2023
09/01/2023
Date
USGS Morrison Gage
Side Channel WSE
Elevation of Top of Berm (12.6 ft)
High Point of Thalweg (10.5 ft)

ATTACHMENT 9. WETLANDS AND WATERS DELINEATION REPORT



WETLANDS AND WATERS DELINEATION REPORT

Linnton Mill Restoration Site
Year 4 (2023)

DECEMBER 2023

RestorCap LLC
337 17th Street, Suite 200
Oakland, CA 94607

restorcap.com

RESTORCAP

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LIST OF ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

ACM – ACTIVE CHANNEL MARGIN

AKS – AKS ENGINEERING & FORESTRY

CORPS – U.S. ARMY CORPS OF ENGINEERS

DSL – OREGON DEPARTMENT OF STATE LANDS

FT – FEET

HDP – HABITAT DEVELOPMENT PLAN

MBI – MITIGATION BANKING INSTRUMENT

NAVD – NORTH AMERICAN VERTICAL DATUM

OCH – OFF-CHANNEL HABITAT

OHW – ORDINARY HIGH WATER

OLW – ORDINARY LOW WATER

USFWS – U.S. FISH AND WILDLIFE SERVICE

USGS – UNITED STATES GEOLOGICAL SURVEY

1. Introduction

This report describes the delineation of wetlands and non-wetland waters at the Linnton Mill Restoration Site (Site), located at 10504 NW St. Helens Rd, in Portland, Oregon, in Section 2, Township 1 North, Range 1 West W.M. The study area encompasses the entire Linnton Mill site, approximately 27.83 acres (Attachment A). An Assessor's Tax Lot map is included in Attachment A. The Tax Lot numbers for the site are 100 and 800.

The purpose of delineating wetlands at the Site is to determine the actual acres of wetlands and non-wetland waters created through the restoration project. Earthwork for the project was completed in 2019. The uplift achieved will determine the quantity of 404 Credits available at the mitigation bank. Wetland biologists from RestorCap completed the wetland delineation in September and October of 2023, and a survey of the High Tide Line was completed by AKS Engineering & Forestry (AKS) in November 2023.

This delineation satisfies Mitigation Banking Instrument (MBI) Performance Standard "completion of post-construction delineation" from Table D2: Credit Release Schedule, Exhibit D of the MBI (Grette Associates 2021).

1.1 Site Overview

The Site is a 27.83-acre off-channel habitat restoration project located along the west side of the lower Willamette River, from river mile 4.5 to 4.8 (Figure 1). The Site was designed to provide off-channel and cold water refugia to support-sub yearling and yearling juvenile Chinook salmon that rear within this portion of the lower Willamette River, as well as riparian and upland habitat to serve a range of wildlife species including eagle, other native birds, and mink. Restoration of the Site included construction of off-channel habitat (OCH), active channel margin (ACM), riparian, and upland habitats, as well as daylighting Linnton Creek (Figure 3). Earthwork was completed in 2019. Initial planting was completed in early 2020 with additional planting in early 2021.

The Site is approved by the Interagency Review Team co-chaired by the Oregon Department of State Lands (DSL) and the U.S. Army Corps of Engineers (Corps) to provide mitigation credits for unavoidable impacts to aquatic habitats in accordance with Section 10 of the Rivers and Harbors Act, Section 404 of the Clean Water Act, and Oregon DSL Removal/Fill permits.

2. Description of the Study Area

2.1 Site History

The Linnton Mill operated from 1894 to 2001, when industrial use of the site ceased and the site was left as a dilapidated plywood mill and maritime pier, with paved and gravel roadways and parking areas, paved and gravel storage areas, and unmaintained vegetated areas. The entire property was developed and operated as a sawmill from 1894 to 1947, when it was destroyed by fire. The northern part of the property was then used as a plywood mill from 1951 to 2001, with the southern portion of the property used for stockpiling/dewatering of Columbia River sand from 1997 until the early 2,000's (CH2M Hill 2007).

Prior to restoration, which was completed in 2019, the site consisted of a flat, high-bank area at the top of a steep, armored, bank of the Willamette River. The flat upland and over-steepened banks were created with fill decades prior. There is no indication that the site was created by fill placed in the Willamette River (i.e., former waters of the U.S.), but rather was created by fill placed in uplands to raise the elevation to be usable, flat, waterfront industrial property.

In addition, two drainages were piped under the property and daylighted on the Willamette River shoreline. It is unknown when the piping occurred, but likely several decades ago. Site conditions within the Linnton Mill site between 2012 and 2016 had not changed significantly, according to Grette (2016), and the wetland depressions mapped onsite were non-jurisdictional.

RestorCap began restoration work on the Site in 2017. The first phase included removal of dilapidated, abandoned infrastructure, including all overwater pier structures and 1,978 piles (1,488 removed and 499 cut at or below grade) from the Willamette River. Buildings, concrete, and asphalt were removed from the uplands, and shoreline armoring was removed from the ACM. The ACM was regraded and planted to mimic a more natural shoreline and expand ACM habitat. To construct the OCH in the southern portion of the Site, RestorCap excavated upland earth, which included 2,485 yards of earth below the OWH line, and placed it in uplands in the northern end of the Site. An offshore island was included in the design to create protected OCH. Linnton Creek was daylighted approximately 400 feet to the west of its original outfall location, and it now provides year-round freshwater inputs to provide cold water refugia. The OCH was designed to be flooded and provide refugia for sub-yearling and yearling juvenile Chinook salmon during rearing and outmigration, and to provide habitat for avian species and other wildlife during seasonal low-water periods.

Sixty-five habitat structural features were installed throughout the Site, including five log structures, 20 habitat logs with rootwads, 15 snag logs, 15 boulder clusters, and 10 debris piles. Several were placed below the OHW line to provide refugia for juvenile salmonids.

The Site's Planting Plan was executed from 2019 through 2021. Native seeding occurred in November 2019 and native plantings were installed though 2021, including herbaceous plugs and woody/shrub pole cuttings. Seeding and planting species were chosen and installed based on elevation and designed habitat type in each elevation zone. Planting palettes and zones of planting from the as-built report and presented as Attachment B.

2.2 Existing Conditions

With the completion of earthwork in 2019, the Site has been steadily developing into valuable habitat for native plant, fish, and other wildlife species. The Site was developed relatively recently, which means the vegetation communities are in the early successional stages, and hydric soils in wetland areas are still developing. Additionally, remnants of the old mill fire in the form of burnt pieces of wood are still present in small patches in the southern portion of the Site, but they don't appear to negatively affect vegetative growth. The Site is functioning as designed, with expanded ACM and shallow water habitat, functional OCH that floods seasonally, and riparian and upland habitats that contribute to the habitat value of the wetlands and waters. More details about existing conditions are provided below.

2.2.1 Vegetation

Vegetation at this restoration Site was seeded/planted within the last four years. Seeding and planting occurred as per the Habitat Development Plan (HDP) and MBI. Seeded plant species have been establishing for four years, and larger plugs, pole cuttings, and trees have been establishing over the past two to three years. The Site is in the monitoring and adaptive management period, which means RestorCap actively monitors the vegetative cover and species, and also manages for non-native invasive species. Highly invasive, non-native plant species are removed by hand within wetted areas and occasionally sprayed in non-wetted areas as appropriate. Vegetation throughout the Site is in an early successional stage of development, characterized primarily by herbs, with shrubs, saplings, and some trees scattered throughout. The OCH and fringe wetland upslope have seen substantial vegetative development, particularly where the seep in the southwest provides perennial hydrology.

Off-Channel Habitat and Fringe/Seep Wetlands

In this area, red alder (*Alnus rubra*), black cottonwood (*Populus trichocarpa*), and several willow species (*Salix* spp.) have grown into trees up to 25 feet in height. Douglas spiraea (*Spiraea douglasii*), willows, cottonwood, and cluster rose (*Rosa pisocarpa*) are common shrub and sapling species in the OCH and fringe wetlands; slender willow herb (*Epilobium ciliatum*), American brooklime (*Veronica americana*), slender hairgrass (*Deschampsia elongate*), and soft rush (*Juncus effusus*) are characteristic herbs.

At lower elevations of the OCH, persistent emergent vegetation is present. Areas fed by seep hydrology tend to have greater vegetative cover, which is dominated by Sitka willow (*Salix sitchensis*), water purslane (*Ludwigia palustris*), marsh cudweed (*Gnaphalium uliginosum),* bentgrass, soft rush, and redroot flatsedge (*Cyperus erythrorhizos*). Other areas in this zone are characterized by moderate cover of native herbs, such as toad rush (*Juncus bufonius*), rough cocklebur (*Xanthium strumarium*), pine bluegrass (*Poa secunda*), and Spanish clover (*Acmispon parviflorus*).

Active Channel Margin

Vegetated portions of the ACM include a narrow band of hillslope vegetation dominated by herbaceous species, including bentgrass (*Agrostis exarata*), yarrow (*Achillea millefolium*), Roemer's fescue (*Festuca roemeri*), and Western fescue (*Festuca occidentalis*). Common shrub and sapling species in this habitat type include common snowberry (*Symphoricarpos albu*s), cluster rose, willow species, and red osier dogwood (*Cornus stolonifera*). Willow species, and black hawthorn (*Crataegus douglasii*) are representative of the tree layer. The tree and sapling/shrub layers are lower in overall cover and plant height compared to the OCH, particularly the seep-fed areas.

Uplands

Upland areas throughout the site are dominated by herbaceous species with shrubs and trees increasing in cover and height each year. Dominant herbs include yarrow, blue wildrye (*Elymus glaucus*), bog lupine (*Lupinus polyphyllus*), miniature lupine (*Lupinus bicolor*), bentgrass, pine bluegrass, and Roemer's fescue. Planted shrubs are scattered throughout the uplands and include tall Oregon grape (*Mahonia aquifolium*), Lewis' mock orange (*Philadelphus lewisii*), cascara buckthorn (*Frangula purshiana*), and Pacific blackberry (*Rubus*

ursinus). Mature trees in this habitat type are primarily Oregon white oak (*Quercus garryana*).

2.2.2 Hydrology and Precipitation Analysis

Hydrology at the Site was designed to be dominated by the Willamette River, with a large prism of inundation moving into the Site along the ACM and OCH areas. Hydrologic inputs from the Willamette River fluctuate daily with tidal action, and seasonally with rainwater input and dam releases upriver. Typical water elevations range from approximately +5 ft to +20.1 ft NAVD88 in this portion of the river. The elevations of the OCH portion of the Site were designed through hydrologic modeling. An inundation analysis was prepared to assess frequency of inundation at key elevations which were subsequently used to define and design habitat types for the completed Project. Based on that analysis, the OCH portion of the Site was designed with its lowest portion at approximately +5 ft NAVD88 to provide inundation throughout the year, and the flow-through channel elevation at +10 ft NAVD88 to receive river flow-through during spring months. Basis of Design inundation analysis tables from Waterways (2016) are provided in Attachment A.

Hydrologic inputs at the Site also include Linnton Creek, which empties into the OCH, and a seep that appears to move under Highway 30 and emerge in the southern portion of the site, on a slope, draining into the OCH on either side of Linnton Creek. Prior to the initiation of restoration activities, several subsurface investigations at the Site (Farallon 2016) and at the BP property (AECOM 2017) to the south during the summer months identified groundwater elevations ranging from elevation 20 to 30 feet (NAVD 88) at the west side of the project area where the seep is now visible on Site. The OCH was designed at an elevation that would facilitate daylighting of groundwater as an additional cold water input. Following the completion of earthwork in 2019, seep hydrology and flow patterns became visible on aerial imagery in the southern portion of the Site, where the seep drains into the OCH. During monitoring and fieldwork, RestorCap has observed saturation and in some locations inundation year-round downslope of the seep. Based on the timing of these previous studies, as well as four years of visual observations, the seep appears to be a relatively permanent and perennial source of hydrologic input to the Site. There are no indicators that this source of subsurface hydrology could be altered or eliminated in the future, as flows come from Forest Park and are independent of the surface and stormwater flows west of Highway 30.

An unnamed tributary along the northern Site boundary is conveyed through the Site via a culvert, which daylights immediately adjacent to the Willamette River. This culvert was re-routed during restoration to the north of its original location, where it was placed outside the upland fill area.

Precipitation is an additional source of hydrology at the Site. The annual average rainfall for the Portland International Airport climate station, approximately 8.25 miles east of the Site, is 37.07 inches (USDA 2023a). A WETS analysis for the Portland International Airport climate station was performed for the three-month (July, August, September) period preceding the site visits. A total of 1.87 inches of precipitation occurred, which is normal for this period of time. In July, 0.00 inches of precipitation occurred (average 0.51 inch, dry), 0.62 inch occurred in August (average 0.54 inch, normal), and 1.25 inches occurred in September (average 1.52 inches, normal) (NOAA 2023). Table 1 below shows the WETS analysis.

Table 1. NRCS WETS table analysis

Preceding Month	WETS Rainfall Percentile (inches)		Measured Rainfall[1] (inches)	Conditions[2]	Condition Value[3]	Month Weight	Value
	30%	70%					
July	0.24	0.64	0	Dry	1	1	1
August	0.23	0.84	0.62	Normal	2	2	4
September	0.77	2.01	1.25	Normal	2	3	6
Sum:							11

[1] Observed rainfall for the month

[2] Dry conditions are below 30% WETS table value, Normal conditions are between 30% and 70% of the WETS table values, Wet conditions are above 70% of the WETS table value.

[3] dry equals a value of 1, normal equals a value of 2, wet equals a value of 3

2.2.3 Soils

The NRCS Web Soil Survey for the Site (USDA 2023b) identifies two soil types in the study area: Urban land, 0 to 3 percent slopes (50A), and Water (W) (see Attachment C). According to the NRCS, the Urban land soil complex is not classified as hydric. The soil mapping does not appear to have been updated since the completion of restoration; existing NRCS mapping reflects historical conditions at the site.

Soils throughout the Site qualify as problematic, as they fall under the problematic soil condition "recently developed wetlands" described in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Corps Manual; Environmental Laboratory 1987). The Site was restored only four years prior to the completion of this delineation. In this short time, it is unlikely that wetland soils have developed distinct hydric soil characteristics. Additionally, soils excavated from what is now the OCH may have developed hydric soil characteristics from the years of draining dredge spoils. These remnant hydric soil indicators may be present in the mounded upland fill area in the northern portion of the Site.

3. Methods

RestorCap biologists Kate Allan and Will Ohlenforst performed a delineation of wetlands within the Site on September 25 and 26, and October 26 and 27, 2023. Wetland resources were delineated following the methods outlined in *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Corps Manual; Environmental Laboratory 1987), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region – Version 2.0* (WMVC Supplement; Corps 2010). These methods use a three - parameter approach for identifying and delineating wetlands: the presence of field indicators for hydrophytic vegetation, hydric soils, and hydrology. They also include guidance for identifying problematic conditions for each indicator.

The Site was investigated and data was collected to determine the presence or absence of wetland indicators. Fourteen sample points were taken in which soil pits were excavated and examined for hydrology and hydric soil indicators. Vegetation data was also collected at each point for the tree, sapling/shrub, and herbaceous strata over a radius around the sample point recommended for each in the Corps Manual. The wetland

indicator status of plant species observed was derived from the *Indicator Status of Plants Found in Oregon Wetlands* (DSL 2009). The Oregon Department of State Lands requires the use of this combined 1988 and 1993 National Wetland Plant List (NWPL) list. Prior to the site visit, historical aerial imagery from Google Earth (2023), the Soil Survey of Multnoma County (USDA 2023b), and the National Wetlands Inventory (NWI; USFWS 2023) were reviewed.

