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Alder Creek Restoration Project

2022 Monitoring Report Year 7

Wildlands PNW
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WILDLANDS

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Reporting Period	November 1st of the preceding year (2021) through October 31st of the current year (2022).

LIST OF ABBREVIATIONS

ACM	Active Channel Margin
DSAYs	Discounted Service Acre Years
Project	Alder Creek Restoration Project
PRPs	Potentially Responsible Parties
Trustees	Portland Harbor Natural Resource Trustee Council
Report	Year 7 Habitat Monitoring Report/Annual Report for the Alder Creek Project

I. OVERVIEW

This report serves as the Year 7 (2022) Habitat Monitoring Report/Annual Report ("Report") for the Alder Creek Restoration Project ("Project"). The Alder Creek Restoration Plan was signed by all members of the Portland Harbor Trustee Council by July 2014 and the site was established (e.g., Deed Restriction recorded and financial securities posted) in February 2015. This report will include all the requirements of the Habitat Monitoring Report as detailed in Exhibit B-1, Section 6.4 and 6.4.1. of the Restoration Plan (Plan).

Report Time Period
Per the Plan, the "Reporting Period" is from November 1st of the preceding year (2021) through October 31st of the current year (2022). This report documents the seventh year of the Establishment Period for the Alder Creek Restoration Project.

A. RESPONSIBLE PARTIES

The Alder Creek Restoration Project ("Project") is a site that has been developed for use by potentially responsible parties ("PRPs") and/or the Portland Harbor Trustee Council ("Trustees") to satisfy restoration obligations resulting from the Natural Resource Damages Assessment in Portland Harbor. The Restoration Plan was signed in 2014 by:

- National Oceanic and Atmospheric Administration, acting on behalf of U.S. Department of Commerce
- U.S. Fish and Wildlife Service, acting on behalf of U.S. Department of the Interior
- Oregon Department of Fish and Wildlife, acting on behalf of State of Oregon
- Confederated Tribes of the Grand Ronde Community of Oregon
- Confederated Tribes of Siletz Indians
- Confederated Tribes of the Umatilla Indian Reservation
- Confederated Tribes of the Warm Springs Reservation of Oregon
- Nez Perce Tribe

The eight signatories to the Restoration Plan are collectively referred to as the Trustees. The Project was established (Deed Restriction recorded and financial securities posted) in February 2015. Earthwork related to habitat construction was completed in October 2015. Monitoring years are listed in the methods section below.

People responsible for the monitoring, maintenance, management, and reporting for the Alder Creek Restoration Project include the following:

Restoration Implementer
and Property Owner: Portland Harbor Holdings II, LLC (Wildlands)

Project Biologists:
Bill Roper, Wildlands
Staff Biologists, Turnstone Environmental

Land Management:
Pat Stephens, Wildlands
Lauren Banks, Independent Contractor

Report Preparation: Julie Mentzer, Project Manager, Wildlands
Bill Roper, Director of Biological Services, Wildlands

B. PURPOSE

The purpose of the Project is to restore, create, and enhance approximately 52.28 acres (Property) on the southern tip of Sauvie Island at the divergence of the Willamette River and Multnomah Channel located in Multnomah County just outside of the City of Portland, Oregon. The Project provides restoration credits in the form of discounted service acre years (DSAYs) that may be used to offset restoration obligations under NRDA.

C. LOCATION

The Restoration Project is located in the northernmost reach of the Portland Harbor Superfund Site on the southern tip of Sauvie Island (see **Figures 1 and 2**). The Sauvie Island Drainage Improvement Company's (SIDIC) levee bisects the Property and separates the Property into two distinct areas. The southeastern portion of the Project (waterward of the SIDIC levee and within the floodplain of the Willamette River) is approximately 32 acres and is bordered by the SIDIC Levee on the north, mostly undeveloped private property to the northeast, the Willamette River to the east, and the Multnomah Channel to the southwest. The northwestern portion of the Project (landward of the SIDIC levee and outside of the active floodplain) is approximately 20 acres and is bordered on the northeast by private rural-residential property, on the east by a utility easement, on the south by the SIDIC Levee, and by the ESCO Landfill to the northwest.

The Project is located within Township 2N, Range 1W, Sections 27, 28, and 34 of the Linnton and Sauvie Island, Oregon 7.5-minute U.S. Geological Survey quadrangle maps, Willamette Meridian, identified by tax lot numbers 700 and 800.

D. HABITAT CONSTRUCTION AND PLANTING

Habitat construction commenced in June 2014. After completing approximately 25% of the site, the remainder of the site was graded to prevent fish stranding in the event of a 100-year event, and the site was buttoned-up for winter. Grading resumed in June 2015 and the earthwork was completed in October 2015. Planting began in the summer of 2015; however, the majority of the plants were installed in spring and summer of 2016, with the final planting effort occurring in November and December of 2016. **Table 1** provides a summary of habitat acreages from the 100% design drawings and the final as-built drawings. **Table 2** provides the planting dates, planting densities, and any substitutions.

Table 1. Proposed Restoration Habitat Types

Habitat Type	Active Channel Margin	Proposed (acres)	As-Built (acres)
Side Channel (off-channel habitat)	No	3.10	3.16
Mudflat or Beach	Yes	3.29	3.46
Vegetated Marsh	Yes	5.57	5.13
Scrub-shrub riparian below the OHWL	Yes	11.15	11.76
Riparian forest within the historic floodplain	No	8.79	8.39
Riparian forest outside the historic floodplain (upland cottonwood-dominant forest)	No	7.05	7.20
Upland Oak-dominant forest	No	13.33	13.18
Total ACM		**20.01**	**20.35**
Total Project Acreage (including ACM)		**52.28**	**52.28**

Table 2. Planting Schedule

Habitat	Date Planted	Density Proposed	Density Planted	Substitutions
Perennial Marsh (created in 2014)	July/August 2015	5,000 plants/acre	5,000 plants/acre	*Carex densa* substituted for *Carex aperta*
Scrub-shrub and Riparian; elevation 13 (water level) and above*	February 2016	2,000 plants/acre	2,000 plants/acre	None
Perennial marsh (created in 2015)	July/August 2016	5,000 plants/acre	5,000 plants/acre	*Carex densa* substituted for *Carex aperta*
Scrub-shrub (elevations 10 to 13)*	October 2016	2,000 plants/acre	2,000 plants/acre	None
Upland Forest: Cottonwood dominant	December 2016	2,000 plants/acre	2,000 plants/acre	*Rubus ursinus* substituted for *Rubus idaeus*
Upland Forest: Oak dominant	December 2016	860 plants/acre	860 plants/acre	*Rubus ursinus* substituted for *Rubus idaeus*
Upland Forest: Oak dominant	November 2019	1,200 plants/acre	1,200 plants/acre	None

* During the February 2016 planting, the water level was at elevation 13 so the scrub-shrub areas between 10 and 13 were planted in October 2016 when the water level was below 10 feet.

E. PERFORMANCE STANDARDS

The performance standards for Year 7 include hydrology, geomorphic/structural features, installed vegetation monitoring, invasive plant species including reed canarygrass, and photo documentation. As a result of Year 7 monitoring, no fish barriers were observed, invasive plant species cover is low with management ongoing, installed vegetation within the emergent marsh, scrub-shrub, and riparian forest habitats continue to progress with good survivorship, areal cover, and recruitment, and the site habitats are continuing to develop. Additional monitoring, not tied to performance standards, was required for some elements. More information is included below in the Habitat Monitoring Requirements and Habitat Monitoring Data/Results sections. See **Appendix 1** for a list of performance standards and the results of monitoring.

F. CORRECTIVE OR MAINTENANCE ACTIVITIES

Activities to control and manage invasive species have been occurring on the site since 2013. Beginning in 2013, in the areas outside of the grading limits, a combination of mowing and supplemental hand removal was used to minimize the cover of reed canarygrass (*Phalaris arundinacea*) and Himalayan blackberry (*Rubus armeniacus*). During early management activities, a significant amount of native trailing blackberry (*Rubus ursinus*) was found and retained in these areas.

After the completion of grading activities in October 2015, ongoing invasive species management activities were conducted to minimize invasive species establishment. Invasive species management during the Reporting Period (November 1, 2021 to October 31, 2022) is discussed further in the "Habitat Data/ Results" section.

In Year 7, a Wildlands' representative regularly visited the site to assess trespass, trash, invasive species, erosion, and to conduct general inspections of the site. Year 7 monitoring identified that the emergent marsh cover for Year 7 did not meet the performance standard for native vegetation cover. In addition, the riparian scrub-shrub and riparian forest (ACM), the riparian forest and cottonwood-dominant upland forest, and the oak-dominant upland forest all fell short of the native woody species cover performance standards for the respective habitats for Year 7. See the following section for further discussion.

Lauren Banks, an independent contractor, was on the site daily during the summer months to perform land management and maintenance duties including checking and repairing signs, assessing and treating invasive species, looking for signs of trespass, collecting and disposing of trash, and fulfilling any other management or maintenance needs. See **Appendix 2** for the Maintenance Activity Log.

A replant of the oak-dominant upland forest was conducted in November 2019 to address a significant loss of planted trees and shrubs. See Table 3 below for details. The planted trees and shrubs were irrigated in 2020-2022, and irrigation is expected to continue in 2023 starting in June or July. While this habitat did not meet the Year 7 performance standard for native woody species cover, it did meet all the Years 2-5 performance standards including woody species density and native herbaceous cover. Monitoring identified 1,019 native woody plants per acre (more than double the Year 5 performance standard of 500 or more native woody plants per acre), so no corrective actions are warranted as the habitat is on a trajectory towards meeting the performance standards, although delayed as a result of the replant. For Year 7, the main goal for this habitat was to continue efforts to establish the native woody vegetation. The results of monitoring done in Year 7 suggest that native herbaceous cover is increasing, so hand removal of invasive species will continue and the habitat will be assessed in Year 8 to determine if the habitat has progressed to the point that chemical and/or mechanical control of invasive species is appropriate.

Table 3. Oak-Dominant Upland Forest Replant, 2019

Plant Species		**West Mound (7.5 acres)**	**East Mound (2.1 acres)**
Scientific Name	Common Name		
Alnus rubra	red alder	609	171
Crataegus douglasii	black hawthorn	609	171
Fraxinus latifolia	Oregon ash	1078	302
Mahonia aquifolium	Oregon grape	703	197
Physocarpus capitatus	Pacific ninebark	469	131
Quercus garryana	Oregon white oak	2953	827
Ribes sanguineum	flowering currant	469	131
Rosa pisocarpa	swamp rose	703	197
Symphoricarpos albus	snowberry	1406	394
	Total	8,999	2,521
Total plants installed over 9.6 acres		**11,520**	

G. RECOMMENDATIONS FOR CORRECTIVE OR REMEDIAL ACTIONS

The Year 7 monitoring showed that the emergent marsh habitat was not meeting the 40% native herbaceous performance standard with 14.8% native herbaceous cover documented. In Year 6, the marsh was spot-checked in several areas and these spot-checks suggested that the native emergent cover was near or above 30% in Year 6. Since Year 5 and Year 7 both had late and long inundation periods resulting in a substantially shorter growing season unlike Years 4 and 6 which had much longer growing periods, the data suggests that fluctuations in native emergent marsh cover will continue from year to year depending on the timing and duration of inundation in the marsh habitat. Since native plants are present and the percentage of non-native cover has not increased, the native emergent marsh cover is expected to increase in years with optimal conditions. No corrective or remedial actions are recommended for this habitat as they are not likely to yield higher native herbaceous cover.

In the Riparian Scrub-Shrub and Riparian Forest ACM habitat, the native woody species cover was documented at 53% while meeting all the other vegetation standards for Year 7. While the 53% native woody cover does not meet the Year 7 native woody species cover standard of greater than 55%, it is Wildlands' opinion that the habitat meets the intent of the standard. No corrective or remedial actions are recommended at this time.

For Year 7 in the Riparian Forest and Cottonwood-dominant Upland Forest, both density and cover data were collected for native woody species in order to understand what was occurring in this habitat as we transition from density to cover standards. In Year 5, monitoring of the riparian forest and cottonwood-dominated upland forest identified 1,017 native woody plants per acre which was not meeting the density standard of at least 1,200 native woody stems per acre. In Year 7, monitoring identified 1,184 native woody plants per acre which is an increase over the Year 5 monitoring results. The increase is likely the result of naturally recruited plants and/or possibly plants that appeared dead during Year 5 monitoring but were resprouting during the Year 7 monitoring. The native woody species cover in the riparian forest and cottonwood-dominated upland forest was recorded as 30.5%. While this amount of native woody species cover does not meet the Year 7 standard of greater than 50% cover, it represents significant cover which is expected to increase year by year. All other vegetation standards are being met in this habitat. No

corrective or remedial actions are recommended for this habitat as it is on a trajectory to meet the cover standards without intervention in the coming years, even if slightly delayed.

The Year 7 monitoring of the Oak-dominant Upland Forest identified the native woody species cover at 6.1% which is well below the Year 7 standard of greater than 25%; however, the habitat is meeting all of the Year 2-5 performance standards including native woody species density which was identified as 1,019 native woody plants per acre which is more than double the Year 5 density standard of greater than 500 plants per acre. This habitat is progressing well and is on a trajectory to meeting future performance standards. Wildlands will continue the management and irrigation of this area to establish the native woody vegetation and implement chemical and/or mechanical control of non-native species once the risk of damaging the young plants has decreased to an acceptable level. No corrective or remedial actions are recommended at this time.

II. HABITAT MONITORING REQUIREMENTS

Monitoring requirements, including the current year and future years, are provided below. These requirements were taken from the "Habitat Development Plan" of the signed Alder Creek Restoration Plan and included in this report for reference (see Table 4). If monitoring methods differ in any year from those prescribed in the Habitat Development Plan, the change in method and the reason for the change will be detailed in the Habitat Monitoring Data/Results section.

Table 4. Establishment Period Monitoring Schedule

Biological Resource *Component*	**Monitoring Frequency**	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Hydrology & Geomorphology													
Visual Surveys (including LWD retention)	Years 2, 3, 5, 7, 10								X				
Topography	Years 1, 3, 5, 7, 10								X				
Invasive Plant Species													
Vegetation	Years 1, 2, 3, 4, 5, 7, 10			X				X					
Native Vegetation													
Riparian Scrub/Shrub, Riparian Forest, Upland Forest	Years 2-5, 7, 10								X				
Emergent Marsh	Years 2-5, 7, 10								X				
Wildlife													
Fish Surveys	Years 2*, 3, 5, 7, 10		X	X	X	X							
Bald Eagle Surveys	Years 3, 5, 7, 10	X	X	X	X	X	X	X	X				*I*
Bird Surveys	Years 2*, 3, 5, 10				X	X	X						
Mink Surveys	Years 3, 5, 7, 10					X	X	X					
General Site Monitoring													
Aerial Photographs	Years 1, 3, 5, 7, 10								X				
Photo Documentation	Years 1-5, 7, 10								X				

* Fish surveys and bird assemblage surveys were scheduled to occur in Year 1 (2016); however, they were delayed until Year 2 (2017). All other scheduled monitoring events will occur as previously scheduled.

A. MONITORING PERIOD AND SCHEDULE

The Project includes numerous habitat monitoring requirements over the initial ten-year interim monitoring period (i.e., Establishment Period), which differ by year (Table 4). The ten-year monitoring period is as follows (listed by reporting year):

Year 1 – 2016
Year 2 – 2017
Year 3 – 2018
Year 4 – 2019
Year 5 – 2020
Year 6 – 2021
Year 7 – 2022
Year 8 – 2023
Year 9 – 2024
Year 10 – 2025

B. HABITAT MONITORING METHODS

1. AERIAL PHOTOGRAPH INTERPRETATION

Aerial photos will be taken during late summer each year that aerial photography is required. This will allow a year-to-year comparison of the development of planted vegetation, geomorphology, and will allow the tracking of general changes to the Restoration Site that may be difficult to detect during surveys constructed from the ground.

2. PHOTO DOCUMENTATION

Ten permanent photograph locations have been recorded with Global Positioning System (GPS) to illustrate year-to-year progress of the Project. Subsequent photos will be taken from the same location each year photo documentation is required. At these permanent photograph locations, the monitoring biologist will take four direction photos, one in each cardinal direction (N, E, S, W), unless the photo location borders the Project boundary, in which case photos will be taken from all directions that show the Project. These photos will be taken in August or September in each year that photo documentation is required.

3. HYDROLOGY AND GEOMORPHOLOGY

During years 1, 3, 5, 7, and 10, topographic surveys will be completed once a year after the wet season to document changes in site topography and structural habitat features. Topographic surveys will include collecting topographic readings along the 5 pre-selected, permanent monitoring transects. In addition, once a year during years 2, 3, 5, 7, and 10 after the wet season a visual inspection will be made to document any barriers that prevent fish from entering or exiting the site. If a fish barrier is identified, the Trustee Council will be notified within three (3) business days of discovery. Aerial photos of the site will be collected once during late summer during years 1, 3, 5, 7, and 10. Data from the Columbia Slough gauge was used to monitor water elevation levels on the site. The USGS station at Columbia Slough has been determined to accurately and reliably provide a published record of the condition and water levels at the Alder Creek Restoration Site. This station is located approximately 2 miles down-river of the Project site. To determine the accuracy of this published data, the river elevation at the Project site has been

surveyed on numerous occasions between 2010 and 2020 by both Wildlands' staff and by licensed surveyors from AKS Engineering and Forestry. The surveyed river elevation data has been compared to the closest published 15-minute interval "gage height" at the USGS Columbia Slough station. It has been found to accurately match with the survey data, with an average difference of less than 0.02 feet. Historic water data from this station can be downloaded and a clear picture of the hydrology of the Project site can be determined. Additionally, a satellite aerial photo corresponding to the high-water event for the monitoring year (or as close to the high-water event as is available) was obtained for Years 4, 5, and 7. The photos were analyzed to determine the acres of inundation within the ACM at the time of the photo. Two data loggers were installed on the Project site in October 2020 to collect water level data for Years 7 and 10. While there is a high likelihood that the onsite data loggers could be lost or damaged (e.g. being bent or damaged by floating debris during flood events) to the point of compromising accuracy, we will attempt to use this method in Years 7 and 10 rather than rely on satellite imagery availability which is limited by wind, rain, and cloud conditions.

In order to determine if changes of more than 10% in active channel margin (ACM) acreage from the as-built surveys have occurred, the following method will be followed: For Years 3 and 5, additional elevation points were taken along elevation 20 to determine if the acreage of active channel margin (ACM) has changed by 10% or more. However, as tree and shrub cover increases, surveying along elevation 20 may be increasingly difficult. If dense tree and shrub cover prohibits surveying along elevation 20, visual surveys will be conducted in Years 7 and 10 to record any observed changes. In addition, elevations will be recorded along the original transects to determine if the width of the ACM has changed along the transects.

4. NATIVE VEGETATION

Riparian Scrub-Shrub, Riparian Forest, and Upland Forest

Monitoring will include:

- direct counts of a sub-sample of live installed woody plants,
- direct counts of volunteer plants by species within established sample plots at various locations.
- vegetation cover estimates (herbaceous species only during Years 2-5 and all species thereafter), and
- representative photographs taken from (a minimum of ten) permanent photographic documentation points.

Quantitative monitoring data will be primarily collected using 10x10 meter sample plots along five main baseline transects running more or less north/south across the site (**Figure 3**). Beginning in Year 5, three additional sample plots within the upland forest will be monitored during the monitoring events within the upland forest. The locations of the three additional sample plots have been added to Figure 3.

In each monitoring year, data will be tallied by species and each woody plant will be assessed for plant vigor (i.e., good, fair, poor). Density data will be extrapolated to a per an acre estimate by dividing the total number of trees observed by the amount of surveyed acreage per each habitat. Signs of beaver herbivory will also be noted. The sample plots will also be used to assess cover and diversity for the wooded habitats. Cover classes will be used to determine cover values for each species identified within the plot. The presence and extent of any invasive plant species will be documented throughout the riparian areas during this monitoring.

Emergent Marsh

Monitoring of emergent marsh vegetation will be conducted in Years 2, 3, 4, 5, 7, and 10. Monitoring shall include visual surveys of the emergent marsh vegetation. Cover and diversity will be quantified

using a quadrat method. A sampling transect will be run perpendicular to the baseline transect and quadrat data will be collected along the sampling transect. The frequency of sampling quadrats and the size of quadrats will be tailored to best assess this habitat type. The sampling interval and the size of the quadrat will be determined in the field based on pilot sampling data.