Tidally influenced non-wetland waters were delineated by Connor Huske of AKS on November 21 and 22, 2023 using the ordinary high water (OHW) elevation of +20.1 feet NAVD88. This elevation was established in the MBI as the upper limit of non-wetland waters, and specifically the upper edge of the Palustrine Habitat type. The surveyor recorded points along the +20.1 ft NAVD88 elevation contour on the entire site, including the "island" feature in the off-channel habitat, using RTK equipment capable of sub-meter horizontal precision. This contour was recorded at a maximum spacing of 10 m along the entire shoreline. RTK was used to map the OHW mark by field tying natural ground and break lines for 1-foot contours.

The non-tidal waters of Linnton Creek were delineated using the channel width (as it is a perennial feature) supplemented by *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (Mersel and Lichvar 2014).

4. Results

Descriptions of the aquatic resources identified within the Site that are potentially jurisdictional are provided in the following sections. A summary of aquatic resource acreages is provided in Table 2. Maps showing the location and extent of aquatic resources mapped within the Site are provided as Figure 4 in Attachment A. WETS data for aerial imagery and fieldwork dates are included as Attachment D. Wetland delineation data forms are provided as Attachment E. Photographs of the Site are provided as Attachment F.

4.1 Extent of Wetlands and Waters

Following the completion of construction of the Linnton Mill Restoration Site, wetlands and waters within the Site were greatly expanded. Prior to restoration, no wetlands were present, and open water was limited to the outboard edge of the constructed, linear shoreline, as per the 2016 Wetland Determination Report (Grette 2016). As part of restoration plan, a large side channel was excavated in the southeastern portion of the Site, moving the shoreline landward and creating shallow water habitat where uplands were formerly located. Additionally, a section of Linnton Creek was daylighted within the Site, adding to the overall acreage of open water. Wetlands formed in the upper portions of the off-channel habitat, generally below the OHW line. Pilings were also removed in the Shallow Water Zone, restoring 0.22 acre of open water.

One habitat element delineated as wetlands was not part of the original design: a seep in the hillslope in the southwestern Site has facilitated the formation of extensive seep/fringe wetlands along the OHW line. The extent of wetlands and non-wetland waters delineated in 2023 is presented in Table 2 below and described in detail in the following sections.

Table 2. Extent of Potentially Jurisdictional Wetlands and Non-wetland Waters in 2023

Feature Type	MBI Credit Type	Acres
Wetlands		
Emergent and Shrub/Scrub Wetland – OCH	Palustrine	3.41
Emergent and Shrub/Scrub Wetland – ACM	Palustrine	1.21
Fringe Seep Wetland	(proposed Palustrine/Wetland)	0.51
Depressional Wetland	N/A	0.07
	Total:	**5.20**
Non-wetland Waters		
Linnton Creek - OCH	Riverine	0.01
Side Channel – OCH	Riverine	0.97
Willamette River – ACM	Riverine	2.09
Willamette River – Shallow Waters	Riverine	5.56
	Total:	**8.63**

4.2 Non-wetland Waters

Potentially jurisdictional non-wetland waters within the Site include:

- Unvegetated waters of the active channel margin (ACM) of the Willamette River, below +13 feet NAVD88
- Waters of the off-channel habitat (OCH) of the Willamette River without persistent emergent vegetation, and
- The unvegetated Linnton Creek channel.

The Riverine portion of ACM along the Willamette River includes open water from the elevation 13 feet NAVD88 and below, excluding the OCH. This area begins at the shoreline and extends toward the center of the river, with relatively steep slopes into deep water habitat. It is unvegetated or not persistently vegetated due to the frequency of inundation. The level of inundation depends on rainfall, tidal fluctuations, and dam releases upstream in the Willamette River. The Willamette River and ACM are perennial waters. Rip rap and piles were removed from the ACM during restoration to further expand open waters in this area compared to pre-restoration conditions. These waters

are considered the "Riverine" habitat type in the MBI for the purposes of mitigation crediting.

The OCH includes shallow waters in the side channel to the Willamette River which was excavated during Site restoration in 2019. It generally includes unvegetated mudflats and low flow channel in the deeper areas, and seasonally vegetated wetlands along its upper margins. The upper limit is generally mapped at 13 feet NAVD88 as this is the area with more frequent inundation and less persistent vegetation that the upslope OCH wetland area. The level of inundation depends on rainfall, tidal fluctuations, and dam releases upstream in the Willamette River. The OCH is intermittently inundated upstream of its confluence with Linnton Creek, and perennially inundated downstream of Linnton Creek, though with a large prism of water depth that varies seasonally both up and downstream of Linnton Creek. The average width of the OHWM is approximately 250 feet. All the OCH non-wetland waters on Site were created during restoration; none were mapped in the 2016 wetland determination report (Grette 2016). These waters are considered the "Riverine" habitat type in the MBI for the purposes of mitigation crediting.

Linnton Creek was a formerly culverted creek that was daylighted through the Site, with its new culvert opening over 400 feet west/southwest of the historical opening. It flows perennially, emptying into the OCH waters and flowing out the downstream channel mouth into the Willamette River year-round. Hydrological inputs include rainwater and presumably stormwater from the upstream watershed, which drains the open space in Forest Park and a small residential neighborhood located west of Highway 30. The average width of the OHWM is approximately 4 feet. All open water currently mapped in Linnton Creek within the Site was daylighted during restoration; none was present in the 2016 Wetland Determination Report, which describes the Linnton Creek outfall as a culvert emptying into the Willamette River above the OHW line on the pre-restoration riverbank (Grette 2016). These waters were mapped in the MBI as the "Palustrine" habitat type in the MBI for the purposes of mitigation crediting, likely due to insufficient information to predict the channel width after daylighting. For the purposes of this report, we have mapped the width of the unvegetated channel as "Riverine" as it has an OHWM is most accurately characterized as an unvegetated channel.

4.3 Wetlands

4.3.1 Riverine Wetlands

Active Channel Margin. Emergent and shrub/scrub wetland in the ACM generally occurs along steep slopes of the Site along the Willamette River. It includes persistently vegetated areas between the elevations of the OHW line (+20.1 feet NAVD88) and ACM non-wetland waters which occur below 13 feet NAVD88. Primary hydrologic inputs include fluctuations in water elevation of the Willamette River which seasonally floods these wetlands, and minor inputs include precipitation from the limited on-Site watershed. As restoration of this Site was recently completed, vegetation is in the early successional stage of development and is therefore characterized by herbaceous and sapling/scrub communities. Dominant vegetation in these areas includes a mix of hydrophytic and upland species due to the large water elevation prism that provides seasonal hydrologic input to this area. Dominant species include bentgrass (FACW), yarrow (FACU), Roemer's fescue (NL), common snowberry (FACU), and Sitka willow

(FACW). Vegetation throughout the Site is managed to promote native species and remove invasive non-natives.

Soils in these wetlands were historically fill soils placed along the Willamette River for industrial development many decades ago, and the NRCS custom soil resource report for the Site mapped the soil type "Urban land, 0 to 3 percent slopes (50A)" throughout this wetland (USDA 2023b). A portion of these wetlands were present prior to restoration, and a portion, particularly along the OCH channel mouths and island, were created through restoration. These wetlands are considered the "Palustrine" habitat type in the MBI for the purposes of mitigation crediting.

Off-channel Habitat. Emergent and scrub/shrub wetland in the OCH occurs along gradual slopes within the OCH floodplain between the OHW line of 20.1 feet NAVD88 and OCH non-wetland waters which occur below 13 feet NAVD88. Soils mapping by the NRCS is outdated ("Urban land, 0 to 3 percent slopes [50A]") in this area, as soils were excavated from formerly developed land, and remaining soils contain a mixture of native and fill materials. Restoration was completed in 2019, meaning soils have only had four years to develop hydric soil indicators.

Primary hydrologic inputs include fluctuations in water elevation of the Willamette River, as well as precipitation, Linnton Creek, and seeps that convey water under Highway 30 and into the southwest portion of the Site. Northern and eastern sections of this wetland area are seasonally flooded. Dominant vegetation is hydrophytic and includes toad rush (FACW), rough cocklebur (FAC), pine bluegrass (NL), and Sitka willow (FACW). The southwest portion of these wetlands are perennially fed by seeps, which provide hydrologic input along roughly 400 feet in length starting generally between 5 and 10 feet in elevation above the OHW line. Saturation, and in some areas inundation, is present year-round, and drainage patterns are visible on aerial imagery. Substantial willow thickets have developed, and hydrophytic vegetation dominates, with representative species including Sitka willow (FACW), Pacific willow (*Salix lasiandra*; FACW), black cottonwood (FAC), soft rush (FACW), water purslane (OBL), marsh cudweed (NL), bentgrass (FACW), and redroot flatsedge (OBL).

4.3.2 Seep/Fringe Wetlands

Seep/fringe wetlands occur above the OHW line in the southwest portion of the Site. They abut and are hydrologically connected to the OCH emergent and scrub/shrub wetlands, and ultimately to the Willamette River. As noted above, the seep that feeds this wetland is approximately 400 feet long and drains out of the hillslope between roughly 20 and 30 feet NAVD88. Aerial imagery shows seep hydrology collecting below the toe of the slope and draining into the OCH (Google Earth 2023; Attachment F). In its upper elevations, this wetland occurs along 15-30% slopes, so no ponding occurs, and the primary indicators of wetlands hydrology are oxidized rhizospheres along living roots, and the geomorphic position of this wetland in an area where groundwater discharges.

The vegetation along the wetland slope is dominated by slender hairgrass (FACW), and sporadic soft rush (FACW), with scattered shrubs, saplings, and trees including Sitka willow (FACW), Pacific willow (FACW), black cottonwood (FAC), and red alder (FAC) (e.g., SP4, SP6, SP8, SP10, SP13). Below the toe of slope, a seep wetland terrace forms where hydrology collects and forms saturated and even inundated areas year-round (e.g., SP7, SP11). Representative vegetation on the seep terrace includes Sitka willow (FACW), Pacific willow (FACW), Scouler's willow (*Salix scouleriana*; FAC), red alder (FAC), soft rush

(FACW), American brooklime (OBL), slender willow herb (FACW) and slender hairgrass (FACW).

Soils were problematic throughout the site, including these wetlands, as they fall under the problematic soil condition "recently developed wetlands" as the area was excavated for wetland creation in 2019. Due to historical placement of fill and recent excavation to expose the soils now at the surface, soil characteristics showed similarities between upland and wetland points, particularly along the upslope boundary. However, wetland points had substantially more redox features and depleted matrix than upland points, and upland points generally lacked redox along living roots (an indicator of recent, rather than remnant, wetland hydrology). Although they qualify as problematic soils, all wetland soil points also qualified for at least one hydric soil indicator, such as Depleted Matrix (F3), Redox Dark Surface (F6), or Redox Depressions (F8), as well as hydrophytic vegetation and wetland hydrology indicators.

The boundary between seep/fringe wetlands and uplands was generally delineated using vegetation and hydrology indicators, though hydric soil indicators also tended to follow the same boundary. The transition from wetlands to uplands was typically visible in the vegetation shift from slender hairgrass-dominant to a mix of slender hairgrass (FACW), common yarrow (FACU), bog lupine (FAC), miniature lupine (UPL), and Roemer's fescue (NL). Aerial imagery is also beginning to show this vegetation shift as vegetation matures on the Site, with the common yarrow following the upper edge of the seep (Google Earth 2023; Attachment F). The vegetation line also followed the boundary where hydrological indicators fade into the uplands. The presence of oxidized rhizospheres increases from the wetland boundary downslope, as does the abundance of redox features and distinct, depleted soil colors. Collecting data from transects moving from downslope into uplands helped determine the seep wetland boundary.

Seep hydrology and the formation of these wetlands were considered in the Site's design, but their location and scale could not be predicted. Thus, they are currently not accounted for in the mitigation crediting for the restoration project or described in the plans. Our assessment is that this area is a potentially jurisdictional Palustrine emergent and scrub/shrub wetland.

4.3.3 Depressional Wetlands

Although not likely to be jurisdictional due to their lack of hydrological connectivity to navigable waters, two depressional wetlands were mapped on the site for completeness. These wetlands were not part of the restoration project design and appear to have formed in depressions left after construction. The wetlands are located along the central western Site boundary, between an upland hill and the old site entry gate adjacent to the railroad tracks. Vegetation was clearly hydrophytic in the uneven depressions, and was dominated by soft rush (FACW), one-sided sedge (*Carex unilateralis*; FACW), and slough sedge (*Carex obnupta*; OBL). Hydrological indicators included algal matting, water-stained leaves, and oxidized rhizospheres along living roots. As with the rest of the Site, soils were problematic, and rocky fill in the soil caused refusal at 4 inches. The top layer of soil showed hydric soil indicators Redox Dark Surface and Redox Depressions.

5. Discussion

The purpose of delineating wetlands and waters at the Site was to determine the actual acres of wetlands and non-wetland waters created through the restoration project. Earthwork for the project was completed in 2019. The uplift achieved will determine the quantity of 404 Credits available at the mitigation bank.

The quantity and distribution of wetlands and waters at the Site have expanded since the completion of construction. This is largely due to the addition of seep wetlands located along the fringe of the side channel in the OCH, which account for 0.51 acre of additional wetland (palustrine habitat) that was not accounted for in the Site design. This wetland supports the greatest vegetative cover/density on the site, and it is dominated by hydrophytic vegetation. It is fed by perennial seep hydrology, and both saturation and inundation are present year-round. The source of hydrology appears to be subsurface inputs originating west of Highway 30 in Forest Park. Based on the land use restrictions of the City park, no development or other changes that may change the seep hydrology at the Site are anticipated.

The other minor shifts in the quantities of riverine and palustrine habitats compared to the as-built report are likely due to erosion along the hillside, particularly in the seep area where perennial flow likely moves sediment. Shifts may also be the result of changes in vegetative growth since the as-built survey. RTK surveys are fairly accurate in vegetated areas; however, because the largest deviation from the previous OHW line occurs in the most densely vegetated area, this may account for some of the changes. Additionally, 0.01 acre of palustrine habitat was moved to riverine because Linnton Creek was previously considered palustrine, but delineated as a channel in the 2023 delineation.

As noted above, changes in wetlands and waters acreages will affect credit accounting for the Site. We assume that before the Linnton credit ledger is updated, a verification of the wetland delineation will be performed by the Corps.

6. Summary

The conclusions of this report are based on conditions observed at the time of the field delineations.

6.1 Potentially Jurisdictional Wetlands

Based on the findings of the wetland delineation, the Site contains approximately 5.13 acres of potentially jurisdictional wetlands and 0.07 acre of non-jurisdictional, isolated, seasonal depressional wetlands, as summarized in Table 2. Areas mapped as wetlands were dominated by hydrophytic vegetation, with FAC, FACW and OBL classified plants, and also contained hydric soil and wetland hydrology indicators. Wetlands were distinguished from non-wetland waters by the presence of greater than 5 percent absolute cover of hydrophytic vegetation. The three wetland types delineated within the Site are emergent and shrub/scrub wetland, fringe seep wetland, and seasonal depressional wetland.

6.2 Potentially Jurisdictional Non-Wetland Waters

Based on the findings of the wetland delineation, the Study Area contains approximately 8.63 acres (approximately 2.500 linear feet) of potentially jurisdictional non-wetland waters (as summarized in Table 2). Non-wetland waters were determined based on the presence of an OHWM; the two types of non-wetland waters delineated at the Site were perennial river (Willamette River) and perennial creek (Linnton Creek). All delineated features appear to be tributary to a "navigable waters of the U.S." (the Willamette River) and were therefore assumed to be jurisdictional under Section 404 of the Clean Water Act.

7. References

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ATTACHMENT A. FIGURES

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FIGURE 1

Location Map

Linnton Bank Boundary

Linnton Mill Restoration Site
Portland, Oregon

Data Source(s): RestorCap, Grette and Associates, Waterways Consulting, Inc.
Base Source: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Google, County of Clark, WA, Oregon Metro, Oregon State Parks, State of Oregon GEO, WA State Parks GIS, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of

RestorCap
Connecting Capital with Nature

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

S.W.1/4 SEC.2 T.1N. R.1W. W.M.
MULTNOMAH COUNTY
1" = 200'

1N 1W 2C
PORTLAND

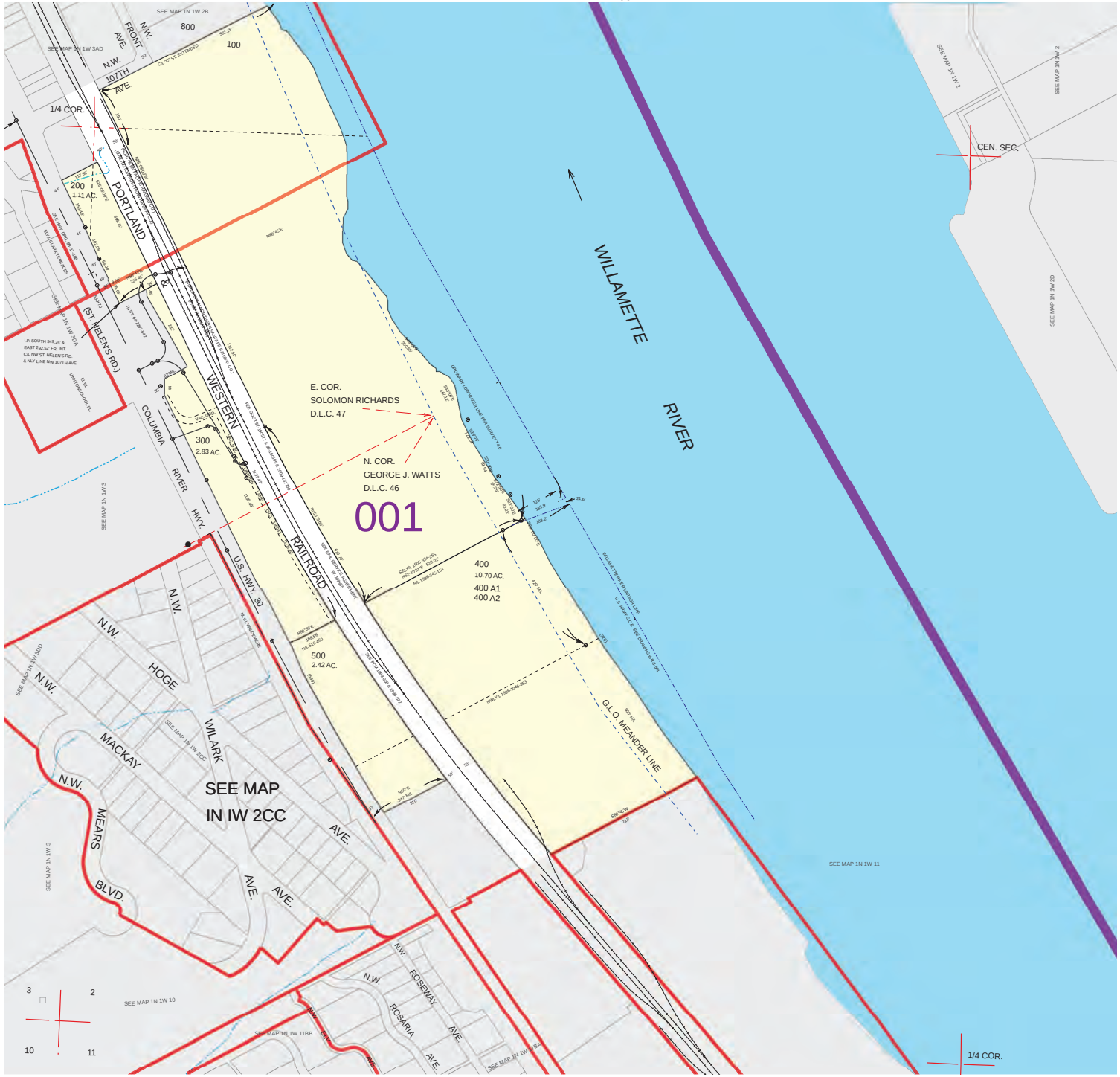

FIGURE 2

Assessor's Tax Lots

Linnton Mill Restoration Site
Portland, Oregon

1N 1W 2C
PORTLAND

6/6/2019

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N

0 55 110 220
Feet

FIGURE 3

Linnton Habitat Types

Linnton Mill Restoration Site
Portland, Oregon

Habitats within Project Area

- Upland / Forested (4.98 ac)
- Riparian (9.37 ac)
- Off-Channel (4.45 ac)
- Active Channel Margin (3.19 ac)
- Shallow (5.57 ac)

Data Source(s): RestorCap, Grette and Associates
Base Source: Maxar, Microsoft, Esri Community Maps Contributors, County of Clark, WA, Oregon Metro, Oregon State Parks, State of Oregon GEO, WA State Parks GIS, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, Google
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RestorCap
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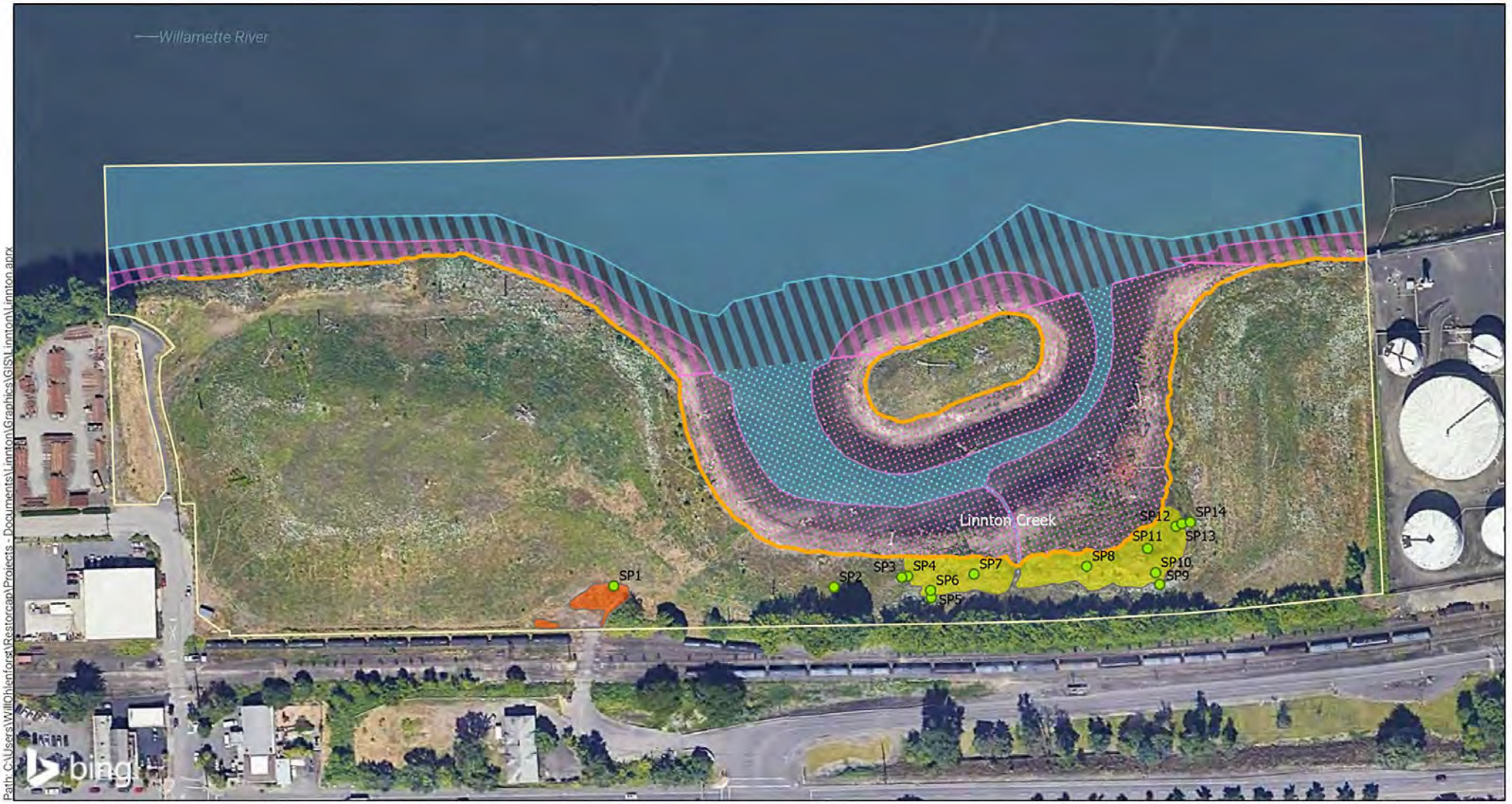

Figure 4

Potentially Jurisdictional Wetlands and Waters

Linnton Mill Restoration Site

Portland, Oregon

Legend

- Linnton Bank Boundary
- Sample Points
- 2023 OHW
- Emergent and Shrub/Scrub Wetland - OCH (3.41 ac)
- Emergent and Shrub/Scrub Wetland - ACM (1.21 ac)
- Fringe Seep Wetland (0.51 ac)
- Depressional Wetlands (0.07 ac)
- Linnton Creek - OCH (0.01 ac)
- Side Channel - OCH (0.97 ac)
- Willamette River - ACM (2.09 ac)
- Willamette River - Shallow Waters (5.56 ac)

Data Source(s): RestorCap, Waterways
Base Source: © 2023 Microsoft Corporation © 2023 Maxar ©CNES (2023) Distribution Airbus DS, Google
12/30/2023 5:08 PM

RESTORCAP
Connecting Capital with Nature

Table 1: Willamette at Portland Exceedance Probabilities			
Frequency of Inundation	Elevations in NAVD 88 (feet)		
	Nov-Mar	Apr-Jul	Aug-Oct.
1%	19.5	21.6	11.4
5%	15.7	18.3	10.5
10%	14.1	16.1	10.0
15%	13.2	15.1	9.6
20%	12.6	14.4	9.3
25%	12.1	13.8	9.1
30%	11.7	13.2	8.8
40%	11.0	12.4	8.4
45%	10.7	11.9	8.2
50%	10.4	11.6	8.0
55%	10.2	11.2	7.8
60%	9.9	10.9	7.7
65%	9.7	10.5	7.5
70%	9.4	10.2	7.3
75%	9.1	9.8	7.1
80%	8.8	9.4	6.9
85%	8.5	8.9	6.7
90%	8.1	8.3	6.7
95%	7.6	7.5	6.0
99%	6.8	6.4	5.4

Figure 5. Table 1 from the Linnton Mill Site Habitat Restoration - Basis of Design Memorandum by Waterways (2016), depicting the frequency of inundation at various elevations. River stage exceedance probabilities for the project area were based on the long-term gage record for the Willamette River at the Morrison Bridge was used (USGS Gage ID 14211720).

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Figure 6. Table 3 from the Linnton Mill Site Habitat Restoration - Basis of Design Memorandum by Waterways (2016). Based on the long-term gage record for the Willamette River at the Morrison Bridge was used (USGS Gage ID 14211720).

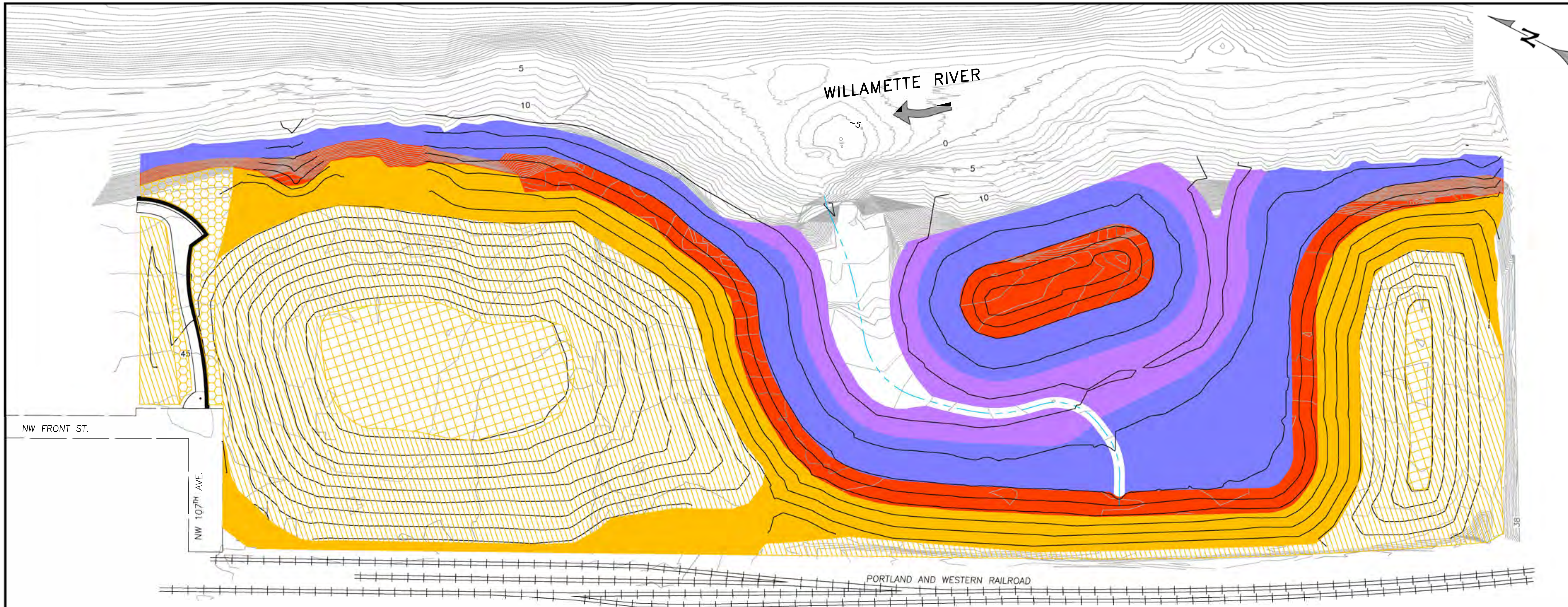
Frequency of Inundation for Alcove/Slough/Open Water Habitat: Base Elevation 5 feet			
Frequency of Inundation	Elevations in NAVD 88 (ft.)		
	Nov-Mar	Apr-Jul	Aug-Oct.
1%	19.5	21.6	11.4
5%	15.7	18.3	10.5
10%	14.1	16.1	10.0
15%	13.2	15.1	9.6
20%	12.6	14.4	9.3
25%	12.1	13.8	9.1
30%	11.7	13.2	8.8
40%	11.0	12.4	8.4
45%	10.7	11.9	8.2
50%	10.4	11.6	8.0
55%	10.2	11.2	7.8
60%	9.9	10.9	7.7
65%	9.7	10.5	7.5
70%	9.4	10.2	7.3
75%	9.1	9.8	7.1
80%	8.8	9.4	6.9
85%	8.5	8.9	6.7
90%	8.1	8.3	6.4
95%	7.6	7.5	6.0
99%	6.8	6.4	5.4