Cover classes will be used to determine cover values for each species identified within the quadrat. Bare soil, rock, wood, or other non-plant cover will also be quantified. The location of the sampling transect will need to be determined in the field because the extent of this habitat type occurs in a fairly narrow belt along the constructed channels. A sampling transect will be run perpendicular to the main baseline transects and quadrat data will be collected along the sampling transect. The frequency of sampling quadrats and the size of quadrats will be tailored to best assess this habitat type and based on pilot sampling data. The extent of existing habitat will then be compared to construction drawings and design goals in order to assess the relative success of management efforts.

5. LARGE WOODY DEBRIS

Large woody material monitoring will be performed in Years 2, 3, 5, 7, and 10 following winter-spring floods to assess overall quality and stability of placed large woody material as well as any natural recruited wood, and to assess their function. Monitoring will consist of visual inspections by foot or by boat.

6. INVASIVE NON-NATIVE PLANT SPECIES

In Years 1 through 5, 7, and 10 invasive vegetation field surveys will be conducted annually during the riparian, marsh, and forest habitat monitoring. During Years 6, 8, and 9, invasive species presence will be noted and mapped during general site assessments, and any necessary treatments will be undertaken depending on the species and its extent. Invasive species are as defined in Section 6.1.8 in the Habitat Development Plan.

7. FISH MONITORING

Fish will be monitored at standard locations to determine the presence of native fish. The monitoring will occur within the newly created channels in Years 2[1], 3, 5, 7, and 10, or until juvenile salmonids are documented on the site. Sampling will take place two times per month from February through May in each monitoring year until juvenile salmonids are documented within the created channels. The timing of fish monitoring is subject to weather and other ecological factors and may change based on field conditions. During fish monitoring, habitat conditions will be recorded, including shade, cover, depth, substrate, and water quality (including water temperature, dissolved oxygen, turbidity). Water quality measurements should be taken where fish monitoring occurs and at locations in the Willamette River and Multnomah Channel adjacent to the Project site. During fish surveys, occurrences of aquatic plants will be noted by species, location, and relative abundance. All potential permits necessary for the authorization of fish sampling will be acquired from the appropriate regulatory agencies. Sampling methods will adhere to all permit conditions.

Monitoring will be conducted using one or more of the following: snorkel surveys, visual shoreline surveys, or underwater surveys using a GoPro camera. Beach seining was used for the first monitoring event, but since a salmonid was captured, beach seining will no longer be conducted.

[1] The Year 1 fish surveys were delayed until Year 2 (2017).

8. OTHER WILDLIFE MONITORING

- Bald eagle and osprey monitoring
    - Monitoring will take place in Years 3, 5, 7, and 10, once per week from mid-December through August. Although these surveys are targeting bald eagle, other raptor sightings (including osprey) and behavior will also be recorded.
- Investigate potential bald eagle and osprey nests
    - During site visits, all potential bald eagle and osprey nests will be identified and the location recorded with a GPS. Using binoculars or spotting scopes, the nest will be observed until it can be determined if it is actively being used, and by what type of bird. This information will be recorded and the nest will be documented for future visits.
- Bird assemblages including diversity and abundance
    - Bird monitoring will be completed in Years 2[2], 3, 5, and 10. The point counts will be done on transects established during pre-construction monitoring. These transects will be monitored once a month in April, May, and June.
- Mink
    - Mink usage monitoring will take place along the waterways of the Restoration Project including a 50-foot buffer from each waterway in the spring and summer in Years 3, 5, 7, and 10. Survey methods include camera traps at three locations with scent stations to lure animals into camera view. Searches for tracks, scat, and den sites should also occur in designated areas with potential for mink use and shall be conducted during camera trap data collection and maintenance or at least twice a month. Monitoring should take place for at least 12 weeks of spring/summer.
- Pacific lamprey
    - Lamprey monitoring will be conducted as part of a Harbor-wide monitoring effort done by USFWS staff in accordance with the Lamprey Monitoring Plan developed by the Trustees.

During monitoring efforts for specific species, any observation or sign of other Target Species will be documented.

[2] Year 1 bird assemblage surveys were delayed until Year 2 (2017).

III. PERFORMANCE STANDARDS

Performance Standards for the Project are below. This information is from the Alder Creek Restoration Plan, Exhibit B-1 (Habitat Development Plan), Section 5.3.

Performance standards have been created for the following habitat parameters:

- Hydrology
- Geomorphic/structural features
- Vegetation
    - Emergent marsh
    - Shrub-scrub and riparian (ACM)
    - Riparian forest and cottonwood-dominated upland forest
    - Oak-dominated upland forest
    - Invasive plant species
- Permanent protection

A. HYDROLOGY

A visual survey will be conducted (on foot or by boat) of the created channels and the connections to the Multnomah Channel and the Willamette River in Years 2, 3, 5, 7, 10. The following performance standards will be used to demonstrate the success of newly created hydrologic connections:

- Constructed side channels and ACM (beach, mudflat, emergent marsh, and riparian scrub-shrub/forest) will flood (i.e., filling and partially or completely draining) in response to fluctuations in the daily tidal regime and seasonal river stages in the Willamette River and Multnomah Channel;
- Connections shall remain open (not blocked or clogged with debris or sediment to the extent that it prevents hydrologic connectivity to the Willamette River and Multnomah Channel; and
- Created and enhanced emergent marsh and riparian wetland areas will remain flooded, ponded, or saturated for a duration of time sufficient to maintain wetland hydrology (i.e. 14 or more consecutive days) or show reliable Group A or B primary wetland hydrology indicators as described in the Regional Supplement to the Corps of Engineers Wetland Delineation manual: Western Mountains, Valleys, and Coast Region (Version 2.0, May 2010).

B. GEOMORPHIC/STRUCTURAL/HABITAT COMPLEXITY ELEMENTS

This performance standard will use topographic surveys, aerial photography, hydrology, and visual site inspections to verify that the total quantity of ACM and side channel habitat is being maintained, that there are no barriers to fish entering or exiting the side channel, and that structural habitat features were installed as designed and are being retained.

A minimum of 24 pieces of large woody debris ("LWD") will be installed within the active channel margin (i.e., along the created channels and within the marsh, mudflat, and scrub-shrub habitats). LWD will be from onsite sources. Performance for LWD will be based on retention of pieces and/or natural recruitment, and the following standards will be used:

Years 2, 3, 5, 7, and 10: woody debris will have an 80 percent retention rate including naturally recruited material.

If the amount of large wood on-site fails to meet performance standards in Years 2, 3, 5, 7 or 10 and if existing conditions and hydraulics will allow the retention of replacement materials, LWD will be installed in the interior channels (and marsh/mudflat where appropriate) to achieve the targeted density.

In the forested areas above the OHWL (non-ACM habitats), habitat complexity elements in the form of debris piles, downed wood/logs, and rock piles will be installed at a minimum of one feature for every one acre (for a total of twenty-nine). Out of the 29 elements, at least one but no more than five will be rock piles. All habitat complexity elements will be created from onsite sources.

A minimum of four snags will be installed on the Project site with at least one installed within the upland habitat behind the levee. The snags will be created from onsite sources.

Additional performance standards include:

- During years 1, 3, 5, 7, 10, topographic surveys will be completed once a year after the wet season to document changes in site topography and structural habitat features.
- Annual inspection to document any fish barriers.
- Aerial photos of the site will be collected once during later summer during years 1, 3, 5, 7, 10.
- Water level data loggers will be placed at a minimum of two locations and continuous data will be collected, as feasible. If determined that continuous monitoring is not feasible, an alternative monitoring schedule will be determined in consultation with the Trustee Council representatives.

The following changes at the site would trigger a project review with Trustee Council representatives to determine what, if any, adaptive management actions are necessary:

- Identification of any fish passage barriers.
- Changes of more than 10% in ACM and side channel habitat acreages from the as-built surveys.
- Changes of more than 20% in side channel depths from the as-built surveys. Channel depths will be measured from the OHWM.

C. VEGETATION

Establishment of native vegetation at the Project is anticipated to result from both active planting and volunteer recruitment. Invasive plant species will be based on the current Oregon Department of Agriculture (ODA) Noxious Weed list and the Portland Plant List (September 2011). Invasive species for the purposes of performance evaluation include the following:

- Reed canarygrass
- Species on the ODA Noxious Weed list
- Species on the Portland Plant List, Rank A and Rank B
- Tree and shrub species on the Portland Plant List, Rank C
- Traveler's joy (*Clematis vitalba*) on the Portland Plant List, Rank C

The most recent versions of the ODA and City of Portland lists will be used. All lists described above will serve as a tool to identify and target species for treatment. Performance standards for native habitats and certain invasive species are described below.

Emergent Marsh

The following performance standards will be used to assess the successful establishment of emergent marsh vegetation:

Year 5:

Cover:

- ≥ 30% native herbaceous
- ≤ 10% invasive herbaceous (excluding reed canarygrass)

Years 7 and 10:

Cover:

- ≥ 40% native herbaceous
- ≤ 10% invasive herbaceous (excluding reed canarygrass)

Emergent marsh monitoring will occur in Years 2, 3, 4, 5, 7, and 10; however, the purpose of the monitoring conducted in Years 2, 3, and 4 is to identify the native and non-native herbaceous cover to gauge whether or not the site appears to be on a trajectory towards meeting the performance standards for Year 5. If the emergent marsh appears to be in jeopardy of not meeting the performance standard for Year 5, adaptive management including herbivory prevention and replanting may be conducted.

Riparian Scrub-shrub and Riparian Forest (ACM)

The following performance standards will be used to assess successful riparian scrub-shrub and riparian forest vegetation establishment.

Years 2-5:

- A minimum of 1,200 native woody stems per acre
- At least 5 native woody species (for Riparian Scrub-Shrub within the ACM)
- At least 3 native tree species and 5 native shrub species (for Riparian Forest within the ACM)
- Cover (during the first 5 years, woody species will be excluded from percent cover):
  - ≥ 10% native herbaceous
  - ≤ 10% invasive herbaceous (excluding reed canarygrass)
  - ≤ 10% invasive shrubs

Year 7:

Cover:

- ≥ 55% native woody species
- ≥ 10% native herbaceous
- ≤ 10% invasive herbaceous (excluding reed canarygrass)
- ≤ 5% invasive shrubs

Year 10:

Cover:

- ≥ 80% native woody species
- ≥ 10% native herbaceous
- ≤ 5% invasive herbaceous and shrubs (excluding reed canarygrass)

Volunteer recruitment of native shrubs and trees in the riparian scrub-shrub and forest planting areas may be credited towards the density per acre performance standard. If the density rates fall below the required performance standards, the Restoration Implementer will consult with the Trustee Council or its designee(s) regarding the precise plan for replanting. Replanting will be conducted during the appropriate season following monitoring. Beyond Year 5, mortality rates are expected to be minimal given the ideal conditions present at the Project for riparian vegetation, and natural succession of the plant community is

anticipated to direct long-term habitat development. Mortality due to beaver herbivory is addressed below.

Riparian Forest and Cottonwood-dominated Upland Forest

While the riparian forest (which is within the 100-year historic floodplain, above the OHWL, and waterward of the SIDIC levee) and the cottonwood-dominated upland forest (which is outside the 100-year historic floodplain, above the OWHL, and landward of the SIDIC levee) represent two distinct areas on the site, they have been combined for the purposes of performance standards and monitoring. The following performance standards will be used to assess successful vegetation establishment within the riparian forest and cottonwood-dominated upland forest (above the OHWL).

Years 2-5:

- A minimum of 1,200 native woody stems per acre
- At least 3 native tree species and 5 native shrub species
- Cover (during the first 5 years, trees/shrubs will be excluded from percent cover):
  - ≥ 10% native herbaceous
  - ≤ 10% invasive herbaceous (excluding reed canarygrass)

Year 7:

Cover:

- ≥ 50% native woody species
- ≥ 10% native herbaceous
- ≤ 10% invasive herbaceous (excluding reed canarygrass)
- ≤ 5% invasive shrubs

Year 10:

Cover:

- ≥ 80% native woody species
- ≥ 5% native herbaceous
- ≤ 5% invasive herbaceous and shrubs (excluding reed canarygrass)

Volunteer recruitment of native trees and shrubs in the riparian forest and cottonwood-dominated upland forest planting areas may be credited towards the density per acre performance standard. If the density rates fall below the required performance standards, the Restoration Implementer will consult with the Trustees regarding the precise plan for replanting. Replanting will be conducted during the appropriate season following monitoring. Beyond Year 5, mortality rates are expected to be minimal given the ideal conditions present at the Project for riparian vegetation, and natural succession of the plant community is anticipated to direct long-term habitat development.

Oak-Dominated Upland Forest

The following performance standards will be used to assess successful oak-dominated upland forest vegetation establishment.

Years 2-5:

- A minimum of 500 trees/shrubs per acre
- At least 1 native tree species and 4 native shrub species
- Cover (during the first 5 years, trees/shrubs will be excluded from percent cover):
  - ≥ 25% native herbaceous
  - ≤ 15% invasive herbaceous (excluding reed canarygrass)
  - ≤ 15% invasive shrubs

Year 7:

Cover:

- ≥ 25% native woody species
- ≥ 25% native herbaceous
- ≤ 10% invasive herbaceous (excluding reed canarygrass)
- ≤ 5% invasive shrubs

Year 10:

Cover:

- ≥ 40% native woody species (at least 10% of woody species cover will be provided by oaks)
- ≥ 25% native herbaceous
- ≤ 5% invasive herbaceous and shrubs (excluding reed canarygrass)

Volunteer recruitment of native trees and shrubs in the oak-dominated upland forest planting areas may be credited towards the density per acre performance standard; however, very little natural recruitment is expected to occur. If the density rates fall below the required performance standards, the Restoration Implementer will consult with the Trustee Council or its designee(s) regarding the precise plan for replanting. Replanting will be conducted during the appropriate season following monitoring. Beyond Year 5, mortality rates are expected to be minimal given the ideal conditions which will be present at the Project for oak-dominated upland forest vegetation, and natural succession of the plant community is anticipated to direct long-term habitat development.

Beaver Herbivory

A total of 10% of the woody plantings are expected to be lost to beaver herbivory (which equals 200 per acre since we are planting 2,000). During woody species density monitoring events, all live stems will be counted. In addition, all beaver-chewed stems resulting in mortality will be counted and documented as such.

If beaver herbivory is causing more than 10% mortality, the Restoration Implementer will notify the Trustee Council or its designee(s). Any beaver-chewed stems (resulting in mortality) beyond the 10% expected to be lost to beaver herbivory will be counted and added to the surviving tree/shrub number. If the resulting density is above 1,200 stems per acre, the performance standard will be considered met for that particular year. However, in order to continue on a trajectory towards meeting cover standards in Year 7, replanting efforts will be conducted in the year following monitoring if less than 1,200 live native woody species per acre were documented. No more than two replanting efforts, specifically in response to beaver herbivory, will be conducted in five years. (Additional replanting efforts may be appropriate if plant mortality from other factors are at fault and those efforts will not be counted toward beaver herbivory replanting efforts.) Generally, these replanting efforts will consist of 25 percent of the original planting density and will be concentrated in the areas of lowest survival, however actual replanting percentages and strategies (e.g., plant species selections, planting configurations, etc.) will depend on the extent of beaver damage and other sources of mortality, and what the Restoration Implementer calculates is necessary to be able to meet future performance standards.

To the extent practicable, species least desirable to beaver will be used in the replanting effort to discourage beaver herbivory. If, after 2 replanting efforts within 5 years, beaver herbivory continues to be a significant problem to the point that the site may not meet the cover standards in Years 7 and 10, the Trustee Council or its designee(s) will be consulted and either beaver trapping (with approval from the Trustee Council or its designee(s)) will be implemented or cover performance standards for Years 7 and 10 will be adapted to accommodate the rate of beaver herbivory occurring on the site.

Invasive Plant Species Management

It is anticipated that invasive species in the marsh habitats will be managed by the establishment and proliferation of native plants following restoration activities. As previously mentioned, invasive species in this Plan are defined as the following: reed canarygrass; species on the ODA Noxious Weed list; species on the Portland Plant List, Rank A and Rank B; tree and shrub species on the Portland Plant List, Rank C; and traveler's joy (*Clematis vitalba*) on the Portland Plant List, Rank C. In the riparian areas and the upland forest, invasive species will be controlled during the Establishment Period. Primary methods of removing or controlling invasive plant species include: hand or mechanical removal and chemical treatment. These management techniques are discussed in detail below.

- **Hand/Mechanical Removal for Invasive Pest Plant Management:** Hand removal, use of small hand powered or handheld equipment (such as a Weed Wrench or a chainsaw), and mechanical methods (use of larger equipment with motors such as a small tractor with a mower or harrow) will be the preferred methods for the removal of invasive pest plant species from the Project. The Trustee Council or its designee(s) does not to be notified if removal will be done by hand, hand-held equipment, mower, or tractor.

- **Herbicides:** In some instances (i.e., extensive, severe, or persistent infestations), it may be necessary to use herbicides to control invasive plant species. All herbicides will be applied according to label instructions and will typically be applied using a low pressure spray. All herbicide applications will be conducted by a licensed pesticide applicator following all label instructions, in compliance with Oregon State laws, and in compliance with the permits and authorizations obtained for the Project. For areas where invasive plants are growing within desirable vegetation, herbicide will be applied using a backpack sprayer with a hood to minimize drift. No applications will be done within fifteen feet of any surface water.

The goal of reed canarygrass control is to keep it from out-competing the woody plantings in order to give the native plantings the competitive advantage. Specific performance standards developed for reed canarygrass and zero-untreated species are detailed below. General invasive species standards are detailed above under each vegetation type.

Reed Canarygrass

Because this species is known to be very difficult to control in wetland habitats and it is uncertain how each habitat type will be affected by colonization of reed canarygrass, performance standards specific to reed canarygrass cover have been developed and pulled out separately, and cover values will be averaged across the Project site.

Cover:

- Years 1-5: ≤ 30% reed canarygrass
- Year 7: ≤ 25% reed canarygrass
- Year 10: ≤ 20% reed canarygrass

Zero-Untreated Species

All individual plants of the following species will be treated within the year in which they are found, during the season that is most effective for control with reasonably aggressive, legal treatment with the goal of complete eradication:

- Japanese knotweed
- Giant knotweed
- Himalayan knotweed
- Yellow flag iris
- Butterfly bush
- Purple loosestrife

D. PERMANENT PROTECTION

Prior to the end of the 10-year Performance Period, the Project will be permanently protected with a conservation easement. In addition, a long-term management and maintenance endowment fund account will be established and funded up to a previously determined target amount. Long-term activities covered by this fund include, but are not limited to, the following: maintenance, monitoring, remediation, management, debris removal if hydrologic function is impaired, and removal of invasive vegetation impairing habitat function.

IV. HABITAT MONITORING DATA/RESULTS

The Alder Creek Project has completed Year 7 monitoring. See below for details on the monitoring completed in Year 7. A table listing all Year 7 performance standards and monitoring results is included as Appendix 1.

A. MONITORING RESULTS

1. AERIAL PHOTO INTERPRETATION

Aerial photography was required for Year 7. Aerial photography will next be conducted in Year 10 (2025).

2. PHOTO DOCUMENTATION

Photo documentation was required for Year 7. A total of 10 permanent photo points was established for the Project to document overall site conditions and provide a basis for year-to-year comparisons. Multiple photos in different directions were taken on June 7 and on August 18, 2022 from each photo point. A map of the photo points and corresponding photos can be found in **Figures 5a-5b**. Photo-documentation will be conducted during Year 10 (2025).

3. HYDROLOGY AND GEOMORPHOLOGY

On-site visual surveys throughout 2022 indicated that there has not been erosion, washouts, or sedimentation that would significantly change elevations on site. Visual inspections also confirmed that there were no fish passage barriers that could prevent fish from entering or exiting the site. Hydrology and Geomorphology monitoring was conducted in Year 7 and will next be conducted in Year 10.

Wildlands commonly utilizes NOAA and USGS water data stations to reference river elevations and hydrologic conditions on project sites. The USGS station at Columbia Slough (USGS 14211820 COLUMBIA SLOUGH AT PORTLAND, OR) has been determined to accurately and reliably provide a published record of the conditions and water levels at the Alder Creek Restoration Project. This station is located approximately 2 miles down-river of the Project site (see **Figure 6a**). In October 2020, Wildlands installed two water level data loggers and one barometer on the Project site to use for monitoring in Years 7 and 10.

To determine the accuracy of the published data, the river elevation at the Project site has been surveyed on numerous occasions between 2010 and 2022 by both Wildlands' staff and by licensed surveyors from AKS Engineering and Forestry and has been compared to the data collected by the onsite data loggers. The surveyed river elevation data has been compared to the closest published 15-minute interval "gage height" at the USGS Columbia Slough station. It has been found to accurately match with the survey data, with an average difference of less than 0.02 feet. Historic water data from this station can be downloaded and a clear picture of the hydrology of the Project site can be determined. The Columbia Slough gauge provides an excellent representation of water elevations at Alder Creek. Continuous water level data from the USGS water data station at Columbia Slough and the two onsite data loggers was used to document the water levels on the Project site during the Reporting Period (See **Figure 6b**). The water level data for the Reporting Period shows that river elevations in early January, late-February/early March, and again in June were higher than average. While river levels were generally higher than average throughout much of the year, there were periods in February, March, and April which were lower than average.

Frequent site visits have confirmed that constructed side channels and emergent marsh are flooding (i.e., filling and partially draining) in response to fluctuations in the daily tidal regime and seasonal river stages in the Willamette River and Multnomah Channel, as expected. Channel connections have remained open through 2022 and are not blocked or clogged from sediments or debris.

Wildlands' staff again attempted to use a drone to take aerial photos of high water events during the 2022 monitoring period; however, staff was unable to obtain any useable images due to windy, rainy, and/or cloudy conditions. Satellite imagery was obtained for 6/24/2022 which was just a few days after the high water period of 2022 (**Figure 6q**). While Wildlands' GIS specialist was able to translate the approximate area of inundation captured by the satellite photo to GIS to calculate the approximate acreage of inundation shown on the photo (as requested by the Trustees), it should be noted that this method of calculating site inundation would yield only the approximate area of inundation for that particular moment in time and does not represent the extent of ACM on the site or the maximum level of inundation during a particular monitoring year. The information obtained from the satellite photo was compared to data from the onsite data loggers and the Columbia Slough gauge for accuracy. The aerial photo from 6/24/2022 was taken when water levels were shown at the Columbia Slough gauge to be approximately 17.3' NAVD and the GIS translation of the inundation shown on the aerial photo from 6/24/2022 was approximately 16 acres of ACM inundated. The highest water elevation of the 2021-2022 water year occurred on June 14 when the water reached an elevation of approximately 21.5' NAVD.
AKS collected a total of 203 assessment points along elevation 20 in order to measure the active channel margin onsite in Year 7 (2022). Due to thick vegetative conditions, some of the areas along elevation 20 were inaccessible. These areas are shown on **Figure 6d**. The ACM acreage from the as-built drawings was 20.351 acres. The 2022 ACM acreage is 20.259 acres. The difference between the two acreages is 0.092 which represents less than one half of 1% reduction in ACM area. This is well below the 10% threshold.

In order to determine whether side channel depths have changed more than 20% from the as-built surveys, eight transects crossing the side channels were surveyed. The locations and results of those surveys are shown on **Figures 6e-6p**. The channel depths were measured from the OHWM. Using the average change across the eight transects, the change in side channel depth was approximately 4%. This is well below the 20% threshold.

4. NATIVE VEGETATION

Emergent Marsh

Vegetation monitoring of the emergent marsh was conducted on September 21, 2022. The emergent marsh is partially meeting the associated performance standards for invasive herbaceous cover of ≤10% cover with invasive herbaceous cover observed at less than 1% **(Table 5)**. Native emergent cover was observed at 14.8% which is less than the required ≥40% for Year 7. Overall absolute cover for the emergent marsh was observed at 15.4% (**Appendix 3**). Year 7 was a wetter than average year. As a result, the emergent marsh habitat saw inundation much later into the growing season which likely affected the emergence of vegetation during the growing season resulting in low marsh cover. On drier years when the water recedes much earlier in the growing season, the emergent marsh cover is expected to be more robust.

Due to the highly dynamic nature of the emergent marsh hydrology, the growing conditions, and the narrow elevational band that supports marsh on Sauvie Island, fluctuations in cover are to be expected from year to year. While the emergent marsh did not meet the native vegetation performance standard for Year 7, both the native and non-native cover was down suggesting that the main influence was likely the short growing

season in the emergent marsh habitat due to late season inundation. Invasive herbaceous cover was observed at <1%, which meets the invasive herbaceous cover standard for Year 7 (**Table 5**). Vegetation monitoring of the emergent marsh will continue in Year 10 (2025).

Table 5.

Emergent Marsh				
	Performance Standard Years 7 and 10	Measured Yr. 7	Meeting Standards?	Measured Yr. 5
Native Vegetation	≥40%	14.8%	No	22.15%
Non-Native Vegetation		0.60%		3.23%
Invasive Vegetation	≤ 10%	0.00%	Yes	0.25%
Woody Vegetation		0.00%		0.00%
Phalaris arundinacea		0.00%		0.00%
Unknown Dead / Plant Debris		0.00%		0.00%

Riparian Scrub-Shrub and Riparian Forest (ACM)

Vegetation monitoring within the riparian scrub-shrub and riparian forest with the ACM on the Project was conducted on August 16-18, 2022. During surveys the native woody species cover was determined to be 53.1% which is just below the Year 7 native woody species cover standard of ≥ 55% (**Appendix 4)**. A total of 12 native woody species were observed. Native herbaceous cover (excluding woody species) was observed at 14.4% cover, invasive herbaceous cover (excluding reed canarygrass) was 4.9% cover, and invasive woody vegetation cover was <1% cover (**Appendix 4**). The observed cover meets the ≥10% native herbaceous cover, ≤10% invasive herbaceous, and ≤10% invasive shrubs performance standards. (**Table 6**). Vegetation monitoring of the ACM will continue during Year 10 (2025).

Table 6.

Riparian Scrub Shrub and Riparian Forest (ACM)[1]				
	Performance Standards Years 7 and 10	Measured Yr. 7	Meeting Standards?	Measured Yr. 5
Native Woody Species	≥ 55%	53.1%	No	
Native Herbaceous Vegetation	≥ 10%	14.4%	Yes	33.54%
Invasive Vegetation	≤ 10%	4.9%	Yes	4.58%
Invasive Woody Vegetation	≤ 5%	0.00%	Yes	0.00%
Phalaris arundinacea		4.8%		2.73%
Woody Debris		0.00%		0.00%
Native Woody Species Richness (Scrub-Shrub)		12		11

[1]The riparian scrub shrub and riparian forest habitats within the ACM are monitored and reported on as one habitat.

Riparian Forest and Cottonwood-Dominated Upland Forest

Vegetation monitoring within the riparian forest and cottonwood-dominated upland forest was conducted on August 16-18, 2022. The riparian forest and cottonwood-dominated upland forest is partially meeting the associated performance standards for Year 7. While the habitat is not currently meeting the Year 7 cover standard for native woody species cover (≥50%) at 30.5% cover, 1,184 trees per acre were observed (**Appendix 5**) during surveys suggesting that native woody species are thriving and the habitat is on target to meet native woody species cover standards, even if slightly delayed. A total of 14 native tree and shrub species were observed (Appendix 5). (**Table 7)**. Native herbaceous cover (excluding woody species) was observed at 24.3% cover, invasive herbaceous cover (excluding reed canarygrass) was 5.0% cover, and invasive woody vegetation cover was approximately 1% cover (Appendix 4). The observed cover requirements meet the ≥10% native herbaceous cover, ≤10% invasive herbaceous cover, and ≤5% invasive shrub cover performance standards. Vegetation monitoring of the riparian scrub-shrub and cottonwood-dominated upland forest will continue in Year 10 (2025).

Table 7.

Riparian Forest and Cottonwood-dominated Upland forest				
	Performance Standards Years 7 and 10	Measured Yr. 7	Meets Standards?	Measured Yr. 5
Native Woody Species	≥ 50%	30.5%	No	
Native Vegetation	≥ 10%	24.3%	Yes	16.10%
Invasive Herbaceous Vegetation	≤ 10%	5.0%	Yes	4.16%
Invasive Shrubs	≤ 5%	1.2%	Yes	
Phalaris arundinacea		2.1%		2.38%
Woody Debris		0.00%		0.00%
Native Woody Species Density		1,184/acre		1,017
Native Tree and Shrub Richness		14		13

Oak-Dominated Upland Forest

Vegetation monitoring of the oak-dominated upland forest was conducted on August 16-18, 2022. While the oak-dominant upland habitat is progressing, the establishment has been somewhat delayed, as expected, by the necessary replant conducted in 2019. Year 7 monitoring data showed that the habitat was not meeting the Year 7 performance standard for native woody species cover at only 6.1% cover (the standard is ≥ 25%); however, the habitat is meeting the other Year 7 vegetation performance standards with 30.5% native herbaceous cover, 5.5% invasive herbaceous cover, and 0.1% invasive woody cover (Appendix 4). The oak-dominant upland habitat is currently meeting all Year 2-5 performance standards including the native woody species density at 1,019 native woody species per acre (the Year 5 standard is ≥ 500) Appendix 5). The continued increase in native woody species density is likely due to some natural recruitment as well as the resprouting of several plants that were listed as dead or mostly dead during the Year 5 monitoring. The results of the Year 7 monitoring suggest that the habitat continues to progress and is on a trajectory towards eventually meeting the Year 7 performance standards. Vegetation monitoring of the oak-dominated upland forest will be conducted in Year 10 (2025).

Table 8.

Oak-Dominated Upland Forest	Performance Standards Years 7 and 10	Measured Yr. 7	Meets Standards?	Measured Yr. 5
Native Woody Species	≥ 25%	6.1%	No	
Native Herbaceous Vegetation	≥ 25%	30.5%	Yes	15.18%
Invasive Vegetation	≤10%	5.5%	Yes	0.46%
Invasive Woody Vegetation	≤5%	0.01%	Yes	0.00%
Phalaris arundinacea		0.4%		0.03%
Woody Debris		0.00%		0.00%
Native Trees / Shrubs per acre		1019		733
Native Tree and Shrub Richness		13		12

5. LARGE WOODY DEBRIS AND OTHER HABITAT FEATURES

Large woody debris (LWD) monitoring took place on August 16-18, 2022. A total of 65 pieces of LWD were documented onsite consisting of 43 pieces of LWD originally installed and 22 pieces of LWD naturally recruited, which is the same count as the last monitoring event in Year 5. Currently the Project is exceeding the 80% required LWD retention performance standard for Year 7. Representative photos of the LWD observed during surveys can be found in Figure 7. The remaining habitat complexity features of downed wood, debris piles, and rock piles all remain in good condition. Monitoring of the large woody debris and other habitat complexity features will continue in Year 10 (2025).

6. INVASIVE SPECIES MONITORING

Invasive species monitoring occurred in the spring on March 29, and May 10, 2022 and in the summer/fall concurrent with vegetation surveys on August 18 and September 21, 2022. The results of the invasive species survey can be found in Appendix 4. During the invasive species assessment in the spring, many of the ACM plots were inundated and growth across the rest of the habitats was minimal.

Wildlands' Land Management staff visited the Project site frequently during 2022, and maintained daily site visits during the summer months to assess the site for invasive plant species and treat them (either by hand pulling, digging, mowing, or weed whacking) as necessary. In Years 2, 3, 4, 5, 7, and 10, the invasive plant surveys will be done during the riparian, marsh, and forest habitat monitoring using the 41 permanent plots.

The main method of treatment for invasive plant species on the Project site was hand/mechanical removal which is defined as hand pulling, use of small hand powered or handheld equipment (such as a Weed Wrench or a chainsaw), and mechanical methods (use of larger equipment with motors such as a small tractor with a mower or harrow). Hand/mechanical removal along with herbicide applications will continue to be used in future years as necessary to control invasive plant species.

During 2022, Wildlands' biologists visited the Project daily during the summer months to look for presence of "zero-untreated species". No Japanese knotweed, giant knotweed, Himalayan knotweed, purple loosestrife, or butterfly bush was observed on the Project site. Several instances of yellow flag iris were identified and all instances were removed (See **Figure 8**). (**Table 9**).

Reed Canarygrass

Reed canarygrass was treated aggressively in the years prior to construction. In 2022, forty-one permanent plots along predetermined sub-transects were assessed for invasive species cover including reed canarygrass. The reed canarygrass absolute cover values at each plot were added together and averaged over the site for a total reed canarygrass cover of 2.7% (see Appendix 4). This meets the Year 7 performance standard of ≤ 25%. Over the next few years, chemical and/or mechanical treatment of reed canarygrass will continue, as necessary, in order to keep it from out-competing the woody plantings until they can become established.

Table 9

Invasive Plant Species				
	Performance Standard Year 7	Measured Yr. 7	Meets Standards?	Measured Yr. 5
Reed Canarygrass (*Phalaris arundinacea*)	≤ 25%	2.7%	Yes	1.94%
All individual target species (Japanese knotweed, giant hogweed, Himalayan knotweed, yellow flag iris, butterfly bush, purple loosestrife)		Several instances of yellow flag iris were observed onsite. All instances were removed.	Yes	Purple loosestrife and yellow flag iris observed onsite. All treated.

7. FISH MONITORING

Biologists from Turnstone Environmental Consultants (Turnstone) conducted fish monitoring within the created channels two times per month from February through May 2022. Monitoring was conducted by visual shoreline surveys combined with stationary underwater video recording (using a GoPro). Juvenile salmonids were observed on several occasions along with minnows and other unidentified species. Less than ideal visibility during visual surveys yielded low levels of fish observation and hindered species identification, though the number of observations has increased since adopting stationary GoPro video stations rather than roving shoreline camera surveys. Details on the eight fish monitoring visits can be found in the Alder Creek Wildlife Monitoring Report by Turnstone in Appendix 6. Fish monitoring will be conducted in Year 10 (2025).

8. OTHER WILDLIFE MONITORING

Bald Eagle

During the 2021-2022 survey period, 38 total eagle surveys were conducted. A total of 40 bald eagle sightings and 122 raptor sightings were recorded over the 38 visits. Other raptor species observed included osprey (*Pandion haliaetus*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), Cooper's hawk (*Accipiter cooperii*), peregrine falcon (*Falco peregrinus*), and barn owl (*Tyto alba*). Turkey vultures (*Cathartes aura*) were also observed during many of the visits but are not included in the official raptor counts. Additional details and charts are included in the Alder Creek Wildlife Monitoring Report by Turnstone in Appendix 6. During a single survey, the highest number of eagle individuals observed was three: two adults and one juvenile. Eagles were observed on site, either flying over or perched, for 58 percent of all observations. Eagles were generally observed flying over the site or channel but were occasionally observed perching in the cottonwood trees near the shore. Raptors were regularly observed perching and hunting throughout the site and the restored channels. Eagles and other raptors were observed most often between March and May. Bald Eagle monitoring will be conducted in Year 10.

Bird Assemblage Surveys

Bird assemblage surveys were not required in Year 7. The next bird assemblage surveys will be conducted in Year 10 (2025).

Mink Surveys

Mink surveys were conducted in Year 7. Mink monitoring was done through camera trapping from May 11 to September 2, 2022; however, a high water event rendered the cameras non-functional beginning approximately June 10. New cameras were installed on July 7 after the water receded, resulting in a total of 14 weeks of camera monitoring for the year. In addition, visual surveys for tracks, scat, and den sites were conducted along the shoreline of the survey area six times between May and September. No mink or mink sign were observed on any camera photos. Other wildlife species documented included American crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorus*), and beaver (*Castor canadensis*). Mink surveys will continue in Year 10 (2025).

Lamprey Surveys

Lamprey surveys were not conducted in Year 7. The next lamprey surveys will be conducted by U.S. Fish and Wildlife in Year 10 (2025).

9. GENERAL INSPECTIONS

Regular site visits were conducted in 2022 by Wildlands' biologists, land management specialists, and independent contractors. These site visits were for a variety of purposes including invasive species management, trash removal, sign installation and maintenance, supplemental vegetation surveys, and other maintenance and management tasks. Please see the Maintenance Activity Log in **Appendix 2** for further information. Occasional trespass continues to occur from both the river and the access road; however, no trespass damage was observed. On several occasions, small boat craft including kayaks and canoes have been observed in the created channels. Trash and other non-natural debris that floats in when water levels are high are periodically collected and disposed of by Wildlands' staff during site visits.

V. HABITAT MONITORING CONCLUSIONS

The Year 7 monitoring data shows that the site continues to become established and is meeting the majority of performance standards; however, monitoring in 2022 identified a few performance standards that are currently not being met. The 2022 monitoring showed that the emergent marsh habitat was not meeting the 40% native herbaceous performance standard with 14.8% native herbaceous cover documented. In Year 6, the marsh was spot-checked in several areas and these spot-checks suggested that the native emergent cover was near or above 30% in Year 6. Since Year 5 and Year 7 both had late and long inundation periods resulting in a substantially shorter growing season unlike Years 4 and 6 which had much longer growing periods, the data suggests that native emergent marsh cover will continue to vary widely from year to year depending on the timing and duration of inundation in the marsh habitat. Since native plants are present and the percentage of non-native cover has not increased, the native emergent marsh cover is expected to increase in years with optimal conditions. No corrective or remedial actions are recommended for this habitat as they are not likely to yield higher native herbaceous cover.

For Year 7 in the riparian forest and cottonwood-dominated upland forest, both density and cover data were collected for native woody species in order to understand how this habitat continues to establish as we transition from density to cover standards. In Year 5, monitoring of the riparian forest and cottonwood-dominated upland forest identified 1,017 native woody plants per acre which was not meeting the density standard of at least 1,200 native woody stems per acre. In Year 7, monitoring identified 1,184 native woody plants per acre which is an increase over the Year 5 monitoring results. The native woody species cover in the riparian forest and cottonwood-dominated upland forest was recorded as 30.5%. While this amount of native woody species cover does not meet the Year 7 standard of greater than 50% cover, it represents significant cover which is expected to increase year by year. All other vegetation standards are being met in this habitat. No corrective or remedial actions are recommended for this habitat as it is on a trajectory to meet the cover standards without intervention in the coming years, even if slightly delayed.

In the Riparian Scrub-Shrub and Riparian Forest ACM habitat, the native woody species cover was documented at 53%. While that does not meet the Year 7 native woody species cover standard of greater than 55%, the cover is so close to the standard that it meets the intent of the standard. All other Year 7 vegetation standards were met in this habitat. No corrective or remedial actions are recommended at this time.

The Year 7 monitoring of the oak-dominant upland forest identified the native woody species cover at 6.1% which is well below the Year 7 standard of greater than 25%; however, the habitat was also assessed for native woody species density and the monitoring identified 1,019 native woody plants per acre which is more than double the Year 5 density standard of greater than 500 plants per acre. This habitat is expected to be delayed due to the necessary replant conducted in 2019, but the results of the Year 7 monitoring show that the habitat has met all Year 2-5 performance standards. Wildlands will continue the management and irrigation of this area to establish the native woody vegetation and implement chemical and/or mechanical control of non-native species once the risk of damaging the young plants has decreased to an acceptable level. No corrective or remedial actions are recommended at this time.

VI. FINANCIAL OPERATION

- Construction Security – The Performance Bond #22BSBCN8032 in the amount of $2,757,472.00 was posted on January 28, 2015 and provided to the National Oceanic and Atmospheric Administration. Following approval of the as-built drawings, NOAA prepared a letter on January 31, 2017 asking the bonding company to release the bond. The bond was released in February of 2017.

- Interim Management and Contingency Security – An irrevocable Letter of Credit in the amount of $457,288 was issued on January 26, 2015 and is still in place.

- Trustee Council Oversight Funding –Year 7 funding in the amount of $12,625.71 was provided on January 5, 2022.