Frequency of Inundation for High Flow Channel/Alcove/Mud Flat: Base Elevation 9.5 feet			
Frequency of Inundation	Elevations in NAVD 88 (ft.)		
	Nov-Mar	Apr-Jul	Aug-Oct.
1%	19.5	21.6	11.4
5%	15.7	18.3	10.5
10%	14.1	16.1	10.0
15%	13.2	15.1	9.6
20%	12.6	14.4	9.3
25%	12.1	13.8	9.1
30%	11.7	13.2	8.8
40%	11.0	12.4	8.4
45%	10.7	11.9	8.2
50%	10.4	11.6	8.0
55%	10.2	11.2	7.8
60%	9.9	10.9	7.7
65%	9.7	10.5	7.5
70%	9.4	10.2	7.3
75%	9.1	9.8	7.1
80%	8.8	9.4	6.9
85%	8.5	8.9	6.7
90%	8.1	8.3	6.4
95%	7.6	7.5	6.0
99%	6.8	6.4	5.4

Frequency of Inundation for Scrub/Shrub Habitat Elevation Range: 13 feet to 20.1 feet			
Frequency of Inundation	Elevations in NAVD 88 (ft.)		
	Nov-Mar	Apr-Jul	Aug-Oct.
1%	19.5	21.6	11.4
5%	15.7	18.3	10.5
10%	14.1	16.1	10.0
15%	13.2	15.1	9.6
20%	12.6	14.4	9.3
25%	12.1	13.8	9.1
30%	11.7	13.2	8.8
40%	11.0	12.4	8.4
45%	10.7	11.9	8.2
50%	10.4	11.6	8.0
55%	10.2	11.2	7.8
60%	9.9	10.9	7.7
65%	9.7	10.5	7.5
70%	9.4	10.2	7.3
75%	9.1	9.8	7.1
80%	8.8	9.4	6.9
85%	8.5	8.9	6.7
90%	8.1	8.3	6.4
95%	7.6	7.5	6.0
99%	6.8	6.4	5.4

Frequency of Inundation for Forested Riparian Habitat Elevation Range: 20.1 feet to 30.4 feet			
Frequency of Inundation	Elevations in NAVD 88 (ft.)		
	Nov-Mar	Apr-Jul	Aug-Oct.
1%	19.5	21.6	11.4
5%	15.7	18.3	10.5
10%	14.1	16.1	10.0
15%	13.2	15.1	9.6
20%	12.6	14.4	9.3
25%	12.1	13.8	9.1
30%	11.7	13.2	8.8
40%	11.0	12.4	8.4
45%	10.7	11.9	8.2
50%	10.4	11.6	8.0
55%	10.2	11.2	7.8
60%	9.9	10.9	7.7
65%	9.7	10.5	7.5
70%	9.4	10.2	7.3
75%	9.1	9.8	7.1
80%	8.8	9.4	6.9
85%	8.5	8.9	6.7
90%	8.1	8.3	6.4
95%	7.6	7.5	6.0
99%	6.8	6.4	5.4

ATTACHMENT B. AS-BUILT PLANTING PALETTE



PLANTING PLAN

SCALE: 1" = 70'

LEGEND

- (E) 1' CONTOURS
- PROPOSED 5' CONTOURS
- (E) RAILROAD
- PROJECT BOUNDARY
- (E) ROADWAYS
- (N) FLOW LINE
- ZONE 1A
- ZONE 1B
- ZONE 2
- ZONE 3 (LOWER SLOPE)
- ZONE 3 (TRAIL)
- ZONE 3 (UPPER SLOPE)
- ZONE 3 (TOP OF HILLS)

NOTES:

1. SEE PLANTING LIST AND SCHEDULES ON RD7.
2. NO PLANTING OCCURRED BELOW ELEVATION 13.0' (NAVD88) IN THE ACTIVE CHANNEL MARGIN ZONE (WILLAMETTE RIVER SHORELINE).
3. PLANTING ACTIVITIES STARTED IN NOVEMBER 2019 AND CONCLUDED IN FEBRUARY 2020.

WATERWAYS CONSULTING INC.

Grette Associates LLC

PRELIMINARY

PREPARED AT THE REQUEST OF:
LINNTON WATER CREDITS, LLC

PLANTING PLAN

LINNTON MITIGATION SITE
DRAFT
RECORD DRAWINGS

DESIGNED BY: J.H.
DRAWN BY: J.H.
CHECKED BY: J.H.
DATE: 3/20/2020
JOB NO.: 13-044

BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS

0 1"

ZONE 1A PLANTINGS = 1.55 ACRES (+8.5' TO +13' ELEVATION)

SYMBOL	BOTANICAL NAME	COMMON NAME	PLANT TYPE	# OF PLANTS
	TREES - 10' O.C.			
	SALIX LASIANDRA	PACIFIC WILLOW	CUTTING (STAKES)	6,000
	SALIX LASIANDRA	PACIFIC WILLOW	CUTTING (POLE)	50
	SALIX SCOULERIANA	SCOULER WILLOW	CUTTING (STAKES)	1,700
	SHRUBS - 3' O.C. (+10.5' TO +13' ELEVATION)			
	CORNUS STOLONIFERA	RED OSIER DOGWOOD	CUTTING (STAKES)	1,500
	PHYSOCARPUS CAPITATUS	NINEBARK	CUTTING (STAKES)	1,500
	SPIRAEA DOUGLASII	DOUGLAS SPIRAEA	CUTTING (STAKES)	380
	EMERGENTS - 3' O.C. (+8.5' TO +10' ELEVATION)			
	CAREX APERTA	COLUMBIA SEDGE	PLUG	1,600
	CAREX OBNUPTA	SLOUGH SEDGE	PLUG	4,950
	CAREX PACHYSTACHYA	THICK-HEADED SEDGE	PLUG	800
	CAREX STIPATA	SAWBEAK SEDGE	PLUG	3,000
	JUNCUS PATENS	BLUISH RUSH	PLUG	3,650
	LEERSIA ORYZOIDES	RICE CUTGRASS	PLUG	400
			TOTALS	25,530

ZONE 1B PLANTINGS = 3.93 ACRES (+13' TO +20' ELEVATION)

SYMBOL	BOTANICAL NAME	COMMON NAME	PLANT TYPE	# OF PLANTS
	TREES - 10' O.C.			
	FRAXINUS LATIFOLIA	OREGON ASH	BARE ROOT	1500
	POPULUS TRICHOCARPA	BLACK COTTONWOOD	BARE ROOT	750
	POPULUS TRICHOCARPA	BLACK COTTONWOOD	CUTTING (POLE)	50
	SALIX LASIANDRA	PACIFIC WILLOW	CUTTING (POLE)	100
	SALIX RIGIDA	MACKENZIE'S WILLOW	BARE ROOT	500
	SALIX SCOULERIANA	SCOULER WILLOW	BARE ROOT	500
	SHRUBS - 3' O.C. (+10.5' TO +13' ELEVATION)			
	CORNUS STOLONIFERA	RED OSIER DOGWOOD	BARE ROOT	1,000
	LONICERA INVOLUCRATA	BLACK TWINBERRY	BARE ROOT	1,000
	MALUS FUSCA	WESTERN CRABAPPLE	BARE ROOT	1,000
	PHYSOCARPUS CAPITATUS	NINEBARK	BARE ROOT	500
	ROSA PISOCARPA	SWAMP ROSE	BARE ROOT	2,000
	RUBUS PARVIFLORUS	THIMBLEBERRY	BARE ROOT	300
	RUBUS SPECTABILIS	SALMONBERRY	BARE ROOT	150
	SALIX FLUVIATILIS	COLUMBIA WILLOW	BARE ROOT	1,000
	SALIX SITCHENIS	SITKA WILLOW	BARE ROOT	1,500
	SPIRAEA DOUGLASII	DOUGLAS SPIRAEA	BARE ROOT	1,500
	SYMPHORICARPOS ALBUS	SNOWBERRY	BARE ROOT	750
			TOTALS	14,100

ZONE 2 PLANTINGS = 2.20 ACRES (+20' TO +31' ELEVATION)

SYMBOL	BOTANICAL NAME	COMMON NAME	PLANT TYPE	# OF PLANTS
	TREES - 10' O.C.			
	ALNUS RUBRA	RED ALDER	BARE ROOT	500
	CRATAEGUS DOUGLASII	BLACK HAWTHORN	BARE ROOT	1000
	FRAXINUS LATIFOLIA	OREGON ASH	BARE ROOT	1000
	POPULUS TRICHOCARPA	BLACK COTTONWOOD	BARE ROOT	750
	POPULUS TRICHOCARPA	BLACK COTTONWOOD	CUTTING (POLE)	50
	SHRUBS - 3' O.C. (+10.5' TO +13' ELEVATION)			
	AMELANCHIER ALNIFOLIA	WESTERN SERVICEBERRY	BARE ROOT	750
	PHILADELPHUS LEWISII	MOCK ORANGE	BARE ROOT	500
	RUBUS PARVIFLORUS	THIMBLEBERRY	BARE ROOT	250
	SALIX SITCHENIS	SITKA WILLOW	BARE ROOT	500
	SAMBUCUS RACEMOSA	RED ELDERBERRY	BARE ROOT	750
	SYMPHORICARPOS ALBUS	SNOWBERRY	BARE ROOT	1000
			TOTALS	7,050

ZONE 3 LOWER SLOPE PLANTINGS = 3.39 ACRES (+31' TO +35' ELEVATION)

SYMBOL	BOTANICAL NAME	COMMON NAME	PLANT TYPE	# OF PLANTS
	TREES - 10' O.C.			
	ACER MACROPHYLLUM	BIG LEAF MAPLE	BARE ROOT	1450
	PINUS PONDEROSA	VALLEY PONDEROSA PINE	BARE ROOT	500
	POPULUS TRICHOCARPA	BLACK COTTONWOOD	CUTTING (POLE)	100
	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	BARE ROOT	750
	RHAMNUS PURSHIANA	CASCARA	BARE ROOT	800
	THUJA PLICATA	WESTERN RED CEDAR	BARE ROOT	1000
	SHRUBS - 3' O.C. (+10.5' TO +13' ELEVATION)			
	ACER CIRCINATUM	VINE MAPLE	BARE ROOT	500
	AMELANCHIER ALNIFOLIA	WESTERN SERVICEBERRY	BARE ROOT	1500
	HOLODISCUS DISCOLOR	OCEANSPRAY	BARE ROOT	500
	OEMLERIA CERASIFORMIS	INDIAN PLUM	BARE ROOT	500
	PRUNUS EMARGINATA	BITTER CHERRY	BARE ROOT	1000
	PRUNUS VIRGINIANA	CHOKE CHERRY	BARE ROOT	1000
	RIBES SANGUINEUM	RED FLOWERING CURRANT	BARE ROOT	1000
	RUBUS PARVIFLORUS	THIMBLEBERRY	BARE ROOT	1250
	RUBUS URSINUS	TRAILING BLACKBERRY	BARE ROOT	1000
	SAMBUCUS RACEMOSA	RED ELDERBERRY	BARE ROOT	500
	SYMPHORICARPOS ALBUS	SNOWBERRY	BARE ROOT	1250
	VIBURNUM ELLIPTICUM	OREGON VIBURNUM	BARE ROOT	500
			TOTALS	15,100

ZONE 3 UPPER SLOPE PLANTINGS = 6.75 ACRES (+45' TO +85' ELEVATION)

SYMBOL	BOTANICAL NAME	COMMON NAME	PLANT TYPE	# OF PLANTS
	TREES - 10' O.C.			
	ABIES GRANDIS	GRAND FIR	BARE ROOT	750
	ACER MACROPHYLLUM	BIG LEAF MAPLE	BARE ROOT	735
	PINUS PONDEROSA	VALLEY PONDEROSA PINE	BARE ROOT	500
	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	BARE ROOT	1200
	QUERCUS GARRYANA	OREGON WHITE OAK	BARE ROOT	315
	RHAMNUS PURSHIANA	CASCARA	BARE ROOT	1000
	SHRUBS - 3' O.C. (+10.5' TO +13' ELEVATION)			
	ACER CIRCINATUM	VINE MAPLE	BARE ROOT	500
	AMELANCHIER ALNIFOLIA	WESTERN SERVICEBERRY	BARE ROOT	1000
	HOLODISCUS DISCOLOR	OCEANSPRAY	BARE ROOT	1500
	MAHONIA AQUIFOLIUM	TALL OREGON GRAPE	BARE ROOT	1000
	OEMLERIA CERASIFORMIS	INDIAN PLUM	BARE ROOT	250
	PHILADELPHUS LEWISII	MOCK ORANGE	BARE ROOT	1500
	PRUNUS VIRGINIANA	CHOKE CHERRY	BARE ROOT	1000
	RUBUS URSINUS	TRAILING BLACKBERRY	BARE ROOT	1000
	SAMBUCUS CERULEA	BLUE ELDERBERRY	BARE ROOT	1500
	SYMPHORICARPOS ALBUS	SNOWBERRY	BARE ROOT	1250
			TOTALS	15,000

ZONE 3 TOP PLANTINGS = 1.32 ACRES (85' ELEVATION AND ABOVE)

SYMBOL	BOTANICAL NAME	COMMON NAME	PLANT TYPE	# OF PLANTS
	TREES - 10' O.C.			
	ACER MACROPHYLLUM	BIG LEAF MAPLE	BARE ROOT	315
	PINUS PONDEROSA	VALLEY PONDEROSA PINE	BARE ROOT	500
	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	BARE ROOT	100
	QUERCUS GARRYANA	OREGON WHITE OAK	BARE ROOT	500
	RHAMNUS PURSHIANA	CASCARA	BARE ROOT	700
	SHRUBS - 3' O.C. (+10.5' TO +13' ELEVATION)			
	AMELANCHIER ALNIFOLIA	WESTERN SERVICEBERRY	BARE ROOT	750
	HOLODISCUS DISCOLOR	OCEANSPRAY	BARE ROOT	1150
	MAHONIA AQUIFOLIUM	TALL OREGON GRAPE	BARE ROOT	1000
	OEMLERIA CERASIFORMIS	INDIAN PLUM	BARE ROOT	250
	PHILADELPHUS LEWISII	MOCK ORANGE	BARE ROOT	1400
	PRUNUS VIRGINIANA	CHOKE CHERRY	BARE ROOT	500
	RUBUS URSINUS	TRAILING BLACKBERRY	BARE ROOT	750
	SAMBUCUS CERULEA	BLUE ELDERBERRY	BARE ROOT	1000
	SYMPHORICARPOS ALBUS	SNOWBERRY	BARE ROOT	1250
			TOTALS	10,165

ZONE 3 TRAIL PLANTINGS = 0.32 ACRES

SYMBOL	BOTANICAL NAME	COMMON NAME	PLANT TYPE	# OF PLANTS
	TREES - 10' O.C.			
	CRATAEGUS DOUGLASII	BLACK HAWTHORN	BARE ROOT	500
	SHRUBS - 3' O.C. (+10.5' TO +13' ELEVATION)			
	MAHONIA AQUIFOLIUM	TALL OREGON GRAPE	BARE ROOT	1000
	RUBUS LEUCODERMIS	BLACKCAP	BARE ROOT	100
	RUBUS URSINUS	TRAILING BLACKBERRY	BARE ROOT	750
	SAMBUCUS CERULEA	BLUE ELDERBERRY	BARE ROOT	500
			TOTALS	2,850

ZONE 1A SEEDING - OCCURS UNDER ZONE 1A PLANTINGS (+8.5' TO +12' ELEVATION)

SYMBOL	BOTANICAL NAME	COMMON NAME	% MIX BY PLS (PURE LIVE SEED)
	AGROSTIS EXARATA	SPIKE BENTGRASS	35%
	COREOPSIS TINCTORIA	COLUMBIA TICKSEED	20%
	ELEOCHARIS PALUSTRIS	CREEPING SPIKERUSH	40%
	SAGITTARIA LATIFOLIA	WAPATO	5%
		TOTALS	100%