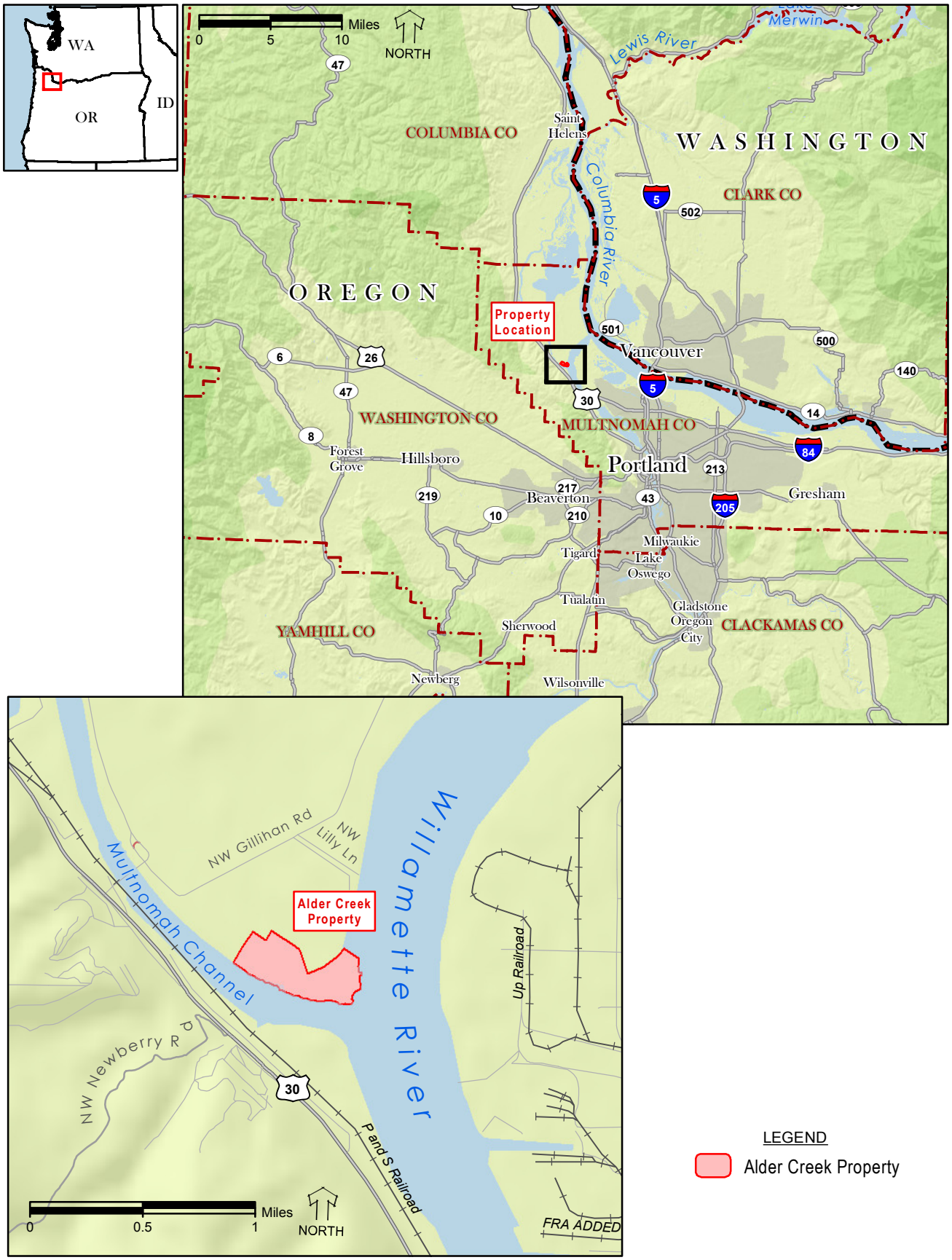
- Lamprey Monitoring Funding – No lamprey monitoring was conducted in Year 7 so no funding was required.

A. TRANSFER OF CREDITS AND ENDOWMENT FUND DEPOSITS

A copy of the Credit Ledger documenting Credit sales through January 2023 is included in Appendix 7. Following the first release of credits on February 25, 2015, there was one credit sale of 35 credits to the City of Portland on March 23, 2015; however, these credits have not yet been used in a settlement or consent decree. The second release of credits occurred on December 1, 2017 and a partial third release of credits occurred on August 27, 2020. No credits were sold in Years 1 through 7 (2016-2022).

The endowment amount corresponding to the sale in 2015, $30,170, has been set aside for the endowment fund for the Project. The required endowment principal in the Alder Creek Restoration Plan is $323,250 and is funded by credits sales with $862 of each credit sold going towards the endowment until it is fully funded. A total of $293,080 of the endowment principal remains to be funded.

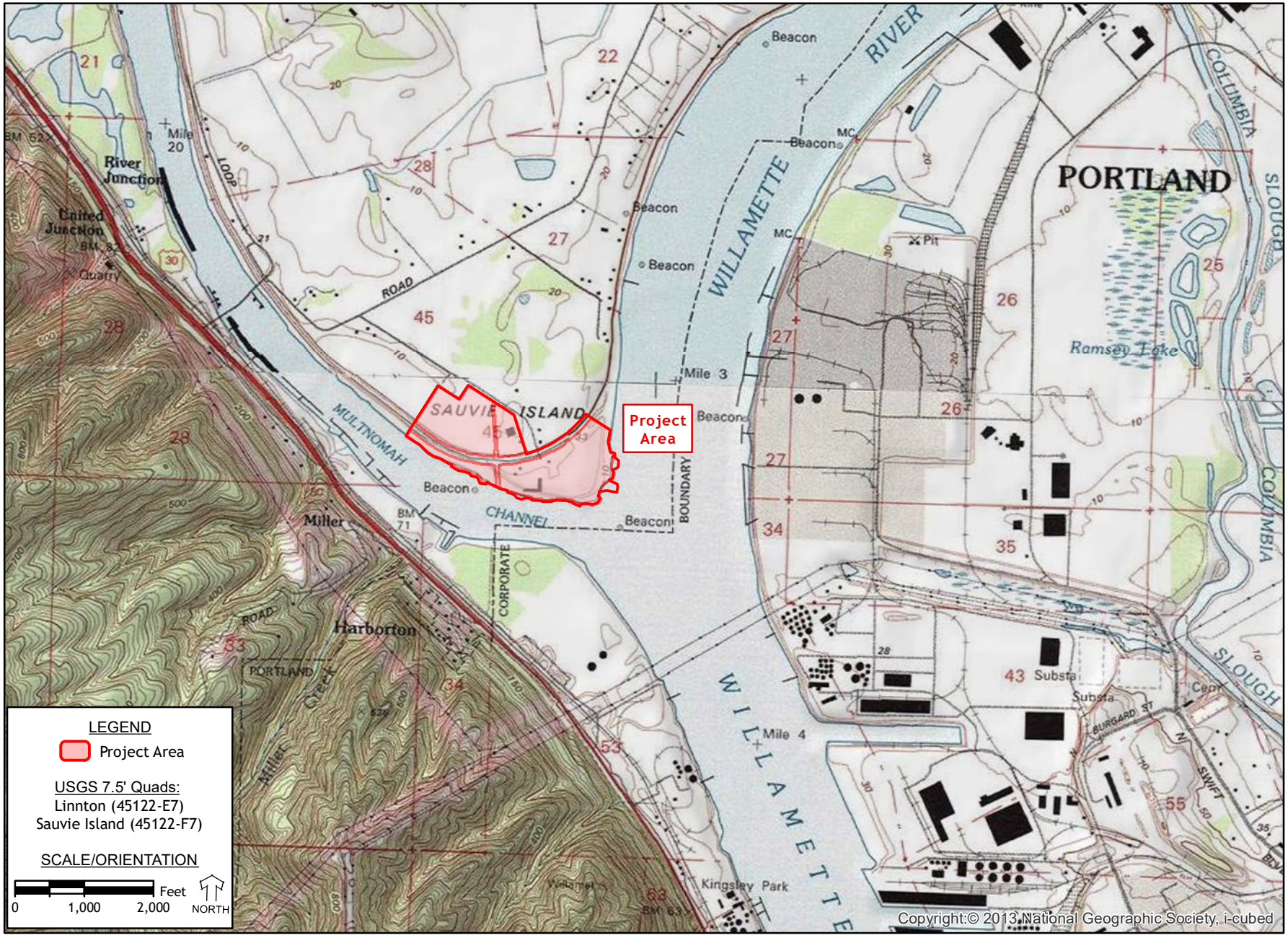
Figures



WILDLANDS

Alder Creek Restoration Project
2022 Monitoring Report

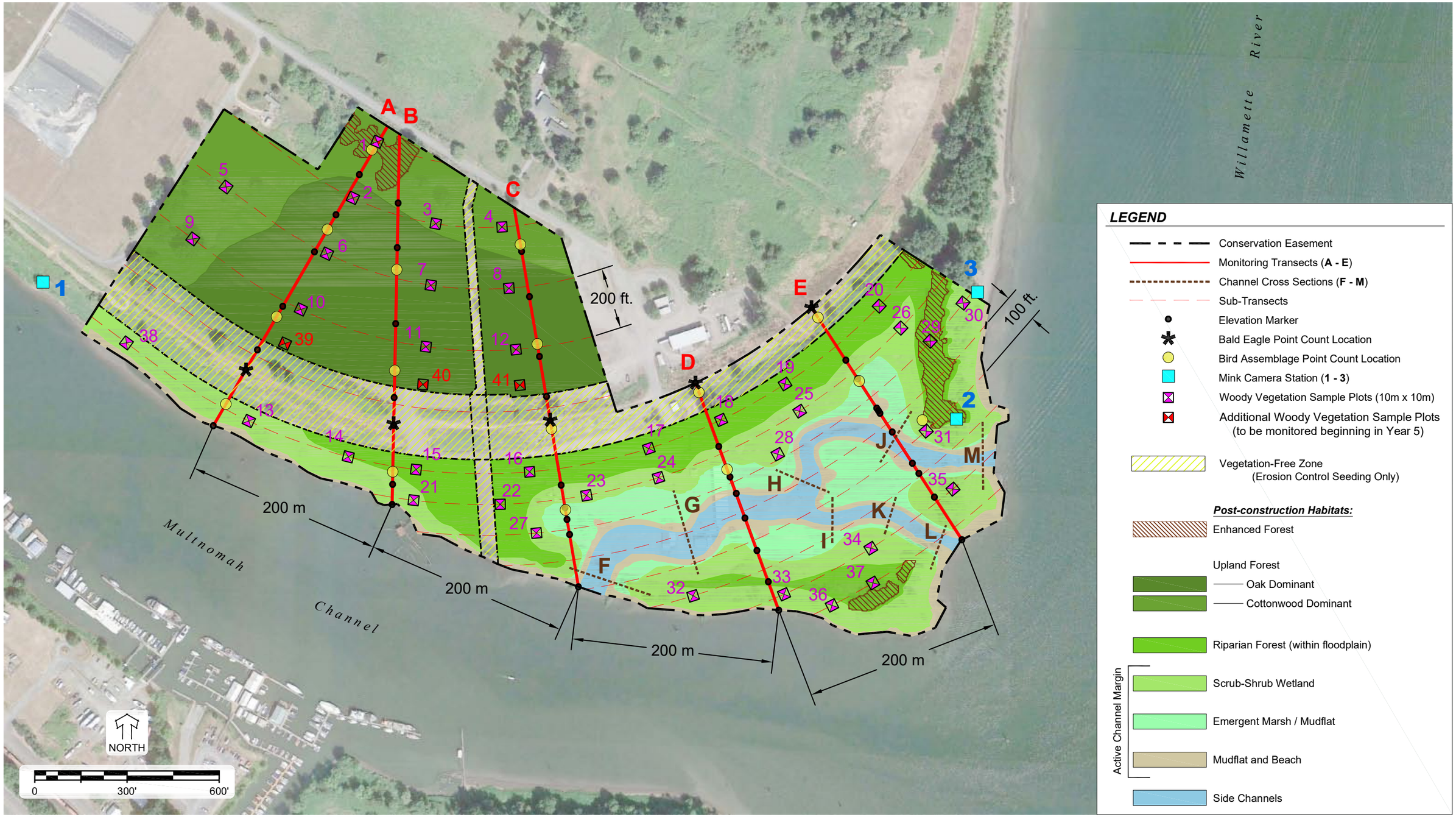
Figure 1
Location Map



WILDLANDS

Alder Creek Restoration Project
2022 Monitoring Report

Figure 2
USGS Quad



WILDLANDS

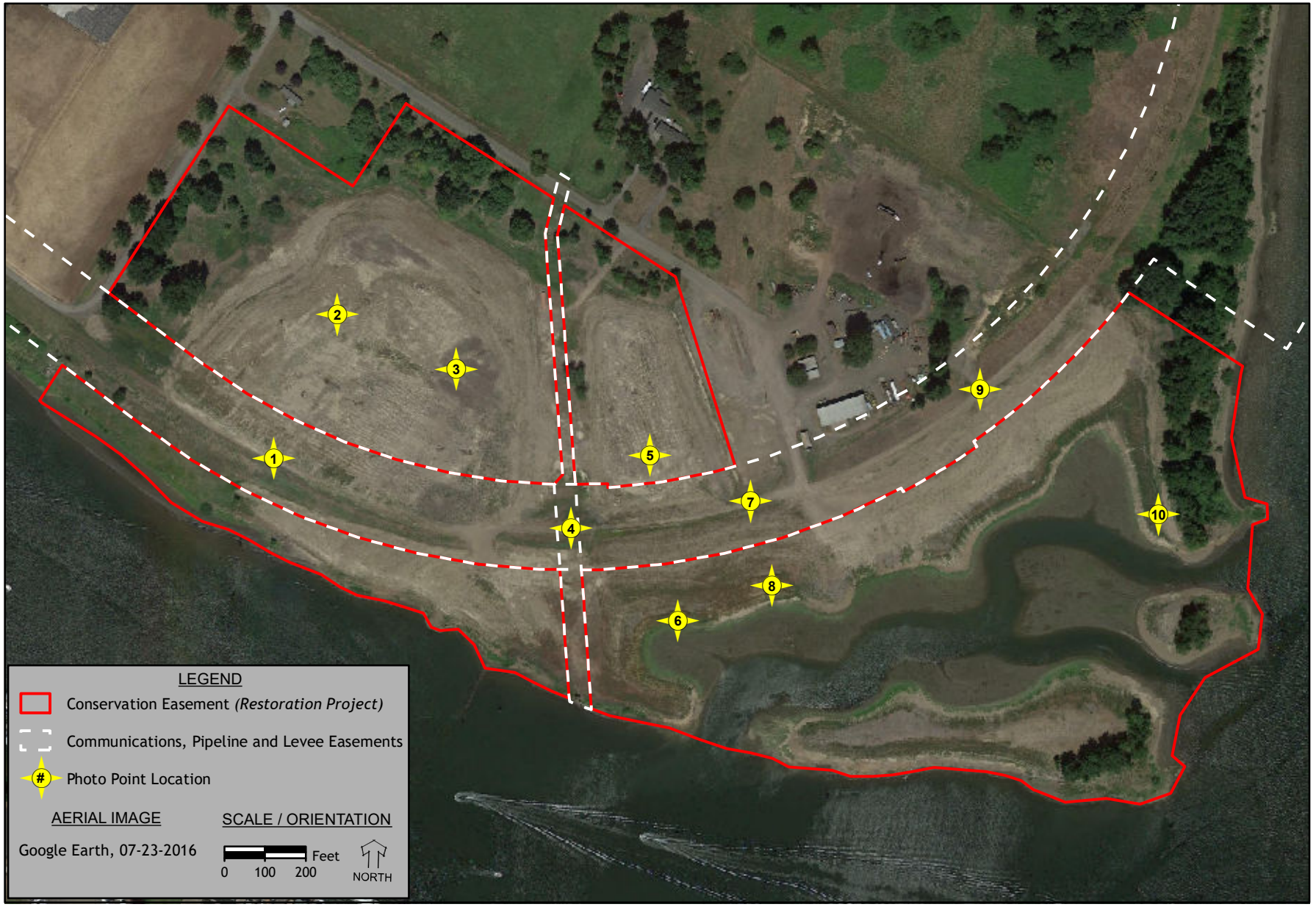
Alder Creek Restoration Project
2022 Monitoring Report

Figure 3
Post-construction Monitoring

WILDLANDS

Alder Creek Restoration Project
2022 Monitoring Report

Figure 4
2022 Aerial Photo



WILDLANDS

Alder Creek Restoration Project
2022 Monitoring Report

Figure 5a
Photo Location Map

North

East

South

West

North

East

South

West

North

East

South

West

North

East

South

West

North

East

South

West

North

East

South

West

North

East

South

West

North

East

South

West

North

Southeast

Southwest

Northwest

East

West

North

South

WILDLANDS

Alder Creek Restoration Project
2022 Monitoring Report

Figure 5b10
Photo Point 10

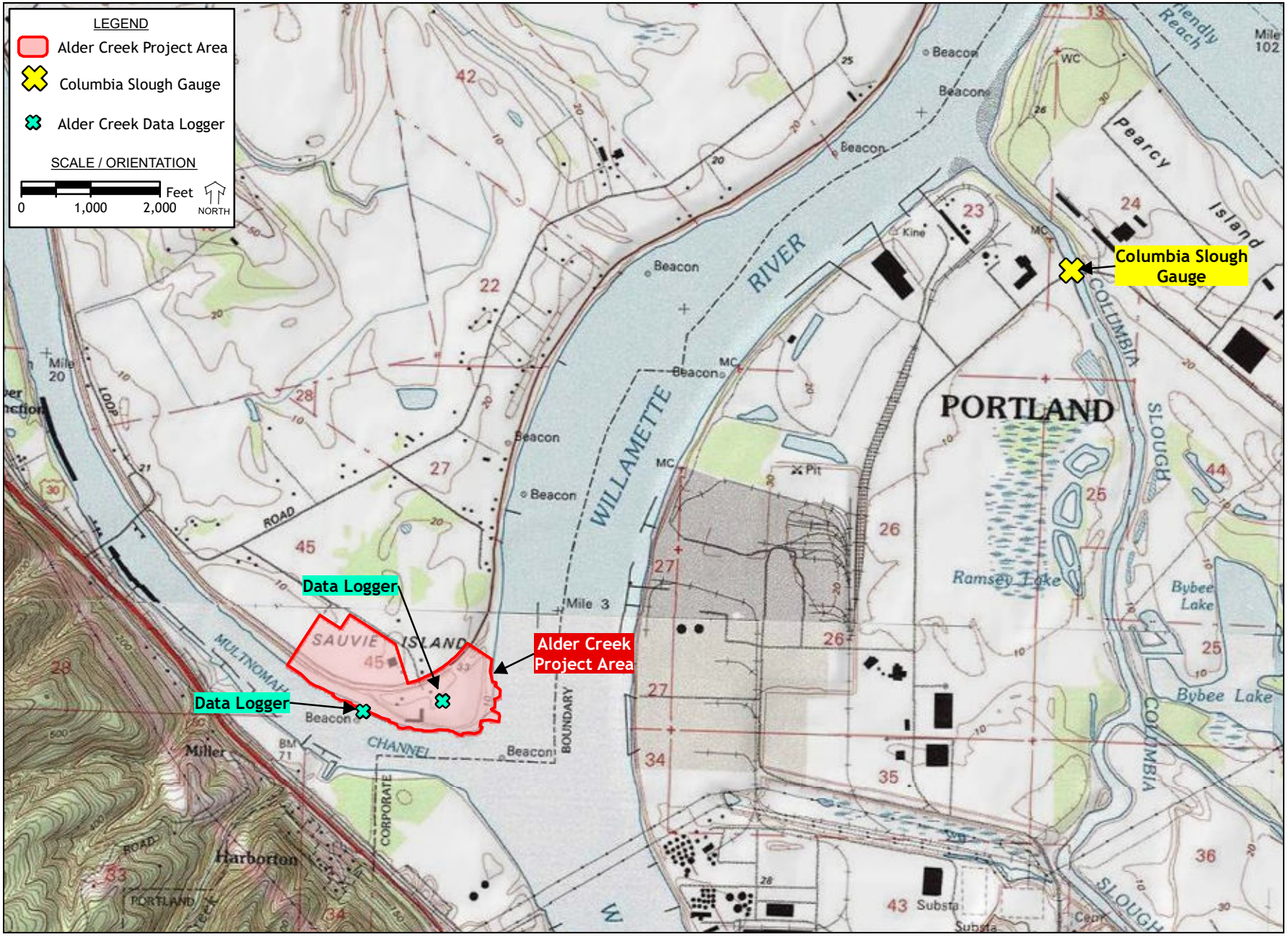
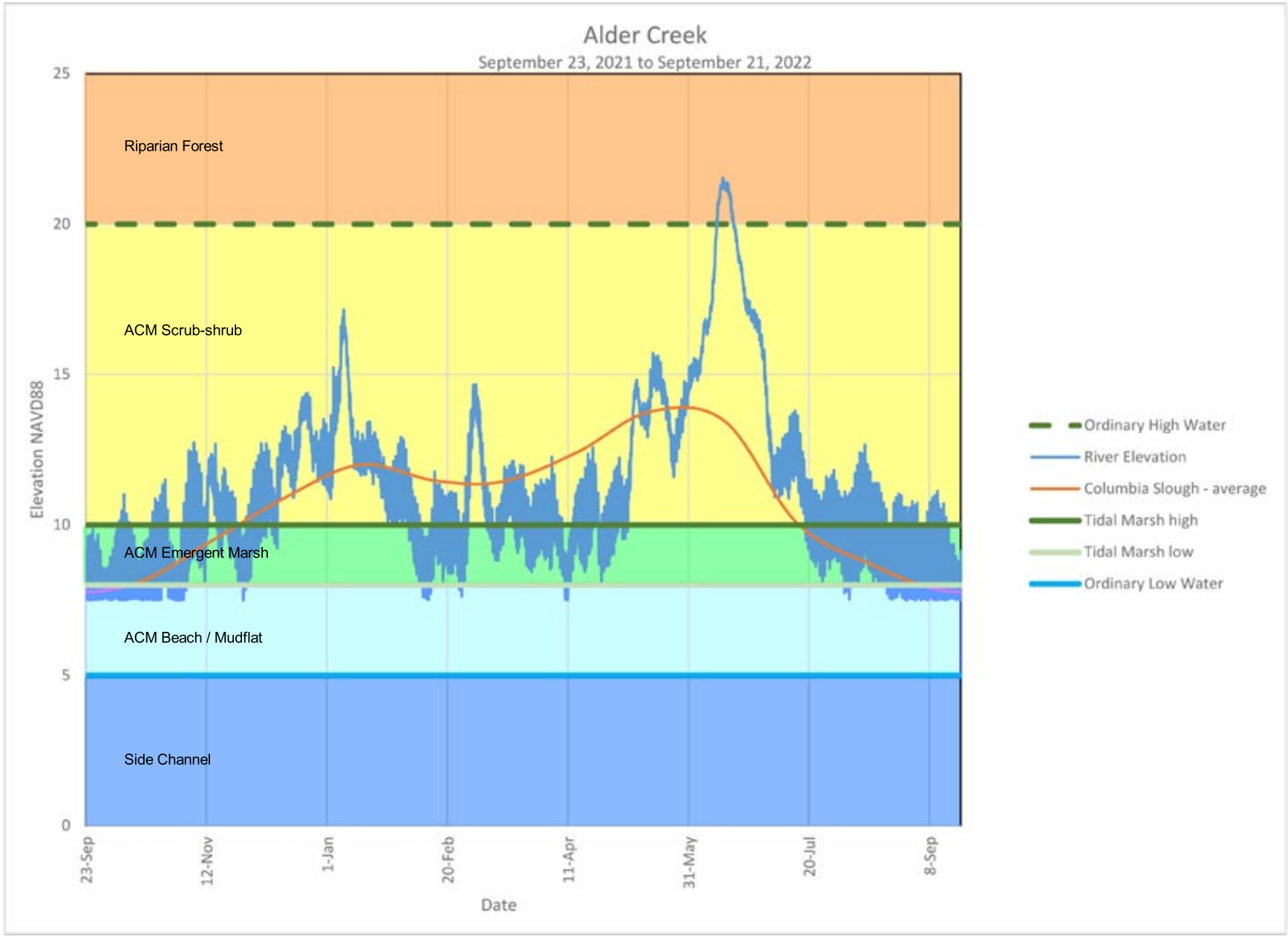
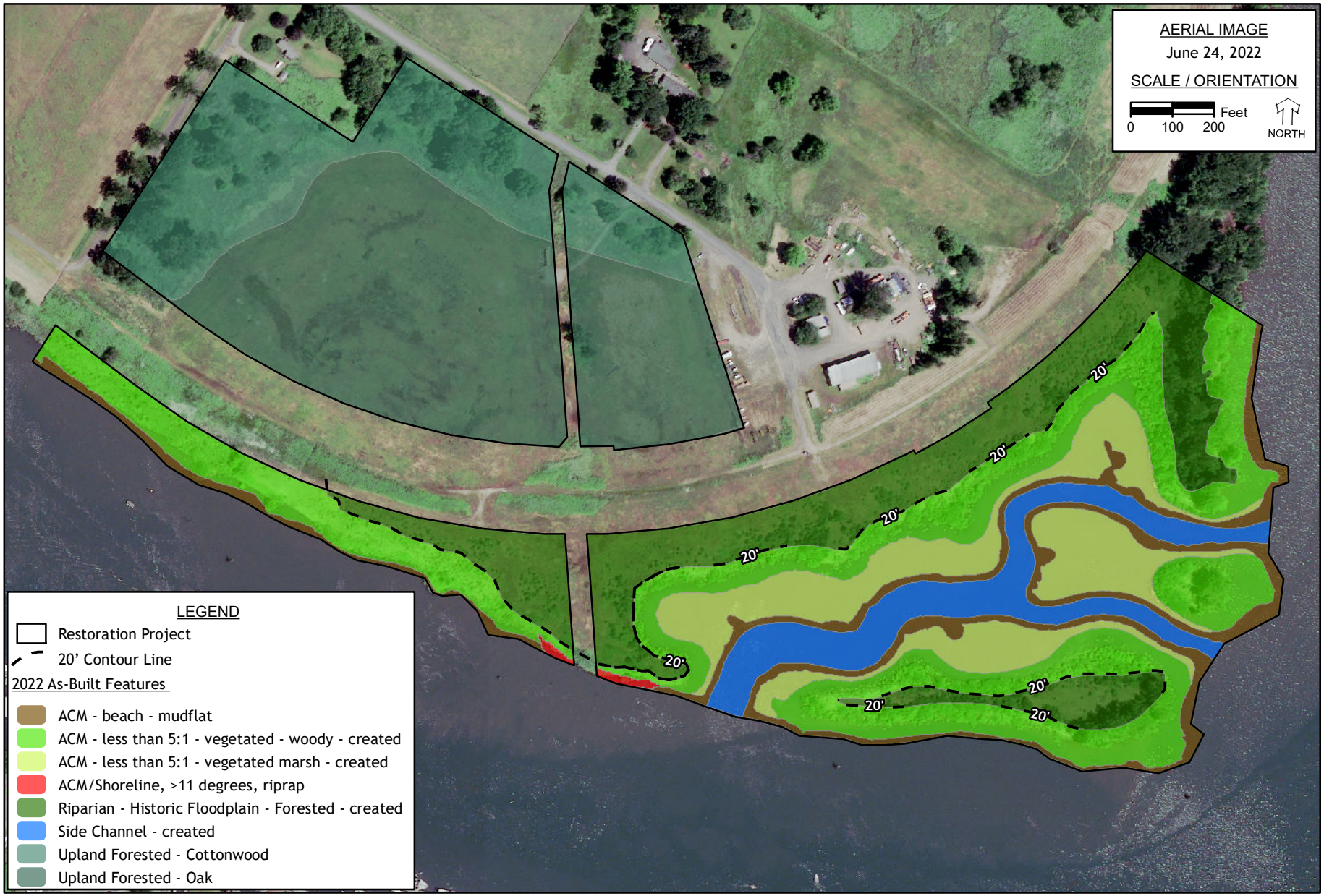


Figure 6a
Alder Creek Data Loggers and Columbia Slough Gauge Station Location


Alder Creek
September 23, 2021 to September 21, 2022
Riparian Forest
ACM Scrub-shrub
ACM Emergent Marsh
ACM Beach / Mudflat
Side Channel
Elevation NAVD88
25
20
15
10
5
0
23-Sep
12-Nov
1-Jan
20-Feb
11-Apr
31-May
20-Jul
8-Sep
Date
Ordinary High Water
River Elevation
Columbia Slough - average
Tidal Marsh high
Tidal Marsh low
Ordinary Low Water


AERIAL IMAGE
June 24, 2022
SCALE / ORIENTATION
0 100 200 Feet
NORTH
20'
LEGEND
Restoration Project
20' Contour Line
2022 As-Built Features
ACM - beach - mudflat
ACM - less than 5:1 - vegetated - woody - created
ACM - less than 5:1 - vegetated marsh - created
ACM/Shoreline, >11 degrees, riprap
Riparian - Historic Floodplain - Forested - created
Side Channel - created
Upland Forested - Cottonwood
Upland Forested - Oak

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

N

SCALE: 1"= 200 FEET

200 0 80 120 160 200

LEGEND

- MONITORING TRANSECTS (A–E)
- CHANNEL CROSS–SECTIONS (F–M)
- ELEVATION MARKERS
- ELEVATION 20 (2015)
- ELEVATION 20 (2022)

A
B
C
D
E
F
G
H
I
J
K
L
M

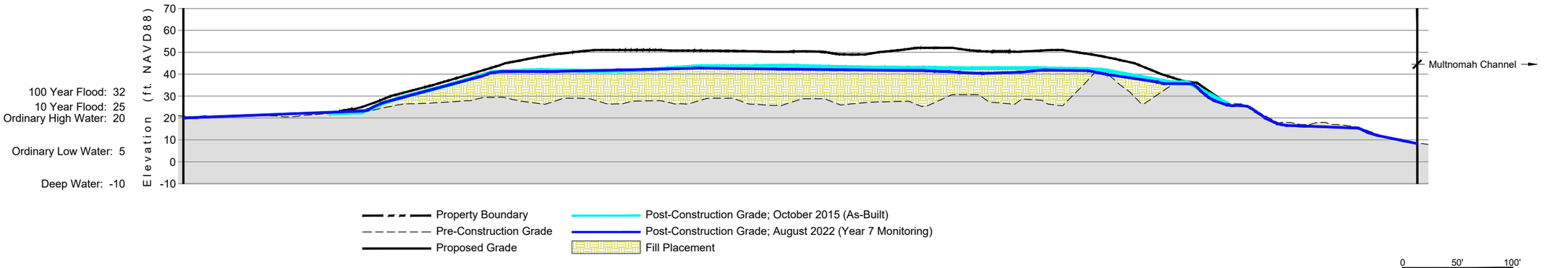
MISSING AREAS INACCESSIBLE FOR SURVEY (DENSE NATIVE VEGETATION)

MISSING AREAS INACCESSIBLE FOR SURVEY (DENSE NATIVE VEGETATION)

MISSING AREAS INACCESSIBLE FOR SURVEY (DENSE NATIVE VEGETATION)

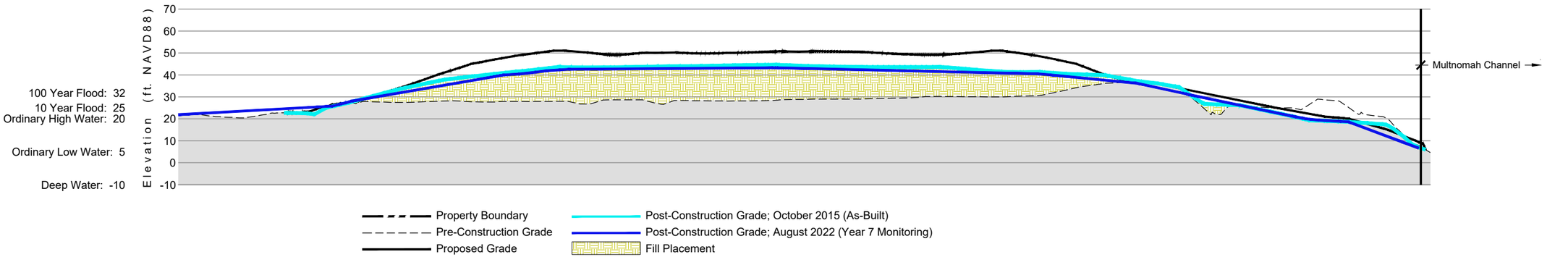
ENLARGEMENT A

ENLARGEMENT B



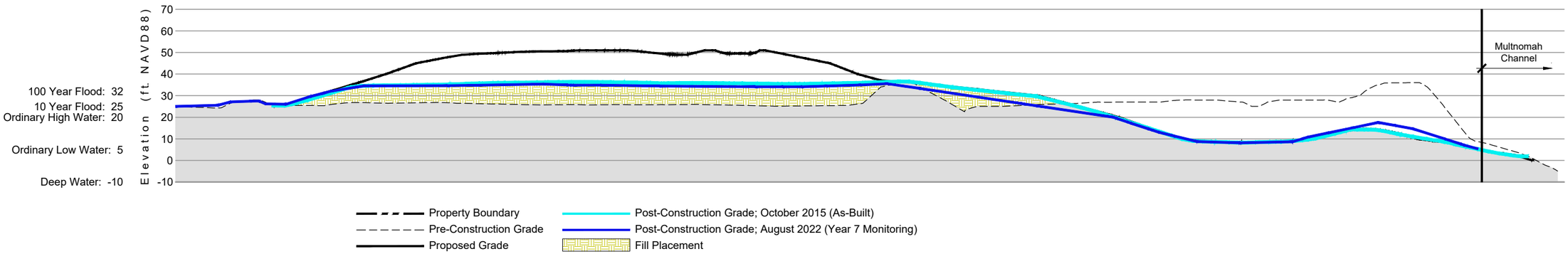
A Cross Section A

0 50' 100'
Horizontal Scale: 1" = 50' 2x Vertical Exaggeration



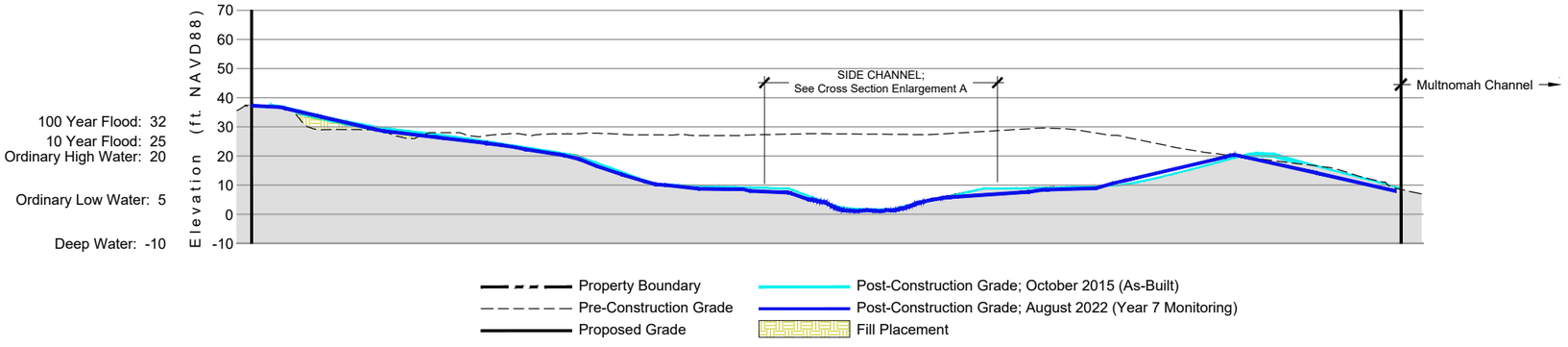
B Cross Section B

0 50' 100'
Horizontal Scale: 1" = 50' 2x Vertical Exaggeration



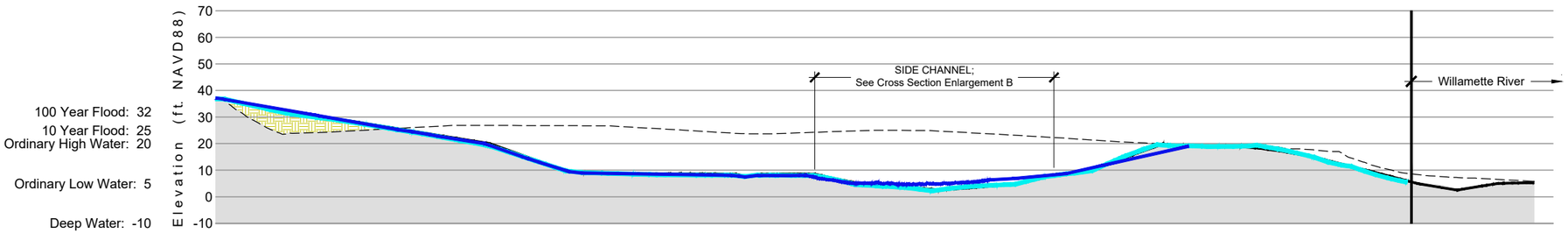
C Cross Section C

0 50' 100'
Horizontal Scale: 1" = 50' 2x Vertical Exaggeration



D Cross Section D

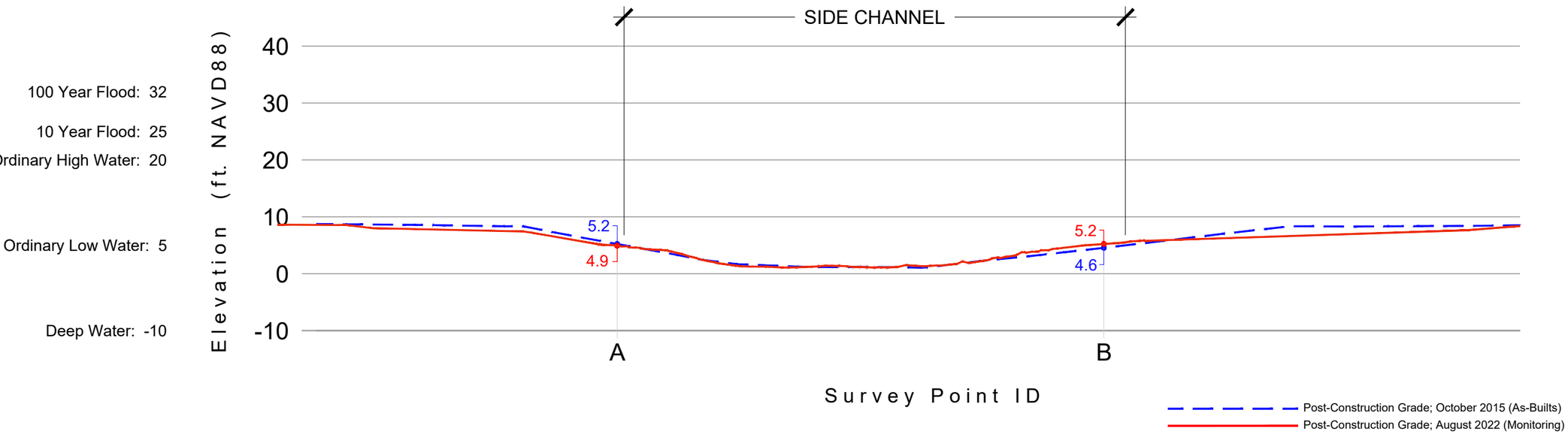
0 50' 100'
Horizontal Scale: 1" = 50' 2x Vertical Exaggeration



E Cross Section E

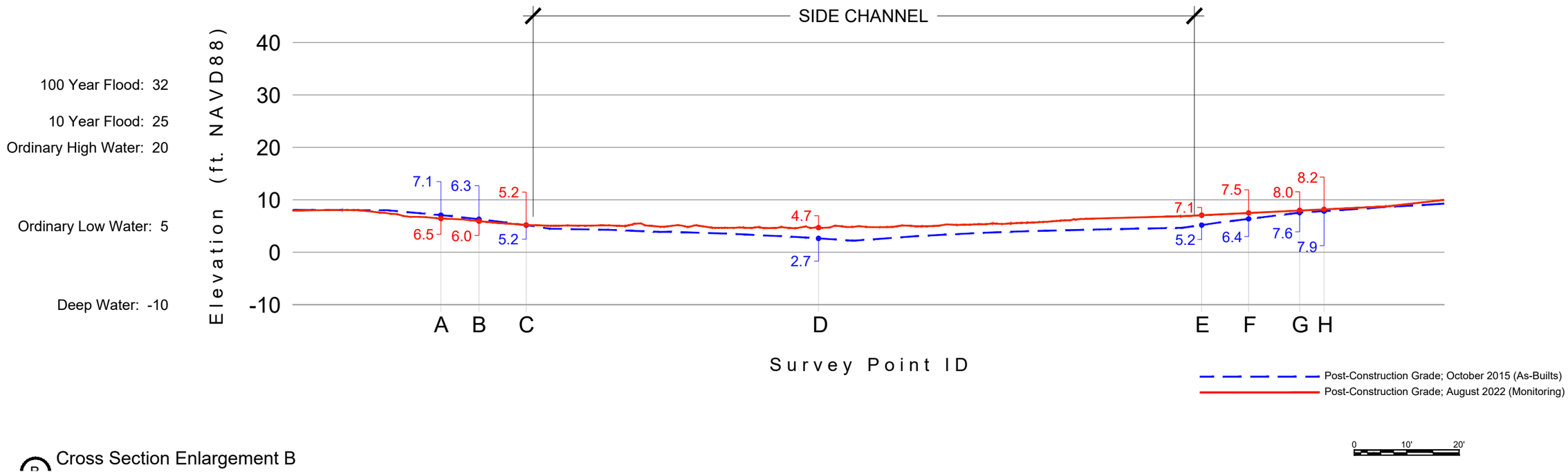
0 50' 100'
Horizontal Scale: 1" = 50' 2x Vertical Exaggeration

Cross Section Enlargement A									
Survey Point ID	Elevation: October 2015	Elevation: August 2022	Elevation Change	Depth October 2015 relative to OHW (elevation 20.0)	Depth August 2022 relative to OHW (elevation 20.0)	Percent Change Relative to OHW 2015 to 2022		Absolute Percent Change Relative to OHW 2015 to 2022	
A	5.2	4.9	0.3	14.8	15.1	(15.1/14.8) =	102%	|102-100| =	2%
B	4.6	5.2	-0.6	15.4	14.8	(14.8/15.4) =	96%	|96 -100| =	4%
		Average Distance:	-0.2					Average:	3%