ZONE 1B SEEDING - OCCURS UNDER ZONE 1B PLANTINGS (+11' TO +20' ELEVATION)

SYMBOL	BOTANICAL NAME	COMMON NAME	% MIX BY PLS (PURE LIVE SEED)
	AGROSTIS EXARATA	SPIKE BENTGRASS	50%
	GLYCERIA ELATA	TALL MANNA-GRASS	10%
	JUNCUS ACUMINATUS	TAPER-TIP RUSH	2%
	DESCHAMPSIA ELONGATA	SLENDER HAIRGRASS	10%
	LEERSIA ORYZOIDES	RICE CUT-GRASS	20%
	SCIRPUS MICROCARPUS	SMALL-FRUIT BULRUSH	8%
		TOTALS	100%

ZONE 2 SEEDING - OCCURS UNDER ZONE 2 PLANTINGS (+20' TO +31' ELEVATION)

SYMBOL	BOTANICAL NAME	COMMON NAME	% MIX BY PLS (PURE LIVE SEED)
	AGROSTIS EXARATA	SPIKE BENTGRASS	15%
	DANTHONIA CALIFORNICA	CALIFORNIA OAT GRASS	20%
	FESTUCA ROEMERI	ROEMER'S FESCUE	20%
	GRINDELIA INTEGRIFOLIA	GUMWEED	5%
	LUPINUS BICOLOR	SMALL-FLOWER LUPINE	10%
	LUPINUS POLYPHYLLUS	LARGE-LEAFED LUPINE	10%
	POTENTILLA GRACILIS	SLENDER CINQUEFOIL	5%
	DESCHAMPSIA ELONGATA	SLENDER HAIRGRASS	10%
	SOLIDAGO CANADENSIS	GOLDENROD	5%
		TOTALS	100%

ALL ZONE 3 SEEDING - OCCURS UNDER ZONE 3 PLANTINGS (+31' ELEVATION AND ABOVE)

SYMBOLS	BOTANICAL NAME	COMMON NAME	% MIX BY PLS (PURE LIVE SEED)
	ACHILLEA MILLEFOLIUM	YARROW	10%
	DANTHONIA CALIFORNICA	CALIFORNIA OAT GRASS	20%
	ELYMUS GLAUCUS	BLUE WILDRYE	5%
	FESTUCA ROEMERI	ROEMER'S FESCUE	30%
	GRINDELIA INTEGRIFOLIA	GUMWEED	5%
	LUPINUS BICOLOR	SMALL-FLOWER LUPINE	5%
	LUPINUS POLYPHYLLUS	LARGE-LEAFED LUPINE	10%
	DESCHAMPSIA ELONGATA	SLENDER HAIRGRASS	10%
	SOLIDAGO CANADENSIS	GOLDENROD	5%
		TOTALS	100%

WATERWAYS CONSULTING INC.
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PRELIMINARY

PREPARED AT THE REQUEST OF:
LINNTON WATER CREDITS, LLC

PLANTING AND SEEDING LISTS

LINNTON MITIGATION SITE DRAFT RECORD DRAWINGS

DESIGNED BY: J.H.
DRAWN BY: J.H.
CHECKED BY: J.H.
DATE: 3/20/2020
JOB NO.: 13-044

BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1"

RD7

ATTACHMENT C. SOILS MAP

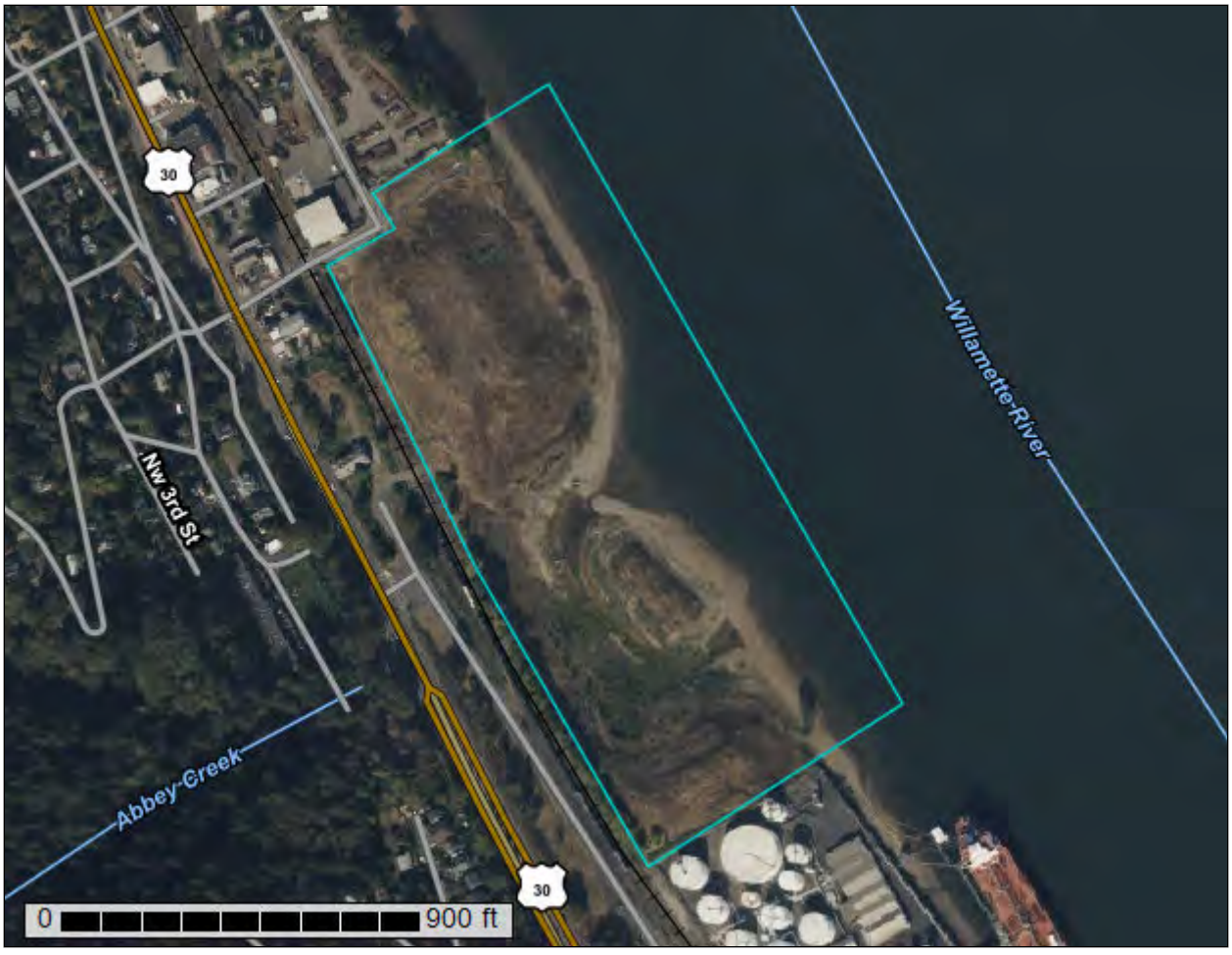
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Multnomah County Area, Oregon



October 31, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Linnton Mill Restoration Site)

Map Scale: 1:3,500 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Multnomah County Area, Oregon
Survey Area Data: Version 22, Sep 7, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 26, 2022—Oct 11, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Linnton Mill Restoration Site)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
50A	Urban land, 0 to 3 percent slopes	22.5	74.0%
W	Water	7.9	26.0%
Totals for Area of Interest		**30.4**	**100.0%**

Map Unit Descriptions (Linnton Mill Restoration Site)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Multnomah County Area, Oregon

50A—Urban land, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 22bv
Elevation: 20 to 50 feet
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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ATTACHMENT D. WETS TABLES

WETS Table

WETS Station: PORTLAND INTL AIRPORT, OR								
Requested years: 1971 - 2000								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0. 10 or more	Avg Snowfall
Jan	46.0	34.6	40.3	5.07	2.98	6.15	12	1.6
Feb	50.7	36.4	43.6	4.18	2.84	4.98	10	1.2
Mar	56.4	39.3	47.8	3.71	2.85	4.31	10	0.1
Apr	61.4	42.6	52.0	2.64	1.93	3.10	8	0.0
May	67.7	48.1	57.9	2.38	1.44	2.88	7	0.0
Jun	73.5	53.2	63.4	1.59	0.94	1.93	5	0.0
Jul	80.1	57.4	68.7	0.72	0.33	0.86	2	0.0
Aug	80.6	57.7	69.1	0.93	0.35	1.09	2	0.0
Sep	75.6	52.8	64.2	1.65	0.72	1.93	4	0.0
Oct	64.3	45.4	54.8	2.88	1.57	3.52	7	0.0
Nov	52.5	40.0	46.3	5.61	3.72	6.73	13	0.5
Dec	46.0	35.3	40.6	5.71	3.89	6.82	12	1.1
Annual:					32.85	40.58		
Average	62.9	45.2	54.1	-	-	-	-	-
Total	-	-	-	37.07			92	4.4

GROWING SEASON DATES			
Years with missing data:	24 deg = 0	28 deg = 0	32 deg = 0
Years with no occurrence:	24 deg = 8	28 deg = 0	32 deg = 0
Data years used:	24 deg = 30	28 deg = 30	32 deg = 30
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	1/21 to 12/29: 342 days	2/15 to 12/1: 289 days	3/23 to 11/15: 237 days
70 percent *	1/2 to 1/18: 381 days	2/6 to 12/10: 307 days	3/17 to 11/22: 250 days
* Percent chance of the growing season occurring between the Beginning and Ending dates.			

STATS TABLE - total precipitation (inches)													
Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1938				2.10	0.57	0.34	0.17	0.49	1.18	2.58	4.26	4.78	16.47
1939	5.47	5.49	2.36	0.27	1.09	1.42	0.78	1.62	0.55	2.14	1.73	9.22	32.14
1940	2.56	11.41	4.95	3.29	1.60	0.02	0.80	0.06	3.54	4.13	4.53	4.85	41.74
1941	5.27	1.59	1.74	1.66	4.27	0.81	0.03	1.45	3.58	2.18	5.04	9.11	36.73
1942	3.63	M3.53	1.63	2.38	2.84	1.94	1.40	0.17	0.06	3.49	11.57	9.37	42.01
1943	5.50	3.27	5.54	2.21	1.42	2.80	0.32	1.39	0.06	5.59	M2.20	2.70	33.00
1944	2.81	3.11	1.93	2.28	1.07	0.81	0.06	0.03	2.73	1.64	5.00	1.90	23.37
1945	4.10	4.36	5.30	2.42	4.57	0.07	0.51	0.37	3.96	2.11	8.58	5.61	41.96
1946	5.12	4.99	4.23	0.78	1.24	1.91	1.08	0.18	1.	4.	7.57	5.47	38.

									15	81			53
1947	3.72	2.77	4.11	1.81	0.66	2.93	0.94	0.29	1.06	8.04	4.08	4.64	35.05
1948	5.87	5.02	4.24	3.41	3.76	1.42	0.32	1.55	3.28	2.39	6.89	8.06	46.21
1949	1.02	9.46	2.78	0.72	2.12	0.68	0.91	0.24	1.66	2.35	5.56	4.86	32.36
1950	10.10	5.77	4.76	2.74	0.57	2.50	0.50	0.72	1.45	7.00	8.67	6.31	51.09
1951	7.71	5.02	3.86	1.14	1.75	0.03	0.28	0.02	2.55	6.81	5.31	5.06	39.54
1952	4.40	3.59	3.82	1.45	0.78	2.23	T	0.18	0.33	0.72	1.44	6.76	25.70
1953	12.83	3.71	3.82	1.89	3.45	2.04	0.03	1.79	1.16	3.56	6.46	7.85	48.59
1954	8.95	4.57	2.55	2.54	1.83	3.58	1.24	1.92	0.85	3.40	5.09	5.01	41.53
1955	2.30	3.37	3.06	4.72	1.24	1.83	0.89	T	2.86	6.69	7.34	10.14	44.44
1956	11.66	2.04	4.30	0.53	2.50	2.03	0.01	2.56	1.12	5.10	1.47	3.64	36.96
1957	2.23	4.14	7.52	1.84	1.97	0.73	0.19	0.69	0.49	3.53	3.07	6.15	32.55
1958	6.56	5.13	2.20	3.33	1.35	3.04	T	0.02	1.05	1.49	6.39	5.06	35.62
1959	7.57	4.18	3.22	0.92	2.89	2.38	0.56	0.09	2.81	3.51	3.30	3.08	34.51
1960	3.93	4.00	4.77	3.33	3.37	0.52	T	1.00	1.37	2.39	8.63	2.61	35.92
1961	4.50	8.92	6.04	3.59	2.80	0.47	0.42	1.07	0.64	2.89	4.67	5.94	41.95
1962	1.58	3.43	4.25	3.15	2.56	0.78	0.06	1.49	1.66	3.31	9.32	2.59	34.18
1963	2.27	3.48	4.69	3.78	2.74	1.71	1.17	0.87	0.75	3.04	5.64	3.60	33.74
1964	9.51	0.78	2.28	1.56	1.04	1.96	0.68	0.90	1.61	0.84	6.78	9.92	37.86
1965	7.44	2.22	1.10	2.20	1.31	0.83	0.44	0.73	0.01	2.03	5.64	7.34	31.29
1966	5.74	1.70	4.71	0.85	0.91	1.02	1.19	0.59	1.70	3.06	5.50	6.89	33.86
1967	6.21	2.02	4.31	2.17	1.02	1.01	0.00	T	0.76	4.72	2.27	4.75	29.24
1968	4.58	6.64	2.68	1.91	3.63	2.20	0.14	4.53	2.20	5.03	6.23	11.12	50.89
1969	7.60	3.14	1.13	2.28	1.61	2.99	0.14	0.04	3.86	3.02	3.18	8.12	37.11
1970	11.81	4.77	2.58	2.94	1.55	0.49	0.05	T	1.10	2.85	5.72	7.49	41.35
1971	7.09	3.36	4.87	2.72	1.00	1.76	0.26	0.95	3.53	2.37	5.76	8.05	41.72
1972	5.71	4.08	5.41	2.98	2.23	0.68	0.56	0.67	3.06	0.87	3.78	8.79	38.82
1973	3.69	1.94	2.45	1.33	1.43	1.45	0.06	1.41	3.29	3.14	11.55	9.93	41.67
1974	8.51	4.61	5.65	1.76	1.74	0.80	2.01	0.07	0.21	2.14	6.73	6.05	40.28
1975	8.43	4.75	3.45	1.88	1.35	1.13	0.43	2.10	T	4.76	4.10	6.68	39.06
1976	5.14	4.92	2.93	2.34	2.29	0.78	0.66	3.29	0.73	1.48	0.77	1.38	26.71
1977	1.07	2.49	3.50	1.04	4.30	0.83	0.39	3.26	3.33	2.28	5.56	8.98	37.03
1978	4.85	3.28	1.49	3.96	3.17	1.69	1.36	2.05	2.07	0.36	3.83	2.51	30.62
1979	2.55	6.53	2.51	2.47	2.41	0.64	0.25	1.18	1.75	4.85	3.38	7.23	35.75
1980	8.51	4.01	3.11	2.58	2.19	2.50	0.19	0.39	1.	1.	6.47	9.72	42.