Cross Section Enlargement A

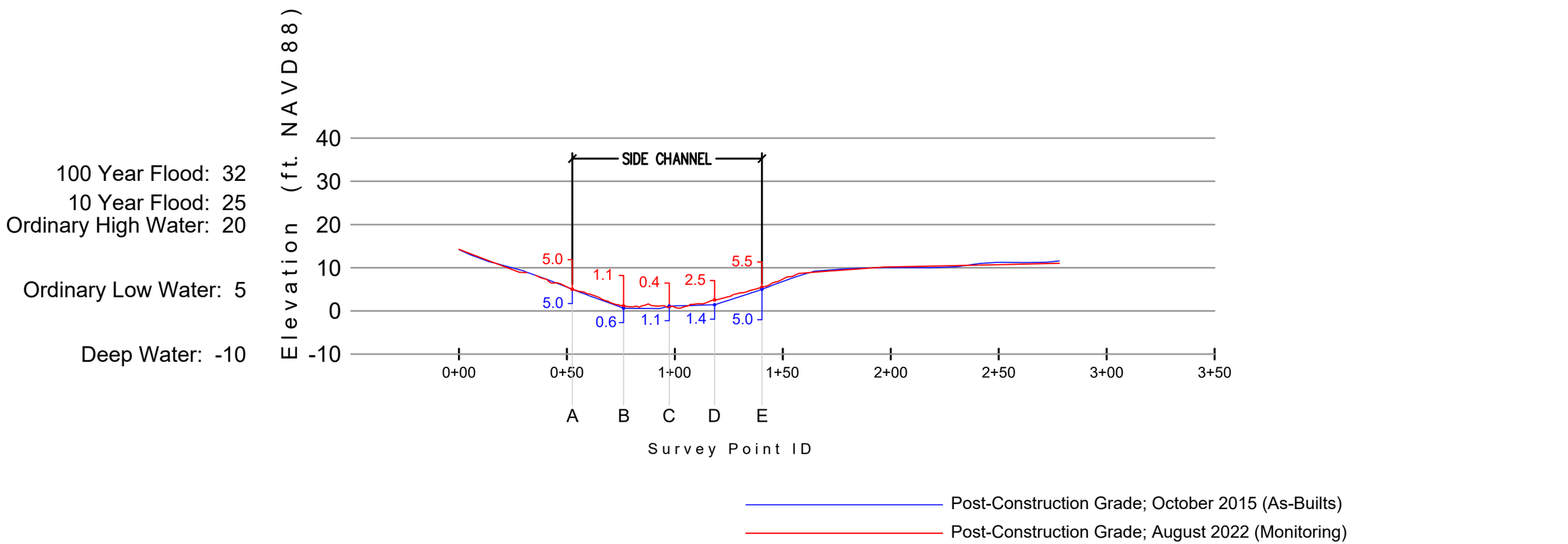
Cross Section Enlargement B									
Survey Point ID	Elevation: October 2015	Elevation: August 2022	Elevation Change	Depth October 2015 relative to OHW (elevation 20.0)	Depth August 2022 relative to OHW (elevation 20.0)	Percent Change Relative to OHW 2015 to 2022		Absolute Percent Change Relative to OHW 2015 to 2022	
A	7.1	6.5	0.6	12.9	13.5	(13.5/12.9) =	104%	|104-100| =	4%
B	6.3	6.0	0.3	13.7	14.0	(14.0/13.7) =	102%	|102-100| =	2%
C	5.2	5.2	0.0	14.8	14.8	(14.8/14.8) =	100%	|100-100| =	0%
D	2.7	4.7	-2.0	17.3	15.3	(15.3/17.3) =	88%	|88-100| =	12%
E	5.2	7.1	-1.9	14.8	12.9	(12.9/14.8) =	92%	|92-100| =	8%
F	6.4	7.5	-1.1	13.6	12.5	(12.5/13.6) =	98%	|98-100| =	2%
G	7.6	8.0	-0.4	12.4	12.0	(12.0/12.4) =	97%	|97-100| =	3%
H	7.9	8.2	-0.3	12.1	11.8	(11.8/12.1) =	98%	|98-100| =	2%
		Average Distance:	-0.6					Average:	4%



Cross Section Enlargement B

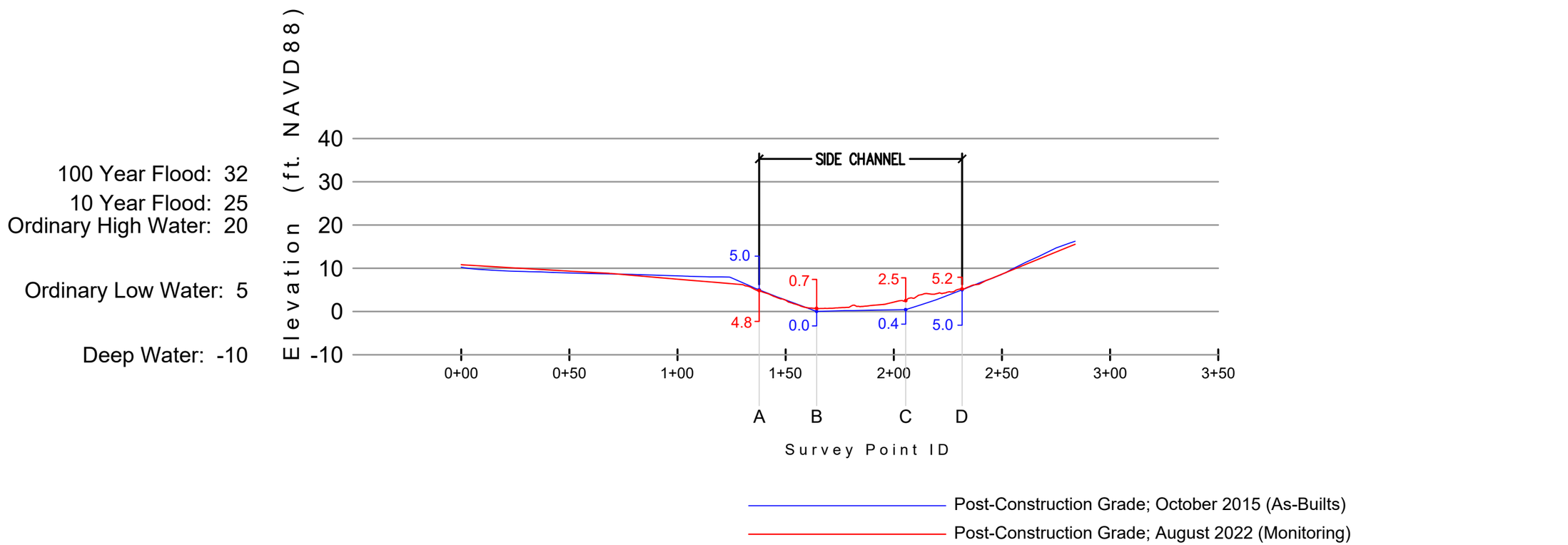
0 10' 20'

Cross Section F									
Survey Point ID	Elevation: October 2015	Elevation: August 2022	Elevation Change	Depth October 2015 relative to OHW (elevation 20.0)	Depth August 2022 relative to OHW (elevation 20.0)	Percent Change Relative to OHW 2015 to 2022		Absolute Percent Change Relative to OHW 2015 to 2022	
A	5.0	5.0	0.0	15.0	15.0	(15.0/15.0) =	100%	|100 -100| =	0%
B	0.6	1.1	+0.5	19.4	18.9	(18.9/19.4) =	97%	|97 -100| =	3%
C	1.1	0.4	-0.7	18.9	19.6	(19.6/18.9) =	103%	|103 -100| =	3%
D	1.4	2.5	+1.1	18.6	17.5	(17.5/18.6) =	94%	|94 -100| =	6%
E	5.0	5.5	+0.5	15.0	14.5	(14.5/15.0) =	97%	|97 -100| =	3%
		Average Distance:	0.6					Average:	3%



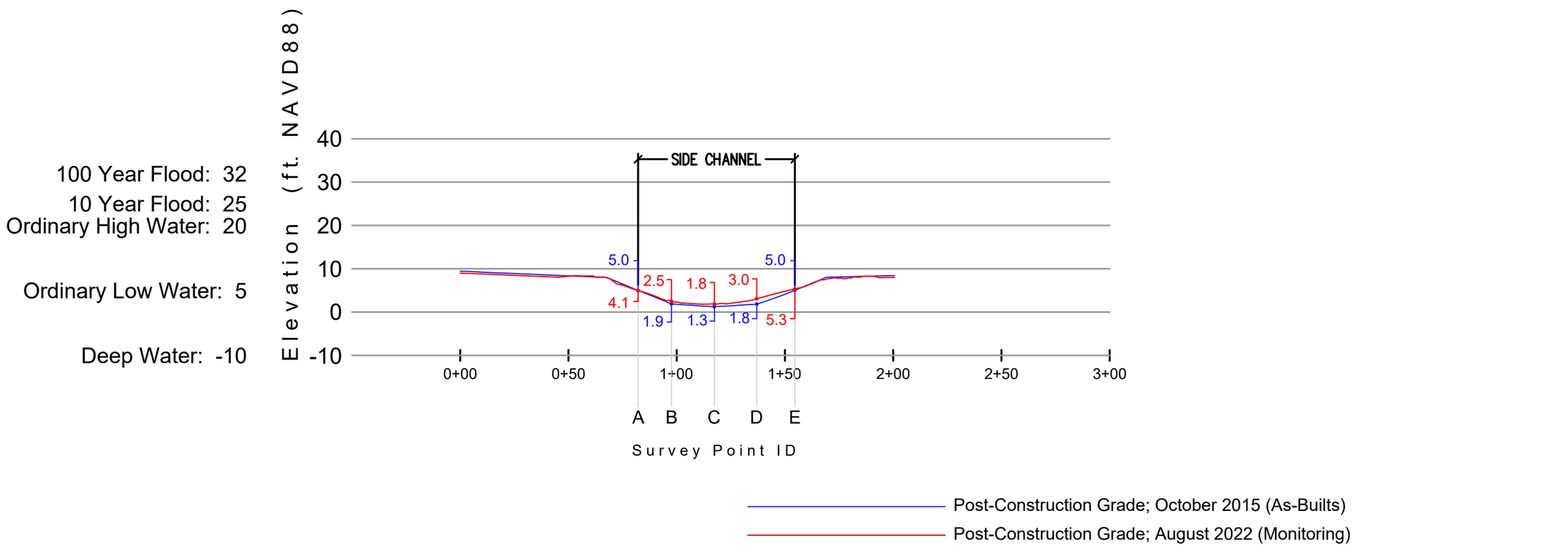
F Cross Section F

Cross Section G									
Survey Point ID	Elevation: October 2015	Elevation: August 2022	Elevation Change	Depth October 2015 relative to OHW (elevation 20.0)	Depth August 2022 relative to OHW (elevation 20.0)	Percent Change Relative to OHW 2015 to 2022		Absolute Percent Change Relative to OHW 2015 to 2022	
A	5.0	4.8	-0.2	15.0	15.2	(15.2/15.0) =	101%	|101 -100| =	1%
B	0.0	0.7	+0.7	20.0	19.3	(19.3/20.0) =	97%	|97 -100| =	3%
C	0.4	2.5	+2.1	19.6	17.5	(17.5/19.6) =	89%	|89 -100| =	11%
D	5.0	5.2	+0.2	15.0	14.8	(14.8/15.0) =	99%	|99 -100| =	1%
		Average Distance:	0.8					Average:	4%



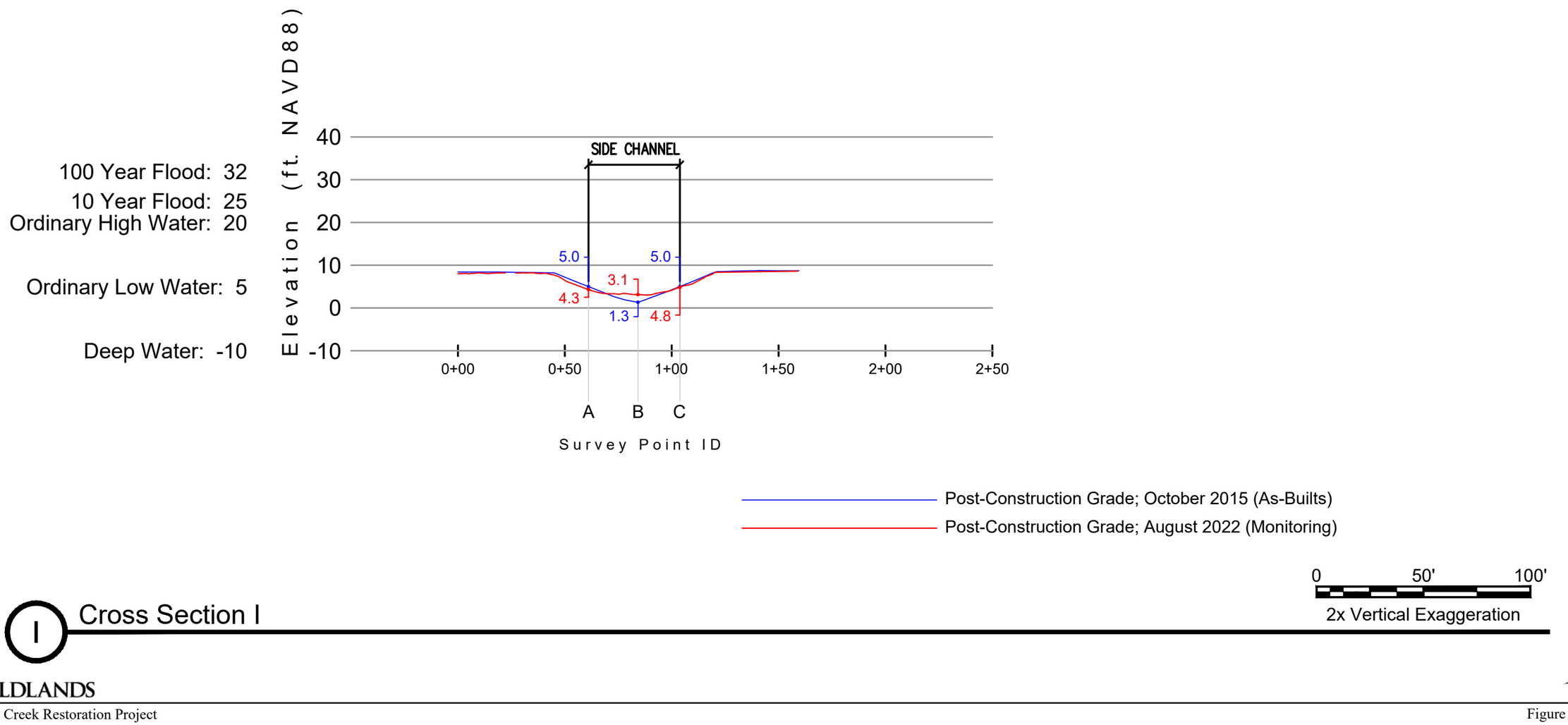
G Cross Section G

Cross Section H									
Survey Point ID	Elevation: October 2015	Elevation: August 2022	Elevation Change	Depth October 2015 relative to OHW (elevation 20.0)	Depth August 2022 relative to OHW (elevation 20.0)	Percent Change Relative to OHW 2015 to 2022		Absolute Percent Change Relative to OHW 2015 to 2022	
A	5.0	4.1	-0.9	15.0	15.9	(15.9/15.0) =	106%	|106 -100| =	6%
B	1.9	2.5	+0.6	18.1	17.5	(17.5/18.1) =	97%	|97 -100| =	3%
C	1.3	1.8	+0.5	18.7	18.2	(18.2/18.7) =	97%	|97 -100| =	3%
D	1.8	3.0	+1.2	18.2	17.0	(17.0/18.2) =	93%	|93 -100| =	7%
E	5.0	5.3	+0.3	15.0	14.7	(14.7/15.0) =	98%	|98 -100| =	2%
		Average Distance:	0.7					Average:	4%



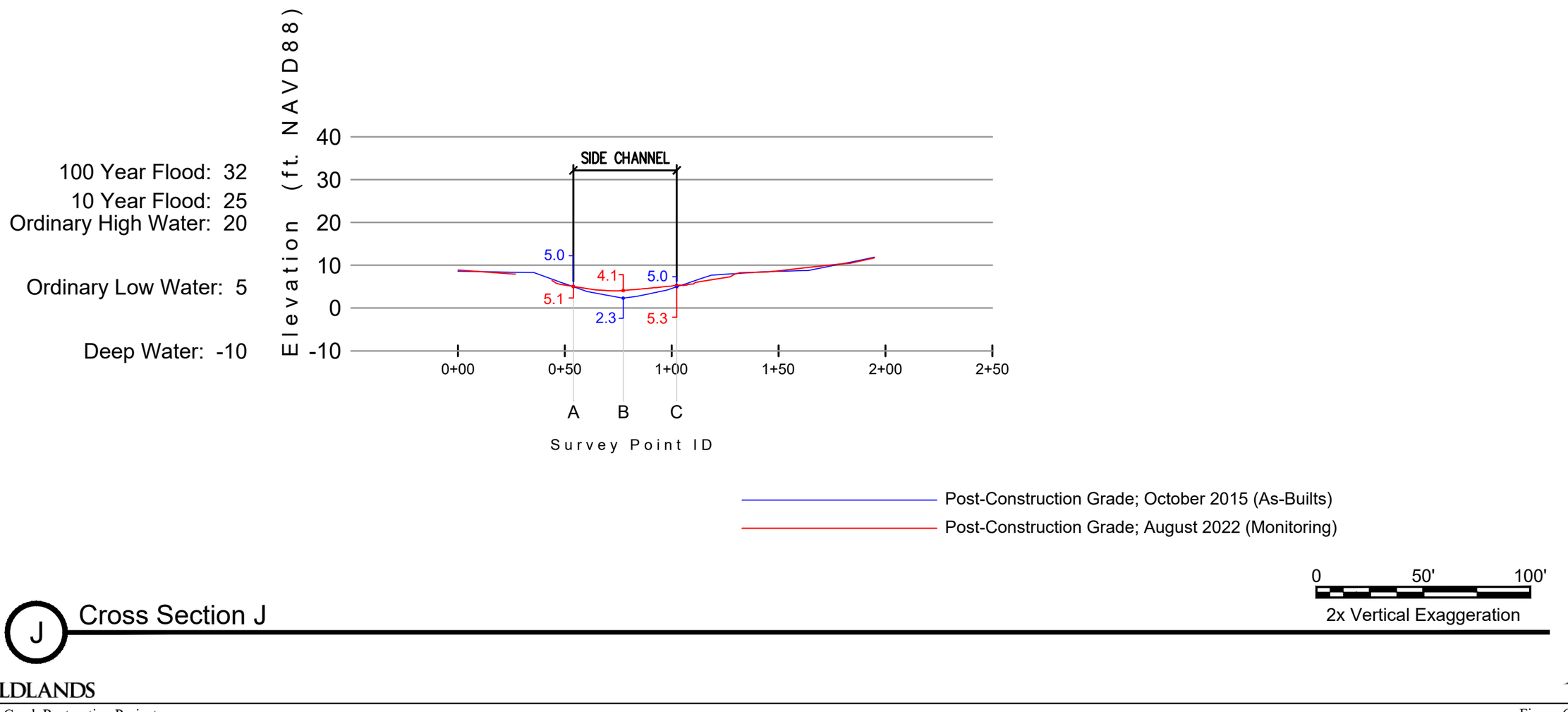
H Cross Section H

Cross Section I									
Survey Point ID	Elevation: October 2015	Elevation: August 2022	Elevation Change	Depth October 2015 relative to OHW (elevation 20.0)	Depth August 2022 relative to OHW (elevation 20.0)	Percent Change Relative to OHW 2015 to 2022		Absolute Percent Change Relative to OHW 2015 to 2022	
A	5.0	4.3	-0.7	15.0	15.7	(15.7/15.0) =	105%	|105 - 100| =	5%
B	1.3	3.1	+1.8	18.7	16.9	(16.9/18.7) =	90%	|90 - 100| =	10%
C	5.0	4.8	-0.2	15.0	15.2	(15.2/15.0) =	101%	|101 - 100| =	1%
		Average Distance:	0.9					Average:	5%