									56	18			41
1981	1.47	3.86	2.33	1.79	2.25	3.23	0.24	0.15	1.86	4.12	4.62	8.37	34.29
1982	6.31	5.98	2.38	3.56	0.46	1.66	0.94	1.66	3.98	4.44	3.51	8.16	43.04
1983	6.23	7.78	6.80	1.87	1.30	1.95	2.68	2.29	0.39	1.95	8.65	5.30	47.19
1984	2.01	3.93	3.19	3.20	3.41	4.06	T	0.09	1.46	3.85	9.74	2.56	37.50
1985	0.06	1.79	3.08	1.07	1.52	2.34	0.55	0.48	2.76	2.75	3.89	2.19	22.48
1986	4.65	5.31	2.60	1.91	2.19	0.23	1.20	0.10	4.30	1.99	6.26	4.30	35.04
1987	6.93	2.45	4.91	1.94	1.63	0.14	1.03	0.35	0.30	0.27	1.96	8.00	29.91
1988	4.95	1.17	3.13	4.57	2.53	2.34	0.69	0.10	1.76	0.19	7.92	2.37	31.72
1989	3.30	2.84	6.73	2.08	2.87	0.78	0.91	1.07	1.48	1.73	3.18	3.08	30.05
1990	7.95	3.43	2.52	2.31	2.37	1.94	0.32	0.95	0.34	4.65	3.68	2.40	32.86
1991	2.56	3.65	4.64	4.05	3.34	2.31	0.07	0.70	0.02	1.51	6.36	4.34	33.55
1992	4.31	4.12	1.87	3.82	0.10	0.60	0.67	0.49	1.12	2.87	4.55	4.98	29.50
1993	3.06	0.72	4.39	5.26	4.36	1.69	2.41	0.37	T	1.59	1.50	5.01	30.36
1994	3.56	4.92	1.84	1.91	0.56	1.67	0.07	0.13	1.13	8.41	5.91	4.85	34.96
1995	5.56	3.19	3.82	3.49	1.65	2.62	1.23	0.81	1.31	3.15	10.74	5.91	43.48
1996	7.15	10.03	3.24	5.12	4.88	0.44	0.73	0.25	3.05	5.38	9.58	13.35	63.20
1997	7.32	1.63	7.14	3.73	3.63	2.83	0.52	1.58	1.98	6.40	4.02	3.03	43.81
1998	6.77	5.27	4.06	1.04	5.55	1.73	0.59	T	1.09	2.16	11.02	6.74	46.02
1999	6.63	8.73	4.03	1.56	1.97	1.73	0.51	0.75	0.10	2.44	6.81	3.62	38.88
2000	5.66	4.50	3.21	1.82	2.70	1.19	0.15	0.12	1.67	3.25	2.46	3.47	30.20
2001	1.47	1.29	3.11	2.85	0.91	1.79	0.95	0.74	0.70	3.12	6.89	6.62	30.44
2002	6.22	3.55	3.40	2.34	1.86	1.57	0.19	0.04	1.54	0.63	1.91	8.00	31.25
2003	7.64	2.37	5.75	4.37	1.49	0.31	T	0.19	0.85	3.01	4.09	7.45	37.52
2004	4.86	3.95	1.53	1.01	1.78	1.12	0.04	2.68	1.03	3.36	2.38	3.91	27.65
2005	1.94	1.30	3.77	3.49	4.34	2.21	0.41	1.05	1.70	3.39	4.98	7.52	36.10
2006	10.92	2.15	2.96	2.46	3.00	0.92	0.47	0.10	0.86	1.39	11.92	5.85	43.00
2007	2.72	3.47	3.20	2.01	1.45	1.08	0.55	0.46	2.04	3.26	4.25	7.57	32.06
2008	4.71	2.19	3.71	2.08	2.02	1.00	0.29	1.23	0.48	1.74	4.15	3.52	27.12
2009	4.50	1.36	3.36	2.31	3.26	1.30	0.34	0.76	1.40	3.02	5.13	3.76	30.50
2010	4.94	2.76	3.58	2.92	4.68	4.27	0.59	0.23	3.36	3.87	6.63	8.35	46.18
2011	4.73	4.28	6.43	5.04	2.92	0.73	0.96	0.17	0.62	2.14	6.57	2.51	37.10
2012	6.82	2.83	7.89	3.25	3.37	4.10	0.21	T	0.04	6.14	8.23	7.56	50.44
2013	3.49	1.26	1.46	2.19	4.75	1.35	T	0.78	5.62	1.15	3.05	1.62	26.72
2014	2.70	5.12	7.52	3.03	2.39	2.33	1.05	0.01	0.	5.	2.99	6.05	40.

									98	94			11
2015	3.33	3.71	4.71	1.75	0.59	0.40	0.57	0.66	1.26	3.69	4.49	15.24	40.40
2016	7.23	4.10	4.73	1.96	1.72	1.42	0.66	0.09	1.69	8.31	6.83	4.61	43.35
2017	4.13	10.36	7.26	4.51	1.92	1.08	T	0.06	2.38	4.57	6.44	3.09	45.80
2018	5.36	1.86	2.50	3.34	0.17	1.03	0.02	0.06	1.59	3.43	2.86	5.08	27.30
2019	2.79	4.10	1.54	2.98	1.51	0.45	0.80	1.23	3.85	1.51	1.52	4.39	26.67
2020	7.58	1.55	2.43	0.79	2.21	3.51	0.05	0.38	2.06	1.51	5.28	5.09	32.44
2021	7.03	3.73	1.55	0.39	0.58	1.25	T	0.05	3.76	3.72	6.43	7.10	35.59
2022	5.10	2.77	2.96	5.73	3.78	3.09	0.17	T	0.31	3.18	5.17	7.76	40.02
2023	3.34	2.49	4.36	5.08	0.91	1.21	T	0.62	1.25	2.49	5.27	M8.34	35.36
Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.													
Data missing for all days in a month or year is blank.													
Creation date: 2023-12-27													

ATTACHMENT E. DATA FORMS

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 9/26/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP1

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): terrace/depression | Local relief (concave, convex, none): uneven | Slope (%): 2

Subregion (LRR): LRR A | Lat: -122.78357697 | Long: 45.59764099 | Datum: NDA83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

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

Remarks:
Disturbed, uneven depressional seasonal wetland located in low topo spot between old gate entrance and the upland hill. Rocky fill soils and artificial topo due to mitigation bank construction in 2019. Clear hydrology and hydrophytic veg.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
	____	=Total Cover	
Sapling/Shrub Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
	____	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Juncus effusus*	30	Yes	FACW
2. *Carex unilateralis*	15	Yes	FACW
3. *Carex densa*	5	No	OBL
4. *Agrostis exarata*	5	No	FACW
5. *Beckmannia syzigachne*	3	No	OBL
6. *Deschampsia elongata*	2	No	FACW
7.			
8.			
9.			
10.			
11.			
	60	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	

% Bare Ground in Herb Stratum 20

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	8	x 1 =	8
FACW species	52	x 2 =	104
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	60 (A)		112 (B)

Prevalence Index = B/A = 1.87

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Hydrophytic veg dominant. Area largely delineated based on veg shift to upland species outside of this wetland depression, along with topography

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
0-4	10YR 2/1	50	10YR 3/2	45	D	M	Loamy/Clayey	rocky fill and clay loam
			5YR 4/6	5	C	PL		Prominent redox concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: rocky fill

Depth (inches): 4

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Hit rocks/refusal at 4" - rocky fill soil, disturbed and compacted by construction. Area meets problematic soil condition "recently developed wetlands" as the area was excavated for wetland mitigation creation in 2019. Despite the disturbance, hydric soil indicators were present. If features were remnant, oxidized rhizospheres indicated recent wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X 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)
- X Oxidized Rhizospheres on 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 (2 or more required)

- X Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised 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** X **No** ___

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

Remarks:

Ponding apparent in algal matting, water-stained leaves. Area is in an uneven depression where water can pond, and follows topography under east side of gate where water clearly drains toward the railroad tracks. Clear wetland hydrology.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 10/27/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP2

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): hillslope | Local relief (concave, convex, none): concave | Slope (%): 25

Subregion (LRR): LRR A | Lat: -122.78302765 | Long: 45.59686661 | Datum: NAD83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

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

Remarks:
Point taken as representative upland sample point along same elevation as seep wetland sample points, but well outside the seep hydrology. Taken north of the seep, on a similar slope as the wetland. Indicators of wetland veg, soils, and hydrology were marginal or absent.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 5)			
1. *Thuja plicata*	3	Yes	FAC
2. *Rubus parviflorus*	2	Yes	FACU
3. *Symphoricarpos albus*	1	No	FACU
4. *Quercus garryana*	1	No	FACU
5. *Amelanchier alnifolia*	1	No	FACU
	8 =Total Cover		
Herb Stratum (Plot size: 5)			
1. *Deschampsia elongata*	45	Yes	FACW
2. *Festuca roemeri*	30	Yes	
3. *Achillea millefolium*	20	Yes	FACU
4. *Lupinus polyphyllus*	5	No	FAC
5. *Trifolium dubium*	0		FACU
6.			
7.			
8.			
9.			
10.			
11.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	45	x 2 =	90
FAC species	8	x 3 =	24
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	78 (A)		214 (B)

Prevalence Index = B/A = 2.74

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1](Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Despite prevalence index, veg in this area is consistently more upland-dominated than any portion of wetland. Veg possibly problematic due to seeding wetland species in uplands

SOIL

Sampling Point: SP2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/2	100					Loamy/Clayey	sandy clay loam
10-16	10YR 4/2	98	5YR 4/6	2	C	PL	Loamy/Clayey	clay texture, faint redox

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ 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) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

This whole project site meets problematic soil condition "recently developed wetlands" as the area was excavated for wetland mitigation creation in 2019. Only very limited and very faint redox observed - possibly remnant features. No clear indicators of hydric soils were observed, which aligns with the lack of hydrology sources, topography, and marginal veg.

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 on 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 (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised 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 clear indicators of wetland hydrology were observed at this point. No seep or other sources of hydrology are visible on aerial imagery at this point, and the topography does not support pooling or ponding. One very faint and questionable oxidized rhizosphere was observed, but was not clear or prevalent enough to be an indicator of hydrology.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 10/27/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP3

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): hillslope | Local relief (concave, convex, none): convex | Slope (%): 25

Subregion (LRR): LRR A | Lat: -122.78282928 | Long: 45.59650803 | Datum: NAD83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

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

Remarks:
Point taken just outside northern seep wetland boundary - upland point. Soils were distinctly different than seep area and had no redox features. Veg was marginal and transitional from wetland to upland species. No indicators of hydrology were present.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	5	Yes	FAC
2.			
3.			
4.			
	5	=Total Cover	
Sapling/Shrub Stratum (Plot size: 5)			
1. *Salix sitchensis*	3	Yes	FACW
2. *Crataegus douglasii*	2	Yes	FAC
3. *Amelanchier alnifolia*	2	Yes	FACU
4. *Populus trichocarpa*	1	No	FAC
5.			
	8	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Deschampsia elongata*	40	Yes	FACW
2. *Festuca roemeri*	25	Yes	
3. *Trifolium pratense*	2	No	FACU
4. *Hypochaeris radicata*	1	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	68	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	

% Bare Ground in Herb Stratum 32

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 6 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	43	x 2 =	86
FAC species	8	x 3 =	24
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	56 (A)		130 (B)

Prevalence Index = B/A = 2.32

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5 - Wetland Non-Vascular Plants[1]
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
Vegetation in transition zone between wetland and upland, moving toward more upland species compared to points inside the seep wetland.

SOIL

Sampling Point: SP3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	2.5Y 4/2	100					Loamy/Clayey	clay, uniform color, no redox

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ 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) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

Although soils throughout the site are problematic due to recent wetland creation for mitigation, this area displayed no redox features, depletions, or other indicators of hydric soils which soils inside the seep wetland showed. No indicators of hydric soils were present at this point, and the northern boundary of this seep wetland was delineated in part due to the shift away from hydric soil indicators in this area.

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 on 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 (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised 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 indicators of wetland hydrology were observed at this point. Indicators of wetland hydrology inside the seep wetland, such as oxidized rhizospheres along living roots and indicators of hyrdology on aerial imagery, were absent at this point, and the northern edge of the seep wetland was delineated in part based on the shift away from hydro indicators in this area.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 10/27/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP4

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): hillslope | Local relief (concave, convex, none): concave | Slope (%): 25

Subregion (LRR): LRR A | Lat: -122.7828064 | Long: 45.59664536 | Datum: NAD83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

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

Remarks:
Point taken inside northern end of seep wetland, in a transition area near the wetland boundary. Distinct wetland features here compared to the paired upland point. Willow saplings coming in among wetland grass-dominated understory, substantial redox present, including along living roots.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____	=Total Cover	
Sapling/Shrub Stratum (Plot size: 5)			
1. *Salix sitchensis*	10	Yes	FACW
2. *Salix lasiandra*	8	Yes	FACW
3. *Crataegus douglasii*	2	No	FAC
4.			
5.			
	20	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Deschampsia elongata*	95	Yes	FACW
2. *Achillea millefolium*	3	No	FACU
3. *Lupinus polyphyllus*	2	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (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	113	x 2 =	226
FAC species	4	x 3 =	12
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals:	120 (A)		250 (B)

Prevalence Index = B/A = 2.08

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5 - Wetland Non-Vascular Plants[1]
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Wetland grass and shrubs dominated this transition zone at the edge of the wetland, where Achillea and Lupinus start to come in more.

SOIL

Sampling Point: SP4

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	2.5Y 3/3	85	5YR 4/6	15	C	PL/M	Loamy/Clayey	sandy clay loam, prominent redox

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ 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)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X 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:

Area meets problematic soil condition "recently developed wetlands" as the area was excavated for wetland mitigation creation in 2019. Despite the disturbance, redox features were abundant. If these features are remnant features, presence of oxidized rhizospheres indicated recent wetland hydrology. Additionally, no redox features were observed in the nearby paired upland point.

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)
- X Oxidized Rhizospheres on 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 (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised 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** X **No** ___

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

Remarks:

This point was taken at the lateral/northern edge of the seep wetland, and seep saturation and inundation are visible on aerial imagery downslope but not to the north. Presence of oxidized rhizospheres along living roots was a good indicator of hydrology here, along with secondary indicators. Wetland hydrology was present at this point.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 10/27/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP5

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): hillslope | Local relief (concave, convex, none): concave | Slope (%): 25

Subregion (LRR): LRR A | Lat: -122.78279877 | Long: 45.59652328 | Datum: NAD83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

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

Remarks:
Point taken just outside the northwestern edge of the northernmost seep wetland, where upland veg comes in and oxidized rhizospheres fall out. Seep hydrology is visible downslope in aerial, so this is likely just upslope of where the seep drains out of the hillside. Representative upland point.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	15	Yes	FAC
2.			
3.			
4.			
	15	=Total Cover	
Sapling/Shrub Stratum (Plot size: 5)			
1. *Populus trichocarpa*	5	Yes	FAC
2. *Symphoricarpos albus*	2	Yes	FACU
3. *Amelanchier alnifolia*	1	No	FACU
4. *Quercus garryana*	1	No	FACU
5.			
	9	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Festuca roemeri*	70	Yes	
2. *Deschampsia elongata*	15	No	FACW
3. *Elymus trachycaulus*	5	No	FAC
4. *Achillea millefolium*	2	No	FACU
5. *Melilotus albus*	1	No	FACU
6. *Acmispon americanus*	1	No	FACU
7.			
8.			
9.			
10.			
11.			
	94	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 6

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	25	x 3 =	75
FACU species	8	x 4 =	32
UPL species	0	x 5 =	0
Column Totals:	48 (A)		137 (B)

Prevalence Index = B/A = 2.85

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5 - Wetland Non-Vascular Plants[1]
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:
Distinct transition here from downslope wetland plants to Festuca roemeri-dominated (NL). This species appears to be a good indicator of uplands onsite

SOIL

Sampling Point: SP5

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Sandy	
5-14	2.5Y 4/2	80	5YR 3/1	10	C	PL/M	Loamy/Clayey	Prominent redox concentrations
			5YR 4/6	10	C	PL		Prominent redox concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

Area meets problematic soil condition "recently developed wetlands" as the area was excavated for wetland mitigation creation in 2019. Despite the disturbance, and the lack of hydrology and veg, redox features present. No oxidized rhizospheres present, so redox may be remnant. Distinct color striations and faded redox may also indicate remand redox and problematic soils

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 on 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 (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised 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:

Seep hydrology likely comes in just downslope. Very limited and marginal oxidized rhizospheres were present, compared to distinct oxidation observed along living roots downslope. No clear indicators of wetland hydrology present at this point.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 10/27/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP6

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): hillslope | Local relief (concave, convex, none): concave | Slope (%): 20

Subregion (LRR): LRR A | Lat: -122.78278351 | Long: 45.59662628 | Datum: NAD83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

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

Remarks:
Point taken just inside the western boundary of the seep wetland, in its northwest portion. Wetland veg, soils, and hydrology much more distinct here than uphill sample point. Seep wetland hydrology visible on aerial imagery just downslope. Area meets the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	10	Yes	FAC
2. *Crataegus douglasii*	8	Yes	FAC
3.			
4.			
	18	=Total Cover	
Sapling/Shrub Stratum (Plot size: 5)			
1. *Symphoricarpos albus*	8	Yes	FACU
2. *Populus trichocarpa*	1	No	FAC
3. *Thuja plicata*	1	No	FAC
4. *Rubus parviflorus*	1	No	FACU
5.			
	11	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Deschampsia elongata*	60	Yes	FACW
2. *Juncus effusus*	30	Yes	FACW
3. *Achillea millefolium*	5	No	FACU
4. *Festuca roemeri*	5	No	
5. *Melilotus albus*	1	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	101	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 0

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	90	x 2 =	180
FAC species	20	x 3 =	60
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	125 (A)		300 (B)

Prevalence Index = B/A = 2.40

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5 - Wetland Non-Vascular Plants[1]
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Deschampsia and Juncus become dominant at this point, where uplands transition to wetlands. Wetland veg dominant.

SOIL

Sampling Point: SP6

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/1	100					Loamy/Clayey	sandy loam
1-3	10YR 2/2	100					Sandy	sand
3-6	2.5Y 4/1	80	5YR 4/6	20	C	PL	Loamy/Clayey	Prominent redox concentrations
6-16	5Y 2.5/1	60						decaying wood, greasy, histic
6-16	2.5Y 4/1	30	5YR 4/6	10	C	PL	Loamy/Clayey	Prominent redox concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X 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:

Area meets problematic soil condition "recently developed wetlands" as the area was excavated for wetland mitigation creation in 2019. Despite the disturbance, redox features were abundant, depleted matrix present. Decaying wood and organic material formed some greasy histic pockets.

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)
- X Oxidized Rhizospheres on 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 (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised 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** X **No** ___

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

Remarks:

This area is fed by a seep, which is visible on aerial imagery and prominent downslope. Geomorphically positioned where groundwater discharges. Hydrology also indicated by abundant oxidized rhizospheres along living roots.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 10/27/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP7

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): hillslope | Local relief (concave, convex, none): concave | Slope (%): 10

Subregion (LRR): LRR A | Lat: -122.78260803 | Long: 45.5963973999023 | Datum: NAD83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

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

Remarks:
Point taken in the interior portion of the northern half of the seep wetland, to provide representative data for the seep wetland as a whole (as opposed to marginal points taken along the edges). Seep provides year-round hydro to this wetland complex, seen in aerials, saturation, and standing water

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix sitchensis*	20	Yes	FACW
2. *Alnus rubra*	15	Yes	FAC
3. *Salix scouleriana*	10	Yes	FAC
4.			
	45	=Total Cover	
Sapling/Shrub Stratum (Plot size: 5)			
1. *Salix sitchensis*	10	Yes	FACW
2. *Salix lasiandra*	8	Yes	FACW
3. *Populus trichocarpa*	4	No	FAC
4. *Arbutus menziesii*	3	No	UPL
5. *Rubus spectabilis*	1	No	FAC
	26	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Juncus effusus*	40	Yes	FACW
2. *Veronica americana*	25	Yes	OBL
3. *Epilobium ciliatum*	10	No	FACW
4. *Deschampsia elongata*	10	No	FACW
5. *Galium trifidum*	5	No	FACW
6. *Holcus lanatus*	1	No	FAC
7.			
8.			
9.			
10.			
11.			
	91	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (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	25	x 1 =	25
FACW species	103	x 2 =	206
FAC species	31	x 3 =	93
FACU species	0	x 4 =	0
UPL species	3	x 5 =	15
Column Totals:	162 (A)		339 (B)

Prevalence Index = B/A = 2.09

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Representative sample point for interior of the seep wetland, which is dominated by wetland plants.

SOIL

Sampling Point: SP7

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	2.5Y 2.5/1	100					Mucky Sand	sandy clay with organic matter
1-5	2.5Y 3/1	95	10YR 4/6	5	C	PL	Loamy/Clayey	sandy clay; clear redox

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: rocky refusal

Depth (inches): 5

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Area meets problematic soil condition "recently developed wetlands" as the area was excavated for wetland mitigation creation in 2019. Despite the disturbance, redox features were clearly present, as were depleted soil colors. Hit a layer of rocky material at 5". Soils are saturated or inundated year-round from seep hydrology, and are still developing following the relatively recent development of the wetlands.

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)
- X Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on 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 (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- X Dry-Season Water Table (C2)
- X Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised 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): 2		
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:

The seep provides year-round hydrology in this seep wetland complex, as evidenced by aerial imagery and the presence of saturation and high water table (at 2" below the surface) during the dry season. Standing water was present nearby this point, where the slope angle reduces and water is able to collect. Clear wetland hydrology was observed at this point, which represents the interior of the entire seep wetland.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 9/26/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP8

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): slope | Local relief (concave, convex, none): concave | Slope (%): 25

Subregion (LRR): LRR A | Lat: -122.7822876 | Long: 45.59601593 | Datum: NAD83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

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

Remarks:
Point taken on a slope in upper elevation of seep wetland. Downhill, slope becomes a terrace where seep hydrology pools, wetland is obvious. Uphill, yarrow and upl plants dominate, oxidized rhizospheres drop off. Delineated using veg shifts and hydro indicators; soils are problematic.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	25	Yes	FAC
2.			
3.			
4.			
	25	=Total Cover	
Sapling/Shrub Stratum (Plot size: 5)			
1. *Salix sitchensis*	10	Yes	FACW
2. *Populus trichocarpa*	8	Yes	FAC
3. *Symphoricarpos albus*	4	No	FACU
4. *Thuja plicata*	2	No	FAC
5. *Rubus parviflorus*	1	No	FAC
	25	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Deschampsia elongata*	90	Yes	FACW
2. *Epilobium ciliatum*	1	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	91	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (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	101	x 2 =	202
FAC species	36	x 3 =	108
FACU species	4	x 4 =	16
UPL species	0	x 5 =	0
Column Totals:	141 (A)		326 (B)

Prevalence Index = B/A = 2.31

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Hydrophytic veg dominant. This community is representative of the upper elevation (western) portion of the seep along the slope. Veg dominated by upl species upslope

SOIL

Sampling Point: SP8

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

Depth	Matrix		Redox Features					
(inches)	olor (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/1	100					Mucky Loam/Clay	gritty, greasy feel - organic
1-5	2.5Y 4/1	50	7.5YR 4/4	10	C	PL/M	Loamy/Clayey	Prominent redox concentrations
1-5	10YR 5/1	30	7.5YR 4/4	10	C	PL/M	Loamy/Clayey	Prominent redox concentrations
5-12	10YR 5/1	50	7.5YR 4/4	50	C	PL/M	Loamy/Clayey	Prominent redox concentrations
								more loam and grit than layer above

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X 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:

Area meets problematic soil condition "recently developed wetlands" as the area was excavated for wetland mitigation creation in 2019. Despite the disturbance, redox featurtes were abundant. If these features are remnant features, presence of oxidized rhizospheres indicated recent wetland hydrology

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)
- X Oxidized Rhizospheres on 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 (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised 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** X **No** ___

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

Remarks:

This area is fed by a seep, which is visible on aerial imagery and prominent downslope. Geomorphically positioned where groundwater discharges. Hydrology also indicated by oxidized rhizospheres along living roots. The less-prominent hydrology in this area indicates this point is near the upper edge of the seep. Edge was delineated using shift in veg and the lack of clear oxidized rhizospheres upslope.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 9/25/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP9

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): slope | Local relief (concave, convex, none): none | Slope (%): 25

Subregion (LRR): LRR A | Lat: -122.78218842 | Long: 45.59572983 | Datum: NAD83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

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

Remarks:
Point taken on a slope in upper elevation of seep wetland. Downhill, slope becomes a terrace where seep hydrology pools, wetland is obvious. Uphill, yarrow and upl plants dominate, oxidized rhizospheres drop off. Delineated using veg shifts and hydro indicators; soils are problematic.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 5)			
1. *Symphoricarpos albus*	8	Yes	FACU
2. *Rubus parviflorus*	3	Yes	FACU
3.			
4.			
5.			
	11 =Total Cover		
Herb Stratum (Plot size: 5)			
1. *Deschampsia elongata*	55	Yes	FACW
2. *Achillea millefolium*	45	Yes	FACU
3. *Lupinus polyphyllus*	5	No	FAC
4. *Lotus corniculatus*	1	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	106 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 5

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	55	x 2 =	110
FAC species	6	x 3 =	18
FACU species	56	x 4 =	224
UPL species	0	x 5 =	0
Column Totals:	117 (A)		352 (B)
Prevalence Index = B/A =			3.01

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Hydro veg present but not prevalent on this portion of the slope, which appears to be just outside the seep wetland

SOIL

Sampling Point: SP9

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	2.5Y 4/3	60	5YR 4/6	3	C	PL/M	Loamy/Clayey	
0-1	5Y 2.5/2	37					Loamy/Clayey	second matrix color
1-12	2.5Y 4/2	50	5YR 3/4	30	C	PL/M	Loamy/Clayey	Prominent redox concentrations
			10YR 3/4	20	C	PL/M		Distinct redox concentrations

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ 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)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X 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:
Hydric soil indicators were present at this point, which apears to be a transitional point at or above the elevation where groundwater discharges and feeds the seep wetlands downslope. Seep may discharge at this site, but possibly not enough to support hydrophytic veg or oxidized rhizospheres.

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 on 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 (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised 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:
Edge was delineated using shift in veg and the lack of clear oxidized rhizospheres observed at this point.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 9/26/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP10

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): hillslope | Local relief (concave, convex, none): slightly convex | Slope (%): 25

Subregion (LRR): LRR A | Lat: -122.78214264 | Long: 45.59576416 | Datum: NAD83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

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

Remarks:
Point taken along transect in transitional seep wetland. Downhill, slope becomes a terrace where seep hydrology pools, wetland is obvious. Uphill, the next point along this transect is in uplands. Delineated using veg shifts and hydro indicators; soils are problematic.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus trichocarpa*	10	Yes	FAC
2. *Alnus rubra*	10	Yes	FAC
3.			
4.			
	20	=Total Cover	
Sapling/Shrub Stratum (Plot size: 5)			
1. *Salix sitchensis*	7	Yes	FACW
2. *Thuja plicata*	2	Yes	FAC
3. *Rubus parviflorus*	1	No	FACU
4.			
5.			
	10	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Deschampsia elongata*	90	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (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	97	x 2 =	194
FAC species	22	x 3 =	66
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	120 (A)		264 (B)

Prevalence Index = B/A = 2.20

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Hydrophytic veg dominant. This community is representative of the upper elevation (western) portion of the seep along the slope. Veg dominated by upl species

SOIL

Sampling Point: SP10

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/1	100					Mucky Sand	greasy, gritty texture
1-4	2.5Y 3/2	70	10YR 3/6	15	C	PL	Loamy/Clayey	Prominent redox concentrations
			10YR 4/6	5	C	PL		Prominent redox concentrations
			10YR 4/2	10	D	M		depletions or second matrix color
4-14	10YR 5/2	60	5YR 4/6	25	C	PL/M	Loamy/Clayey	clay texture, prominent redox
			2.5Y 3/2	15	D	M		depletions or second matrix color

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X 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:

Area meets problematic soil condition "recently developed wetlands" as the area was excavated for wetland mitigation creation in 2019. Despite the disturbance, redox featurtes were abundant. If these features are remnant features, presence of oxidized rhizospheres indicated recent wetland hydrology

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)
- X Oxidized Rhizospheres on 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 (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised 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** X **No** ___

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

Remarks:

This area is fed by a seep, which is visible on aerial imagery and prominent downslope. Geomorphically positioned where groundwater discharges. Hydrology also indicated by oxidized rhizospheres along living roots. The less-prominent hydrology in this area indicates this point is near the upper edge of the seep. Edge was delineated using shift in veg and the lack of clear oxidized rhizospheres upslope.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 9/25/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP11

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): terrace | Local relief (concave, convex, none): none/concave | Slope (%): 0

Subregion (LRR): LRR A | Lat: -122.78204346 | Long: 45.59583282 | Datum: NAD83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

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

Remarks:
Point taken in the southern end of the southernmost seep wetland at the Linnton Mill Restoration Site. It was taken at the edge of a terrace, near the uphill slope where tall alders mark a clear slope and vegetation shift. Aerial imagery shows this area is green and wet year round from seep hydro.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	20	Yes	FAC
2.			
3.			
4.			
	20	=Total Cover	
Sapling/Shrub Stratum (Plot size: 5)			
1. *Salix sitchensis*	50	Yes	FACW
2. *Salix lasiandra*	15	No	FACW
3. *Cornus alba*	10	No	FACW
4. *Physocarpus capitatus*	1	No	FACW
5.			
	76	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Epilobium ciliatum*	55	Yes	FACW
2. *Juncus effusus*	25	Yes	FACW
3. *Schoenoplectus tabernaemontani*	5	No	OBL
4. *Scirpus microcarpus*	5	No	OBL
5. *Equisetum arvense*	1	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	91	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	

% Bare Ground in Herb Stratum 9

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (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	10	x 1 =	10
FACW species	156	x 2 =	312
FAC species	21	x 3 =	63
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	187 (A)		385 (B)

Prevalence Index = B/A = 2.06

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ 5 - Wetland Non-Vascular Plants[1]
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Hydrophytic veg is clearly dominant. This community dominates the whole seep terrace, shifting to wetland grass as the slope increases to the west

SOIL

Sampling Point: SP11

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/2	100					Mucky Loam/Clay	gritty loam texture
1-4	N 3/	60	10YR 3/6	40	C	PL/M	Loamy/Clayey	clay; abundant redox
4-18	N 3/	35	10YR 3/6	25	C	PL/M	Loamy/Clayey	clay; abundant redox
4-18	N 2.5/	25	10YR 3/6	15	C	PL/M	Sandy	pockets of sand present in matrix

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- X Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X 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:
Area meets problematic soil condition "recently developed wetlands" as the area was excavated for wetland mitigation creation in 2018-2019. Despite the disturbance, redox features were abundant, saturation was present, wetland plants dominant, and indicators of hydric soils present.