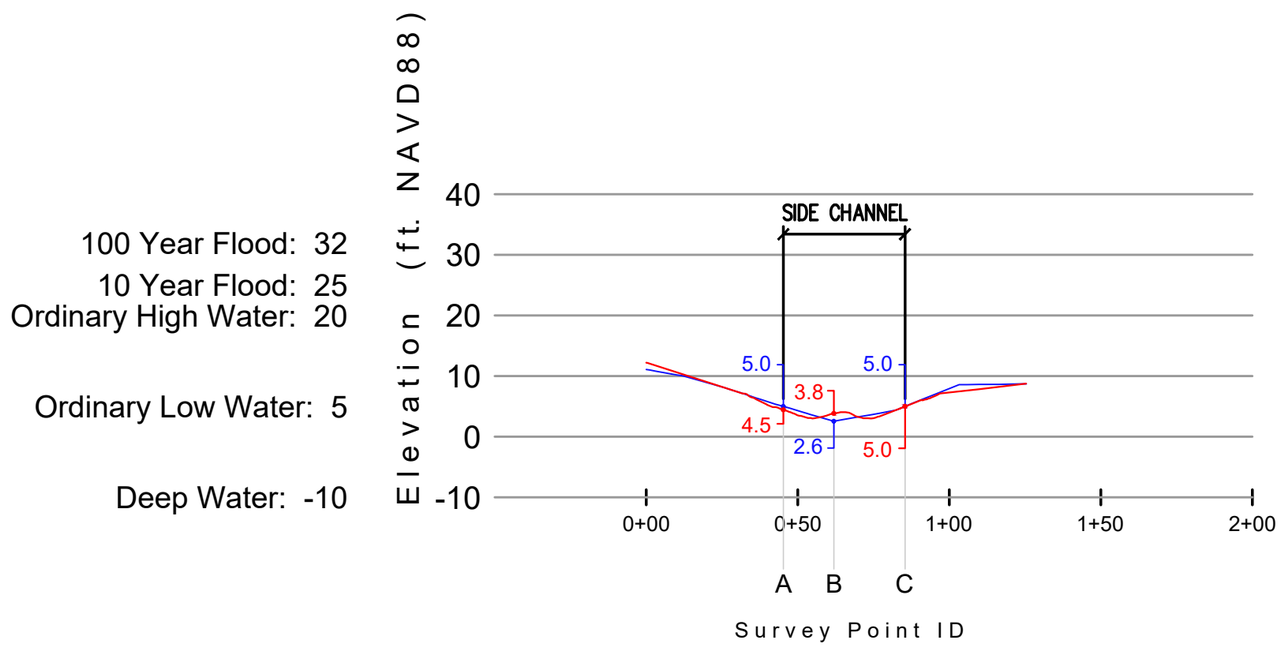
I Cross Section I

Cross Section J									
Survey Point ID	Elevation: October 2015	Elevation: August 2022	Elevation Change	Depth October 2015 relative to OHW (elevation 20.0)	Depth August 2022 relative to OHW (elevation 20.0)	Percent Change Relative to OHW 2015 to 2022		Absolute Percent Change Relative to OHW 2015 to 2022	
A	5.0	5.1	+0.1	15.0	14.9	(14.9/15.0) =	99%	|99 -100| =	1%
B	2.3	4.1	+1.8	17.7	15.9	(15.9/17.7) =	90%	|90 -100| =	10%
C	5.0	5.3	+0.3	15.0	14.7	(14.7/15.0) =	98%	|98 -100| =	2%
		Average Distance:	0.7					Average:	4%



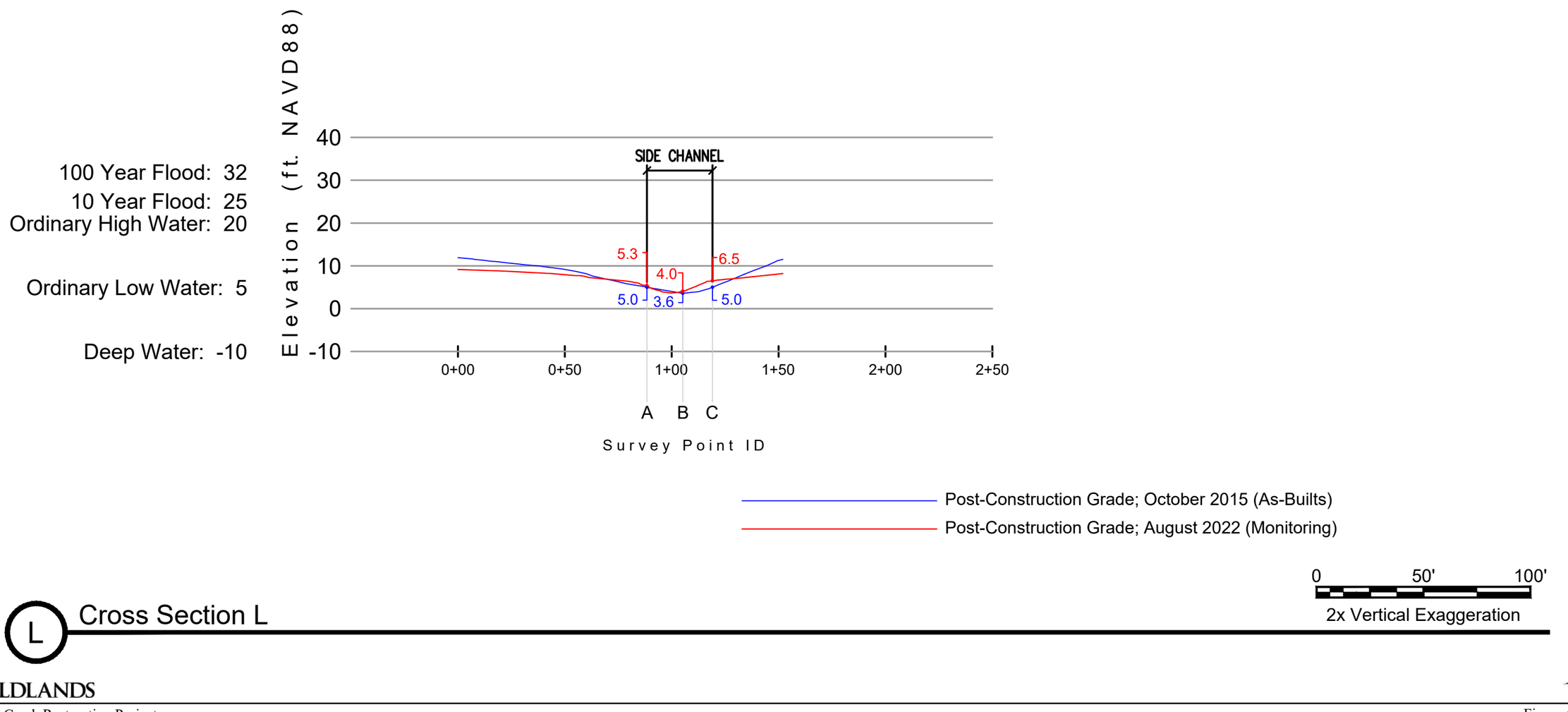
J Cross Section J

Cross Section K									
Survey Point ID	Elevation: October 2015	Elevation: August 2022	Elevation Change	Depth October 2015 relative to OHW (elevation 20.0)	Depth August 2022 relative to OHW (elevation 20.0)	Percent Change Relative to OHW 2015 to 2022		Absolute Percent Change Relative to OHW 2015 to 2022	
A	5.0	4.5	-0.5	15.0	15.5	(15.5/15.0) =	103%	|103 -100| =	3%
B	2.6	3.8	+1.2	17.4	16.2	(16.2/17.4) =	93%	|93 -100| =	7%
C	5.0	5.0	0.0	15.0	15.0	(15.0/15.0) =	100%	|100 -100| =	0%
		Average Distance:	0.6					Average:	3%



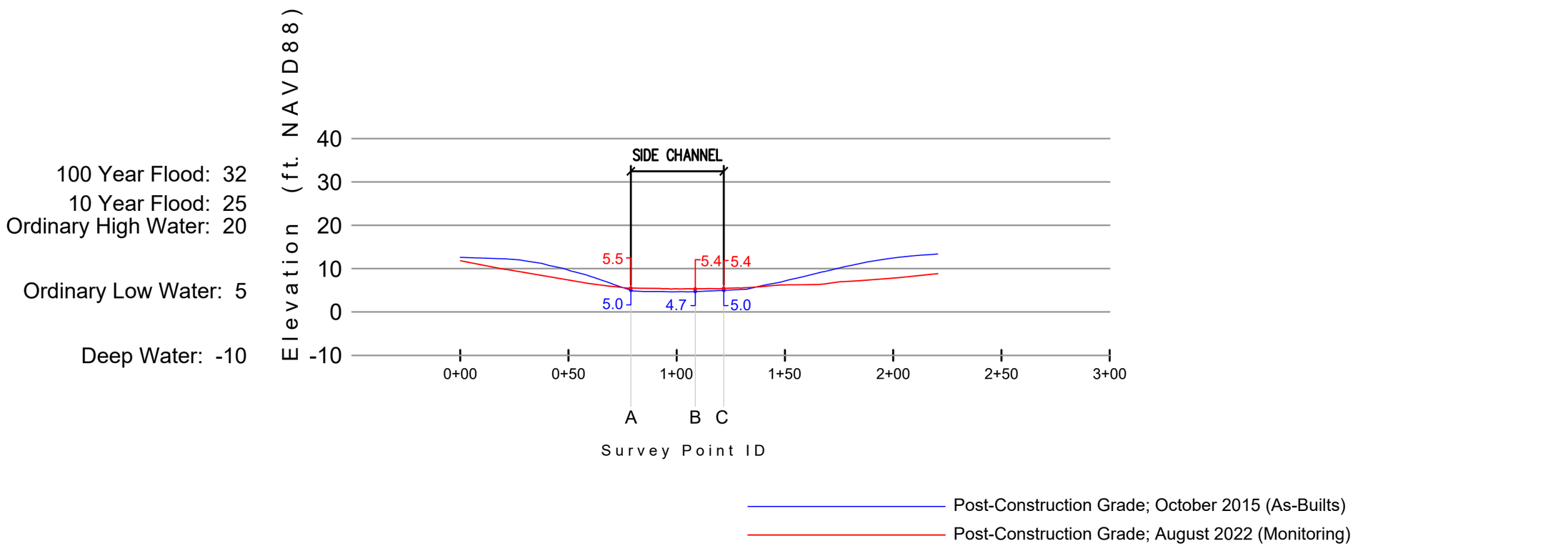
K Cross Section K

Cross Section L									
Survey Point ID	Elevation: October 2015	Elevation: August 2022	Elevation Change	Depth October 2015 relative to OHW (elevation 20.0)	Depth August 2022 relative to OHW (elevation 20.0)	Percent Change Relative to OHW 2015 to 2022		Absolute Percent Change Relative to OHW 2015 to 2022	
A	5.0	5.3	+0.3	15.0	14.7	(14.7/15.0) =	98%	|98 -100| =	2%
B	3.6	4.0	+0.4	16.4	16.0	(16.0/16.4) =	98%	|98 -100| =	2%
C	5.0	6.5	+1.5	15.0	13.5	(13.5/15.0) =	90%	|90 -100| =	10%
		Average Distance:	0.7					Average:	5%



L Cross Section L

Cross Section M									
Survey Point ID	Elevation: October 2015	Elevation: August 2022	Elevation Change	Depth October 2015 relative to OHW (elevation 20.0)	Depth August 2022 relative to OHW (elevation 20.0)	Percent Change Relative to OHW 2015 to 2022		Absolute Percent Change Relative to OHW 2015 to 2022	
A	5.0	5.5	+0.5	15.0	14.5	(14.5/15.0) =	97%	|97 -100| =	3%
B	4.7	5.4	+0.7	15.3	14.6	(14.6/15.3) =	95%	|95 -100| =	5%
C	5.0	5.4	+0.4	15.0	14.6	(14.6/15.0) =	97%	|97 -100| =	3%
		Average Distance:	0.5					Average:	4%

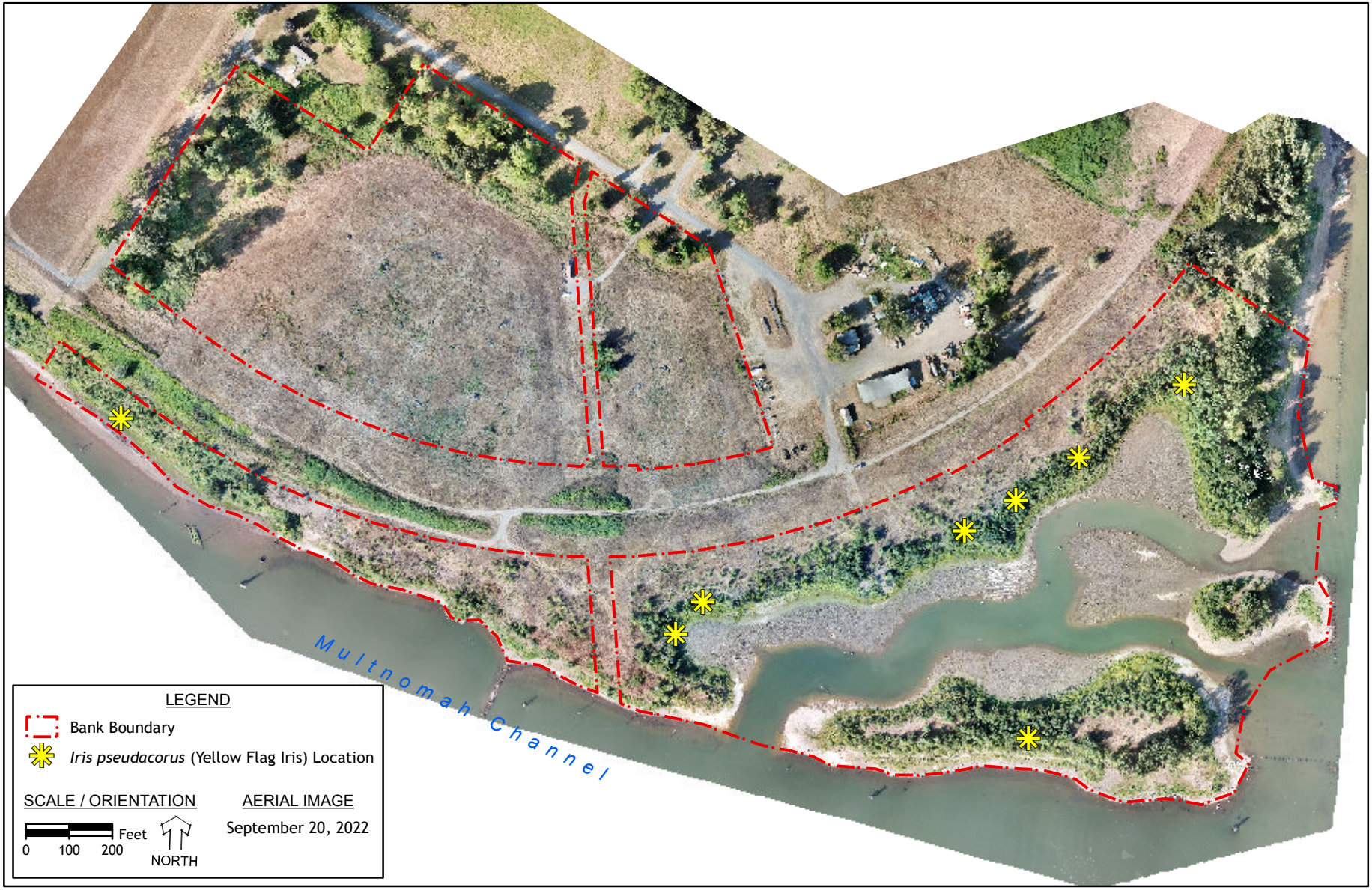


M Cross Section M

WILDLANDS

Alder Creek Restoration Project
2022 Monitoring Report

Figure 6q
Aerial Photo showing High Water - 06/24/2022



WILDLANDS

Alder Creek Restoration Project
2022 Monitoring Report

Figure 8
Invasive Species Map

APPENDIX 1

Performance Standards

Performance Standard	Documentation/Monitoring Method	Monitoring Result 2022
	Installed Vegetation	
Emergent Marsh Year 5: • ≥ 30% native herbaceous • ≤ 10% invasive herbaceous (excluding reed canarygrass) Years 7 and 10: • ≥ 40% native herbaceous • ≤ 10% invasive herbaceous (excluding reed canarygrass)	In Years 2,3,4,5,7, and 10, cover and diversity will be quantified using a quadrat method. However, the purpose of the monitoring conducted in Years 2, 3, and 4 is to identify the native and non-native herbaceous cover to gauge whether or not the site appears to be on a trajectory towards meeting the performance standards for Year 5. If the emergent marsh appears to be in jeopardy of not meeting the performance standard for Year 5, adaptive management including herbivory prevention and replanting may be conducted. A sampling transect will be run perpendicular to the baseline transect and quadrat data will be collected along the sampling transect. The frequency of sampling quadrats and the size of quadrats will be tailored to best assess this habitat type. The sampling interval and the size of the quadrat will be determined in the field based on pilot sampling data.	**Partially Met**- Monitoring of the emergent marsh was conducted on September 21, 2022. Average absolute cover across the 26 monitoring quadrats was observed at 15.4%, native herbaceous cover was observed at 14.8%, and invasive herbaceous cover was observed at 0% cover in Year 7. This does not meet the performance standard of ≥40% herbaceous cover but does meet the the performance standard of ≤10% invasive herbaceous cover. While the emergent marsh did not meet the native vegetation performance standard for Year 7, both the native and non-native cover was down suggesting that the main influence was likely the short growing season in the emergent marsh habitat due to late season inundation. Emergent marsh monitoring will continue in Year 10 **(**2025**)**.

Performance Standard	Documentation/Monitoring Method	Monitoring Result 2022
	Installed Vegetation	
Riparian Scrub-Shrub and Riparian Forest (ACM) Years 2-5: • A minimum of 1,200 native woody stems per acre • At least 5 native woody species (for Riparian Scrub-Shrub within the ACM) • At least 3 native tree species and 5 native shrub species (for Riparian Forest within the ACM) • Cover (during the first 5 years, woody species will be excluded from percent cover): o ≥ 10% native herbaceous o ≤ 10% invasive herbaceous (excluding reed canarygrass) o ≤ 10% invasive shrubs Year 7: • ≥ 55% native woody species • ≥ 10% native herbaceous • ≤ 10% invasive herbaceous (excluding reed canarygrass) • ≤ 5% invasive shrubs Year 10: • ≥ 80% native woody species • ≥ 10% native herbaceous • ≤ 5% invasive herbaceous and shrubs (excluding reed canarygrass)	In Years 2, 3, 4, 5, 7, and 10 native woody plantings and vegetative cover will be assessed at each plot within the riparian scrub-shrub and riparian forest (ACM). The native woody plantings and vegetative cover values at each plot will be added together and averaged over the habitat to evaluate the native vegetative performance standards . The permanent vegetation plots were established in Year 1 and marked at each of the four corners.	**Substantively Met**- Monitoring of the riparian scrub-shrub and riparian forest (ACM) was conducted on August 16-18, 2022. During surveys the native woody cover was determined to be 53.1% which is just below the Year 7 native woody species cover standard of ≥ 55%. The site is substantively meeting the standard and is meeting the intent of the standard. A total of 12 native woody species were observed. Native herbaceous cover (excluding woody species) was observed at 14.4% cover, invasive herbaceous cover (excluding reed canarygrass) was 4.9% cover, and invasive woody vegetation was <1% cover. The observed cover requirements meet the ≥10% native herbaceous cover, ≤10% invasive herbaceous, and ≤5% invasive woody performance standards. Riparian scrub-shrub and riparian forest (ACM) monitoring will continue in Year 10 (2025).

Performance Standard	Documentation/Monitoring Method	Monitoring Result 2022
	Installed Vegetation	
Riparian Forest and Cottonwood-Dominated Upland Forest Years 2-5: • A minimum of 1,200 native woody stems per acre • At least 3 native tree species and 5 native shrub species • Cover (during the first 5 years, trees/shrubs will be excluded from percent cover): o ≥ 10% native herbaceous o ≤ 10% invasive herbaceous (excluding reed canarygrass) Year 7: • ≥ 50% native woody species • ≥ 10% native herbaceous • ≤ 10% invasive herbaceous (excluding reed canarygrass) • ≤ 5% invasive shrubs Year 10: • ≥ 80% native woody species • ≥ 5% native herbaceous • ≤ 5% invasive herbaceous and shrubs (excluding reed canarygrass)	In Years 2, 3, 4, 5, 7, and 10 native woody plantings and vegetative cover will be assessed at each plot within the riparian forest and cottonwood-dominated upland forest. The native woody plantings and vegetative cover values at each plot will be added together and averaged over the habitat to evaluate the native vegetative performance standards . The permanent vegetation plots were established in Year 1 and marked at each of the four corners.	**Partially Met**- Monitoring of the riparian forest and cottonwood-dominated upland forest was conducted August 16-19, 2022. The riparian forest and cottonwood-dominated upland forest is partially meeting the associated performance standards for Year 7. During surveys native woody cover was observed at 30.5% which does not meet the ≥ 50% native woody species cover standard. 1,184 native woody plants per an acre were observed with species richness observed at 14 native tree and shrub species. Native herbaceous cover (excluding woody species) was observed at 24.3% cover, invasive herbaceous cover (excluding reed canarygrass) was 5.0% cover, and invasive woody vegetation was 1.2% cover. The observed cover requirements meet the ≥10% native herbaceous cover, ≤10% invasive herbaceous, and ≤5% invasive shrubs performance standard. Riparian forest and cottonwood-dominated upland forest monitoring will continue in Year 10 (2025).