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 on 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 (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- X Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised 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): 10		
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:
This wetland area is fed by a seep, which is visible on aerial imagery. This area is wet year-round. Sample pit filled with water 10" below the surface, and saturation was present at the surface. Sample point has clear wetland hydrology.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 10/26/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP12

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): hillslope | Local relief (concave, convex, none): convex | Slope (%): 35

Subregion (LRR): LRR A | Lat: -122.78186035 | Long: 45.5957756 | Datum: NAD83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

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

Remarks:
Point taken along southern portion of seep wetland, on slope near edge of wetland terrace, near SE boundary of seep wetland. Substantial buried wood present from old mill fire.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	30	Yes	FAC
2. *Salix prolixa*	15	Yes	OBL
3. *Salix sitchensis*	15	Yes	FACW
4. *Populus trichocarpa*	1	No	FAC
	61	=Total Cover	
Sapling/Shrub Stratum (Plot size: 5)			
1. *Amelanchier alnifolia*	2	Yes	FACU
2. *Salix sitchensis*	2	Yes	FACW
3. *Salix prolixa*	2	Yes	OBL
4. *Symphoricarpos albus*	1	No	FACU
5. *Philadelphus lewisii*	1	No	UPL
	8	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Deschampsia elongata*	90	Yes	FACW
2. *Achillea millefolium*	8	No	FACU
3. *Holcus lanatus*	1	No	FAC
4. *Hypochaeris radicata*	1	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	17	x 1 =	17
FACW species	107	x 2 =	214
FAC species	32	x 3 =	96
FACU species	12	x 4 =	48
UPL species	1	x 5 =	5
Column Totals:	169 (A)		380 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Transitional area between wetland forested veg and wetland grassy slope. Veg clearly hydrophytic at this point, near transition to more yarrow and upl herbs

SOIL

Sampling Point: SP12

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y 3/1	90	5YR 4/6	5	C	PL/M	Sandy	clay sand; prominent redox
0-3	2.5Y 4/2	4	5YR 4/6	1	C	PL/M	Sandy	sandy clay texture - less sand than other matrix
3-14	5Y 5/1	40	5YR 4/4	20	C	PL/M	Loamy/Clayey	Prominent redox concentrations
3-14	2.5Y 3/1	30	5YR 4/6	10	C	PL/M	Sandy	clay sand; prominent redox

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: woody debris

Depth (inches): 14

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Area meets problematic soil condition "recently developed wetlands" as the area was excavated for wetland mitigation creation in 2019. Despite the disturbance, redox features were abundant, depleted matrix present. Woody debris from old mill fire made up 75% of layer 3-14" deep

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)
- X Oxidized Rhizospheres on 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 (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised 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** X **No** ___

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

Remarks:

This area is fed by a seep, which is visible on aerial imagery and prominent downslope. Geomorphically positioned where groundwater discharges. Hydrology also indicated by oxidized rhizospheres along living roots. The less-prominent hydrology in this area indicates this point is near the upper edge of the seep. Edge was delineated using shift in veg and the lack of clear oxidized rhizospheres upslope.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 10/26/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP13

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): hillslope | Local relief (concave, convex, none): concave | Slope (%): 40

Subregion (LRR): LRR A | Lat: -122.78182983 | Long: 45.59575653 | Datum: NAD83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** X **No** ____

Remarks:
Point taken in seep wetland near upland boundary in southernmost portion of seep. This point meets the criteria for a wetland, and was taken in the middle of a 3-point transect, so indicators are slightly more marginal than the downslope point.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	10	Yes	FAC
2.			
3.			
4.			
	10	=Total Cover	
Sapling/Shrub Stratum (Plot size: 5)			
1. *Amelanchier alnifolia*	8	Yes	FACU
2.			
3.			
4.			
5.			
	8	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Deschampsia elongata*	95	Yes	FACW
2. *Lupinus bicolor*	5	No	UPL
3. *Achillea millefolium*	2	No	FACU
4. *Vicia sativa*	1	No	UPL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	103	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=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	95	x 2 =	190
FAC species	10	x 3 =	30
FACU species	10	x 4 =	40
UPL species	6	x 5 =	30
Column Totals:	121 (A)		290 (B)

Prevalence Index = B/A = 2.40

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Point dominated by wetland veg. Very close to transition point where upland veg comes in, moving upslope.

SOIL

Sampling Point: SP13

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y 3/1	90	5YR 4/6	10	C	PL	Sandy	clay-y sand texture, prominent redox
3-14	2.5Y 4/1	70	5YR 4/6	30	C	PL/M	Loamy/Clayey	Prominent redox concentrations this layer contained 70% woody debris

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: woody debris

Depth (inches): 14

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Area meets problematic soil condition "recently developed wetlands" as the area was excavated for wetland mitigation creation in 2019. Despite the disturbance, redox features were abundant, depleted matrix present. Woody debris from old mill fire made up 70% of layer 3-14" deep

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)
- X Oxidized Rhizospheres on 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 (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised 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** X **No** ___

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

Remarks:

This area is fed by a seep, which is visible on aerial imagery and prominent downslope. Geomorphically positioned where groundwater discharges. Hydrology also indicated by oxidized rhizospheres along living roots. The less-prominent hydrology in this area indicates this point is near the upper edge of the seep. Edge was delineated using shift in veg and the lack of clear oxidized rhizospheres upslope.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Linnton Mill Restoration Site | City/County: Portland | Sampling Date: 10/26/23

Applicant/Owner: RestorCap/Linnton Water Credits LLC | State: OR | Sampling Point: SP14

Investigator(s): Kate Allan, Will Ohlenforst | Section, Township, Range: Township 01 N, Range 01 W, Willamette Principal Meridian

Landform (hillside, terrace, etc.): hillslope | Local relief (concave, convex, none): convex | Slope (%): 45

Subregion (LRR): LRR A | Lat: -122.78180695 | Long: 45.59572983 | Datum: NAD83

Soil Map Unit Name: 50A—Urban land, 0 to 3 percent slopes | NWI classification: N/A

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

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

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

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

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

Remarks:
Point taken just upslope of the southern seep wetland boundary, on a herbacous veg-dominated slope. It appears the seep does not provide wetland hydrology at this elevation in the southeast. Soils are problematic, so delineation based on veg shift and lack of oxidized rhizospheres on living roots

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 5)			
1. *Symphoricarpos albus*	1	No	FACU
2.			
3.			
4.			
5.			
	1 =Total Cover		
Herb Stratum (Plot size: 5)			
1. *Deschampsia elongata*	50	Yes	FACW
2. *Achillea millefolium*	20	Yes	FACU
3. *Lupinus polyphyllus*	15	No	FAC
4. *Lupinus bicolor*	5	No	UPL
5. *Vicia sativa*	1	No	UPL
6.			
7.			
8.			
9.			
10.			
11.			
	91 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 9

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	15	x 3 =	45
FACU species	21	x 4 =	84
UPL species	6	x 5 =	30
Column Totals:	92 (A)		259 (B)

Prevalence Index = B/A = 2.82

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1](Provide supporting data in Remarks or on a separate sheet)
____ 5 - Wetland Non-Vascular Plants[1]
____ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks:
Deschampsia transitions to more Achillea from this point upslope. Achillea tends to be a good indicator at this site of uplands.

SOIL

Sampling Point: SP14

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5Y 3/1	95					Loamy/Clayey	sandy clay texture
0-8	2.5Y 4/2	4	7.5YR 4/4	1	C	PL	Loamy/Clayey	sandy clay texture
8-10	2.5Y 4/2	50	7.5YR 4/4	10	C	PL/M	Loamy/Clayey	sandy clay texture
8-10	5YR 2.5/1	35	5YR 4/6	5	CS	PL/M	Sandy	sand texture, dark color with reddish hue, possibly coated with redox. Unlikely to be red parent material

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ 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) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ 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:

Area meets problematic soil condition "recently developed wetlands" as the area was excavated for wetland mitigation creation in 2019. Despite the disturbance, and the lack of hydrology and veg, redox features present. No oxidized rhizospheres present, so redox may be remnant. Sand in lower layer had a reddish hue that may have been redox or may indicate that water has not moved through to wash out iron and manganese

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 on 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 (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised 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 indicators of wetland hydrology observed. No oxidized rhizosperes observed, and they are observable downslope of this point. It is likely that the seep comes out of the hillside just downslope of this point, based on indicators of hydrology lower down.

ATTACHMENT F. SITE PHOTOGRAPHS AND AERIAL IMAGERY

1. Off-channel habitat in high water conditions, May 4, 2023, facing SE.

2. Off-channel habitat below the OHWM during low water conditions, September 26, 2023, facing N.

3. Off-channel habitat, side channel in foreground, Linnton Creek outfall in background, May 31, 2023, facing SW.

4. Linnton Creek in the background discharges into the side channel in the foreground, March 15, 2023, facing S.

5. Active channel margin near N side channel outlet, August 4, 2021, facing SE.

6. Linnton Creek, May 4, 2023, facing E.

7. Northern seep wetland overview, with side channel in background, May 4, 2023, facing SE.

8. Standing water in northern seep wetland during the dry season; seep discharges year-round. September 26, 2023.

9. SP1 – depressional wetland near western Site boundary. September 26, 2023.

10. SP1 – algal matting, water stained leaves, soil cracking, and water marks on rocks indicate wetland hydrology. September 26, 2023.

11. SP4 – edge of northern seep wetland, red flags indicate wetland boundary. October 27, 2027, facing SE.

12. SP4 – substantial redox present in the soil, including oxidized rhizospheres. October 27, 2023.

13. SP7 – located in the northern seep wetland upslope of the OHWM, where perennial seep flow pools. October 27, 2023, facing N.

14. SP7 – saturation at the surface and inundation at 2" below the surface during the dry season indicate perennial wetland hydrology. October 27, 2023.

15. Representative slope wetland fed by seep and dominated by slender hairgrass, transitioning into willow and other hydrophytic species downslope. Sept 26, 2023, facing NW.

16. SP10 – substantial redox present throughout seep wetland sample points, including along oxidized rhizospheres. September 25, 2023.

17. SP11 – taken in southern seep wetland below toe of slope, where seep hydrology pools and FACW/OBL plants dominate. September 25, 2023.

18. SP12 – taken inside the southernmost seep wetland where the transitional slope wetlands become more distinctive. October 26, 2023, facing SW.

19. SP12 – despite large amounts of wood in this pit, clear soil gleiing and redox formation were indicators of wetland hydrology. October 26, 2023.

20. SP14 – upland point representative of upslope seep wetland boundary, where yarrow and lupine come in and oxidized rhizospheres drop out. October 26, 2023, facing SW.

21. Google Earth aerial imagery of seep hydrology on Site is most clear immediately following restoration. Taken August 2020.

22. Google Earth aerial imagery of seep hydrology on Site, taken May 10, 2021.

22. Google Earth aerial imagery of seep hydrology on Site, taken June 17, 2021. Lighter veg color is yarrow, a good indicator of the upper edge of seep wetland on Site.

24. Google Earth aerial imagery of seep hydrology on Site, taken May 2023.

ATTACHMENT 10. ADAPTIVE MANAGEMENT LETTER DATED OCTOBER 4, 2023

RESTORCAP

October 4, 2023

Portland Harbor Natural Resource Trustee Council
c/o Ms. Lauren Senkyr
Habitat Restoration Specialist
VIA EMAIL lauren.senkyr@noaa.gov

RE: Linnton Mill Restoration Site Request for Year 3 Credit Release Following Completion of Adaptive Management of the Off-Channel Habitat

Dear Lauren,

On behalf of Linnton Water Credits, LLC (LWC), RestorCap LLC, its manager, would like to inform the Trustee Council that adaptive management to the low-lying portion of the Off-Channel Habitat (OCH) was completed on September 18, 2023. The Trustee Council's request for adaptive management was to remediate the ponded area in the OCH to prevent potential fish stranding in the low-lying area that is disconnected from the rest of the channel in extremely low-water conditions. In your letter from December 3, 2021, you described the adaptive management action:

> *Sedimentation in and near the off-channel habitat has created a berm and area of ponding during low flow conditions. Low water depths, high water temperatures, and [fish] stranding may result for certain periods of time. In Spring 2021 the Project Developer agreed to conduct depth, temperature, and photo monitoring to better understand the nature and extent of the issue, and potential ecological impacts. In Fall 2021 the Project Developer proposed regrading the area to raise the elevation in the ponded area to prevent ponding and disconnection from Linnton Creek. This work is currently scheduled for the in-water work window during summer 2022.*

RestorCap continued to monitor this depression/area of ponding through daily photo monitoring, in addition to the regular temperature, depth, and dissolved oxygen monitoring conducted by Waterways. The ponded area was observed to become shallower over time as sediment accumulated. It was also rarely cut off from the main channel due to high water levels throughout the year. Also due to high water levels, and the limited window when in-water work is permitted, this adaptive management work was not completed until recently. To avoid potential impacts to fishes, RestorCap avoided in-water work completely, and waited to conduct the work until the ponded area was completely dry and no fishes were present.

The remedial action was conducted on September 18, 2023, when the pond was completely dry and disconnected from the rest of the OCH; thus, RestorCap was not

obliged to obtain a fish salvage permit from Oregon Department of Fish and Wildlife (ODFW) to conduct the work in a wet channel. The dry depression was filled with approximately 5 cubic yards of sand that was allocated from the nearby berm. No more than 1 foot of material was removed from any portion of the berm. All work was conducted using hand tools, and no heavy machinery was required. Please see Attachment A for photographs.

Credits Release Request

Following our submittal of the Credit Release Request dated January 30, 2023, our former employee Kari Dupler was informed that credits from the Year 3 release would not be released by the Trustee Council until the above-described adaptive management action was completed. With the adaptive management complete and the Year 3 Performance Standards met, LWC would like to proceed with the Credits release for Year 3.

In accordance with the credit release schedule included as Appendix 1 to the Habitat Development Plan and updated in the Modified Revised Forecast Settlement Credit Value for Linnton Mill Restoration Site letter dated November 2, 2020, 30% of credits may be released upon achievement of Year 3 Performance Standards.

The Year 3 (2022) Annual Monitoring Report for the Linnton Mill Restoration Site was submitted to the Trustee Council in December 2022. That report details results of ongoing monitoring efforts and confirms that all Year 3 performance standards were met. Additionally, LWC has set aside $361,711, which represents 50% of the $723,422 required for Long-Term Stewardship funding.

As such, LWC requests a total release of 30% of the available Credits which represents 150.75 DSAYS. Accordingly, LWC requests the following release DSAYs:

NRDA-Only: 1.10 DSAYs

Dual-Purpose: 149.65 DSAYs

We appreciate the opportunity to coordinate with the Trustee Council to ensure that the Linnton Mill Restoration Site is successful in meeting the outlined performance standards. Please let us know if you have any questions or comments.

Thank you for all your work in getting us to this point.

Sincerely,
Linnton Water Credits
RestorCap, LLC

Will Ohlenforst

Will Ohlenforst

Copies of this letter provided to:

- Grey Wolf, DSL
- Brandon Rogers, Yakama Nation Fisheries
- Sherrie Duncan, Yakama Nation Fisheries
- Andrea Seager, USACE
- Michael Neal, USACE
- Annie Birnie, NOAA
- Rebecca Digiustino, DEQ

Photo 1 – Dried ponded area in OCH facing north

Photo 2 – Filled ponded area in OCH facing north

Photo 3 – Dried ponded area in OCH facing south

Photo 4 – Filled ponded area in OCH facing south

Photo 5 – Dried ponded area in OCH facing west

Photo 6 – Filled ponded area in OCH facing west

Photo 7 – Dried ponded area in OCH facing east

Photo 8 – Filled ponded area in OCH facing east