Performance Standard	Documentation/Monitoring Method	Monitoring Result 2022
	Installed Vegetation	
Oak-Dominated Upland Forest Years 2-5: • A minimum of 500 trees/shrubs per acre • At least 1 native tree species and 4 native shrub species • Cover (during the first 5 years, trees/shrubs will be excluded from percent cover): o ≥ 25% native herbaceous o ≤ 15% invasive herbaceous (excluding reed canarygrass) o ≤ 15% invasive shrubs Year 7: • ≥ 25% native woody species • ≥ 25% native herbaceous • ≤ 10% invasive herbaceous (excluding reed canarygrass) • ≤ 5% invasive shrubs Year 10: • ≥ 40% native woody species (at least 10% of woody species cover will be provided by oaks) • ≥ 25% native herbaceous • ≤ 5% invasive herbaceous and shrubs (excluding reed canarygrass)	In Years 2, 3, 4, 5, 7, and 10 native woody plantings and vegetative cover will be assessed at each plot within the oak-dominated upland forest. The native woody plantings and vegetative cover values at each plot will be added together and averaged over the habitat to evaluate the native vegetative performance standards . The permanent vegetation plots were established in Year 1 and marked at each of the four corners.	**Years 2-5 Performance Standards Met**- Monitoring of the oak-dominated upland forest was conducted August 16-18, 2022. The habitat is meeting all Years 2-5 performance standards with 1,019 native woody plants per acre were observed, which is more than double the Year 5 density standard of at least 500 trees/shrubs per acre. A total of 13 species of native trees and shrubs were observed. Native herbaceous cover (excluding woody species) was observed at 30.5% cover, invasive herbaceous cover (excluding reed canarygrass) was 5.5% cover, and invasive woody vegetation was <1% cover. The observed cover requirements meet the ≥25% native herbaceous cover, ≤10% invasive herbaceous, and ≤5% invasive shrubs performance standard. During the Year 7 monitoring, native woody species cover was observed at 6.1% cover. Oak-dominated upland forest monitoring will continue in Year 10 (2025).

Performance Standard	Documentation/Monitoring Method	Monitoring Result 2022
	Geomorphic/Structural/Habitat Complexity Elements	
Topographic Surveys During years 1, 3, 5, 7, 10, topographic surveys will be completed once a year after the wet season to document changes in site topography and structural habitat features. The following changes would trigger a project review to determine what, if any, adaptive management actions are necessary: • Changes of more than 10% in ACM and side channel habitat acreages from the as-built surveys. • Changes of more than 20% in side channel depths from the as-built surveys.	Topographic surveys will include collecting topographic readings along the 5 pre-selected, permanent monitoring transects. Channel depths will be measured from the OHWM.	**Met** - Topographic surveys were conducted in August 2022. Changes to the ACM acreage and side channel habitat acreage were well below 10%. Changes in side channel depths were well below 20%. Topographic surveys will continue in Year 10 (2025).
Fish Barriers Annual inspection to document any fish barriers.	After the wet season a visual inspection will be made to document any barriers that prevent fish from entering or exiting the site. If a fish barrier is identified, the Trustee Council will be notified within three (3) business days of discovery.	**Met -** Several visual inspections by walking along the shoreline and by boat were used to determine there were no fish barriers in the created channels. Annual inspections will continue in Year 10 (2025).
Large Woody Debris During years 2,3,5,7 and 10, large woody debris will have an 80 percent retention rate including naturally recruited material. If the existing conditions and hydraulics will allow the retention of replacement materials, LWD will be installed in the interior channels (and marsh/mudflat where appropriate) to achieve the targeted density	After the wet season, a visual inspection will be made to document any changes to the installed large woody debris and any occurrences of natural recruitment.	**Met** – On August 18, 2022 a visual inspection survey was conducted, and large woody debris retention rate was observed to be well above the required 80 percent including natural recruitment. Of the originally installed 48 LWD, 43 remain with an additional 22 observed on the Project through natural recruitment. Large woody debris monitoring will continue in Year 10 (2025).
Aerial Photography Aerial photos of the site will be collected once during later summer during years 1, 3, 5, 7, 10.	Aerial photos will be taken during late summer each year that aerial photography is required.	**Met** - Aerial photography of the site was conducted on September 20, 2022. Aerial photography of the site will continue in Year 10 (2025).

Performance Standard	Documentation/Monitoring Method	Monitoring Result 2022
	Geomorphic/Structural/Habitat Complexity Elements	
Hydrology Water level data loggers will be placed at a minimum of two locations and continuous data will be collected, as feasible. If determined that continuous monitoring is not feasible, an alternative monitoring schedule will be determined in consultation with the Trustee Council representatives.	Hydrology data is collected by reviewing data from the nearby Columbia Slough Gauge, survey data taken on the site, and topographic assessment points taken along elevation 20. For monitoring in Years 7 and 10, information collected via water level data loggers (assuming they remain in place and functional) will also be assessed.	Wildlands installed 2 water level data loggers and one barometer on October 29, 2020, to collect continuous water level data for the monitoring in Years 7 and 10. Wildlands utilized data from the two on site water level data loggers and the USGS station at Columbia Slough which is located approximately 2 miles downriver of the Project site. A satellite photo from June 24, 2022 (Figure 6q) was assessed for information regarding the inundation level at the time of the photograph.

Performance Standard	Documentation/Monitoring Method	Monitoring Result 2022
	Invasive Plant Species	
Reed Canarygrass • Years 1-5: ≤ 30% reed canarygrass • Years 7: ≤ 25% reed canarygrass • Years 10: ≤ 20% reed canarygrass	In Years 2, 3, 4, 5, 7, and 10 reed canarygrass cover will be assessed at each plot and be kept separate from other native and invasive species cover analyses. The reed canarygrass cover values at each plot will be added together and averaged over the site to evaluate the reed canarygrass performance standard. The 41 permanent vegetation plots were established in Year 1 and marked at each of the four corners.	**Met** – Average cover of reed canarygrass within the 41 plots was 2.7%. Reed canarygrass assessments were conducted during the spring and later summer of 2022. Reed canarygrass monitoring will continue in Year 10 (2025).
Zero-Untreated Species All individual plants of the following species will be treated within the year in which they are found, during the season that is most effective for control with reasonably aggressive, legal treatment with the goal of complete eradication: • Japanese knotweed • Giant knotweed • Himalayan knotweed • Yellow flag iris • Butterfly bush • Purple loosestrife		**Met** – The entire site was walked to locate any species on the "zero-untreated" list. During Year 5, several yellow flag iris instances were detected on site (see Figure 8 for general locations). All instances of these species were treated. No Japanese knotweed, Himalayan knotweed, giant knotweed, purple loosestrife, or butterfly bush was found.

APPENDIX 2

Maintenance Log

Alder Creek NRDA Bank
2022 (Year 7)
Maintenance Log

Visit Date:	Visited By: (Name/Initials)	Primary Purpose of Visit	Signage	Trash & Trespass	*Invasives	Other
3/29/2022	Bill Roper	General Inspection	Checked	Checked	Checked	
5/9/2022	Bill Roper	Maintenance/Land Management				Irrigation pump maintenance
5/9/2022	Pat Stephens	Maintenance/Land Management				Irrigation pump maintenance
5/10/2022	Bill Roper	Maintenance/Land Management	Checked	Checked	Checked	onsite equipment maintenance
5/10/2022	Pat Stephens	Maintenance/Land Management				
5/11/2022	Bill Roper	Biological Monitoring	Checked	Checked	Checked	Mink camera installation
6/7/2022	Bill Roper	Biological Monitoring	Checked	Checked	Checked	
6/7/2022	Lauren Banks	Maintenance/Land Management	Checked	Removed	Treated/Removed	Trash removal
6/8/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/9/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/10/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/13/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/14/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/15/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/16/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/17/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/20/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/21/2022	Lauren Banks	Maintenance/Land Management	Checked	Removed	Treated/Removed	Trash removal
6/22/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/23/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/24/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/27/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	

Alder Creek NRDA Bank
2022 (Year 7)
Maintenance Log

Visit Date:	Visited By: (Name/Initials)	Primary Purpose of Visit	Signage	Trash & Trespass	*Invasives	Other
6/28/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/29/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
6/29/2022	Bill Roper	Biological Inspection			Checked	
6/30/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
7/1/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
7/2/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
7/5/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
7/6/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
7/7/2022	Lauren Banks	Maintenance/Land Management	Checked	Removed	Treated/Removed	Trash removal
7/14/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
7/15/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
7/16/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
7/18/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
7/19/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
7/19/2022	Bill Roper	Maintenance/Land Management	Checked	Checked	Checked	Irrigation pump setup
7/19/2022	Kyle Tyson	Maintenance/Land Management	Checked	Checked	Treated/Removed	
7/19/2022	Pat Stephens	Maintenance/Land Management				Irrigation pump setup
7/20/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Checked	oak planting irrigation and irrigation system repair
7/20/2022	Bill Roper	Maintenance/Land Management	Checked	Checked	Checked	Irrigation pump setup
7/20/2022	Kyle Tyson	Maintenance/Land Management	Checked	Checked	Treated/Removed	oak planting irrigation and irrigation system repair
7/20/2022	Pat Stephens	Maintenance/Land Management				irrigation pump setup

Alder Creek NRDA Bank
2022 (Year 7)
Maintenance Log

Visit Date:	Visited By: (Name/Initials)	Primary Purpose of Visit	Signage	Trash & Trespass	*Invasives	Other
7/21/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Checked	oak planting irrigation and irrigation system repair
7/21/2022	Bill Roper	Maintenance/Land Management	Checked	Checked	Checked	
7/21/2022	Kyle Tyson	Maintenance/Land Management	Checked	Checked	Treated/Removed	
7/22/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Checked	oak planting irrigation and irrigation system repair
7/25/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Checked	oak planting irrigation and irrigation system repair
7/26/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Checked	oak planting irrigation and irrigation system repair
7/27/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Checked	oak planting irrigation and irrigation system repair
7/28/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Checked	oak planting irrigation and irrigation system repair
7/29/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	oak planting irrigation
7/30/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	oak planting irrigation
8/1/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	oak planting irrigation
8/2/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	oak planting irrigation
8/3/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	oak planting irrigation
8/4/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	oak planting irrigation
8/5/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	oak planting irrigation
8/8/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	oak planting irrigation
8/9/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	oak planting irrigation
8/10/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	oak planting irrigation
8/11/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	oak planting irrigation
8/12/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	oak planting irrigation

Alder Creek NRDA Bank
2022 (Year 7)
Maintenance Log

Visit Date:	Visited By: (Name/Initials)	Primary Purpose of Visit	Signage	Trash & Trespass	*Invasives	Other
8/15/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
8/16/2022	Lauren Banks	Biological Monitoring	Checked	Checked	Treated/Removed	oak planting irrigation
8/16/2022	Kyle Tyson	Biological Monitoring	Checked	Checked	Treated/Removed	Vegetation monitoring
8/16/2022	Bill Roper	Biological Monitoring	Checked	Checked	Checked	Vegetation monitoring
8/17/2022	Lauren Banks	Biological Monitoring	Checked	Checked	Checked	oak planting irrigation
8/17/2022	Kyle Tyson	Biological Monitoring	Checked	Checked	Checked	Vegetation monitoring
8/17/2022	Bill Roper	Biological Monitoring	Checked	Checked	Checked	Vegetation monitoring
8/18/2022	Lauren Banks	Maintenance/Land Management	Checked	Checked	Treated/Removed	
8/18/2022	Kyle Tyson	Biological Monitoring	Checked	Checked	Treated/Removed	
8/18/2022	Bill Roper	Biological Monitoring	Checked	Checked	Checked	
9/20/2022	Bill Roper	Biological Monitoring	Checked	Checked	Checked	Drone air photos
9/21/2022	Bill Roper	Biological Monitoring	Checked	Checked	Checked	Marsh monitoring and data logger downloads

*invasive plant treatment/removal primarily consisted of hand removal of yellow-flag iris. Scott's broom, Himalayan blackberry, English hawthorn and Canada thistle also removed as encountered

** irrigation withing the oak planting area was rotated to different irrigation zones, allowing any given area to be irrigated approximately once per week.

APPENDIX 3

Emergent Marsh Quadrat Data

Alder Creek Restoration Project
2022 (Year 7)
Emergent Marsh
Quadrat Data

		Quadrat	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
		Absolute Cover	99	0	1	0	0	40	0	1	75	2	0	0	0	1	15	10	10	35	50	0	2	0	0	0	0	60
Native																												
	Species	**Common Name**																										
	Bidens cernua	Nodding beggarticks	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	37.5%	0.0%	0.0%	0.0%	0.0%	0.0%	7.2%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.9%
	Callitriche heterophylla	Water starwort	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
	Carex sp	Sedge	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%	0.0%	0.0%	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Carex obnupta	Slough sedge	99.0%	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%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Cyperus strigosus	False nutsedge	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%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.1%
	Eleocharis obtusa	Blunt spikerush	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	0.0%	0.0%	16.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Eleocharis palustris	Common spikerush	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Erigeron canadensis	Canada horseweed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	37.5%	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%	0.0%	0.0%
	Lindernia dubia	Yellowseed false pimpernel	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%	0.0%	0.0%	0.0%	26.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Ludwigia palustris	Marsh purslane	0.0%	0.0%	0.0%	0.0%	0.0%	36.5%	0.0%	1.0%	0.0%	0.8%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	2.5%	22.3%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	25.1%
	Polygonum hydropiperoides	Swamp smartweed	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%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-Native																												
	Species	**Common Name**																										
	Polygonum hydropiper	Marsh pepper	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%	4.4%	0.0%	2.5%	1.1%	6.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Polygonum persicaria	Ladysthumb	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%	0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Absolute cover	99.0%	0.0%	1.0%	0.0%	0.0%	40.0%	0.0%	1.0%	75.0%	2.0%	0.0%	0.0%	0.0%	1.0%	15.0%	10.0%	10.0%	35.0%	50.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	60.0%

APPENDIX 4

Cover Plot Data

Alder Creek NRDA Bank
2022 (Year 7)
Percent Cover / Plot Data

		Oak Dominated Upland Forest										Riparian and Cottonwood Dominated Upland Forest														Riparian Scrub-Shrub/Forest (ACM)													
		2	6	7	8	10	11	12	39	40	41	1	3	4	5	9	14	15	16	17	18	19	20	22	29	37	13	21	23	24	25	26	27	28	30	31	32	33	34	35	36	38
NATIVE HERBACEOUS																																									
Acmispon parviflorus	Deervetch	15%	1%	14%	5%	0%	0%	0%	2%	16%	3%	0%	0%	0%	0%	0%	11%	13%	0%	16%	12%	18%	13%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Agoseris grandiflora	Dandelion	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Agrostis exarata	Spike bentgrass	0%	0%	0%	3%	11%	0%	16%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Agrostis sp	bentgrass	0%	0%	3%	0%	0%	0%	0%	0%	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%
Bidens cernua	Nodding beggarticks	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%	16%	3%	11%	8%	2%	13%	0%	0%	12%	11%	0%	0%	11%	0%
Bromus carinatus	California brome	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	0%	0%	11%	0%	0%	14%	12%	0%	0%	8%	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bromus sitchensis	Sitka brome	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Carex obnupta	Slough sedge	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%	21%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Conyza canadensis	Horseweed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	8%	3%	11%	2%	0%	13%	0%	5%	12%	2%	2%	0%	11%	0%
Deschampsia cespitosa	Tufted hairgrass	0%	0%	14%	0%	0%	0%	16%	0%	0%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	21%	13%	0%	5%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Eleocharis palustris	Common Spikerush	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%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Elymus glaucus	Blue wildrye	0%	0%	3%	2%	0%	2%	0%	0%	3%	0%	0%	2%	9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Epilobium ciliatum	Slender willowherb	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Equisetum hyemale	Horsetail	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Glycyrrhiza lepidota	Wild licorice	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	2%	0%	0%	0%	0%	5%	0%	0%	0%	0%	11%	3%
Hordeum branchiantherum	Meadow barley	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12%	20%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Juncus effusus	Soft rush	3%	6%	0%	0%	11%	0%	0%	12%	1%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Juncus tenuis	Slender rush	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	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%
Madia glomerata	Mountain tarweed	15%	6%	14%	5%	11%	11%	16%	0%	16%	13%	0%	11%	2%	0%	0%	0%	5%	50%	0%	12%	5%	3%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Poa palustris	Fowl bluegrass	0%	0%	0%	2%	0%	0%	1%	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%	0%	0%	0%	0%	0%
Polystichum munitum	Western swordfern	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Rumex occidentalis	Western dock	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Typha latifolia	Broadleaf cattail	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Xanthium strumarium	Cocklebur	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%	3%	2%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
NATIVE WOODY SPECIES																																								
Acer macrophyllum	Big Leaf Maple	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Alnus rubra	Red Alder	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Arbutus menziesii	Madrone	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Cornus sericea	Redosier Dogwood	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%	0%	0%	29%	1%	0%	0%	0%	0%	0%	0%

		Oak Dominated Upland Forest										Riparian and Cottonwood Dominated Upland Forest															Riparian Scrub-Shrub/Forest (ACM)														
		2	6	7	8	10	11	12	39	40	41	1	3	4	5	9	14	15	16	17	18	19	20	22	29	37	13	21	23	24	25	26	27	28	30	31	32	33	34	35	36	38
Corylus cornuta	Beaked Hazel	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Crataegus douglasii	Black Hawthorn	0%	0%	0%	0%	0%	0%	3%	0%	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Fraxinus latifolia	Oregon Ash	1%	0%	0%	0%	0%	0%	3%	0%	3%	0%	59%	0%	31%	29%	0%	1%	0%	6%	3%	2%	4%	0%	0%	0%	0%	0%	2%	0%	3%	2%	20%	0%	7%	0%	0%	2%	2%	15%	0%	1%	0%
Mahonia aquifolium	Tall Oregon Grape	0%	0%	0%	1%	0%	2%	0%	0%	1%	0%	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%
Mahonia nervosa	Dwarf Oregon-grape	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Malus fusca	Western Crabapple	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Oemleria cerasiformis	Indian Plum/Osoberry	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Physocarpus capitatus	Pacific Ninebark	0%	0%	0%	1%	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%	0%	0%	0%	0%	0%
Populus balsamifera ssp. Trichocarpa	Black Cottonwood	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	57%	17%	43%	0%	36%	12%	4%	13%	8%	63%	8%	0%	30%	0%	38%	28%	20%	15%	22%	30%	23%	12%	11%	2%	56%	31%	0%
Quercus garryana	Oregon White Oak	1%	0%	0%	1%	0%	0%	1%	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%	0%	0%	0%	0%	3%
Ribes divaricatum	Gooseberry	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Rosa gymnocarpa	Baldhip Rose	0%	0%	0%	0%	0%	2%	1%	0%	3%	3%	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%	11%	0%	0%	0%	3%
Rosa pisocarpa	Swamp Rose	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%	5%	0%	0%	23%	0%	0%	8%	0%	0%	0%	0%
Rubus parviflorus	Thimbleberry	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Rubus spectabilis	Salmonberry	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Rubus ursinus	Trailing Blackberry	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	34%	1%	0%	
Salix fluviatillis/exigua	Sandbar Willow	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%	1%	2%	0%	0%	0%	0%	0%	0%	1%	0%	
Salix lucida ssp lasiandra	Pacific Willow	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	12%	38%	0%	20%	31%	10%	30%	23%	0%	0%	15%	0%	1%	13%
Salix scouleriance	Scouler Willow	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12%	1%	28%	0%	2%	0%	0%	0%	30%	27%	0%	0%	3%	3%
Sambucus racemora	Red Elderberry	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Spirea douglassi	Douglas' Spirea	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%	1%	0%	0%	3%	15%	10%	0%	5%	0%	0%	8%	0%	0%	13%
Symphoricarpos albus	Snowberry	1%	0%	0%	5%	0%	0%	0%	0%	1%	0%	14%	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%
NON-NATIVE SPECIES																																									
Agrostis gigantea	Giant bentgrass	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	2%	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%
Aira caryophyllea	Silver hairgrass	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Alopecurus pratensis	Meadow foxtail	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Brassica sp.	Mustard	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Cynosurus	Dog tail	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Daucus carota	Wild carrot	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	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%
Dipsacus fullonum	Common teasel	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	8%	0%	0%	22%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Holcus lanatus	Velvetgrass	38%	14%	0%	0%	28%	46%	0%	49%	16%	0%	0%	2%	0%	0%	0%	0%	9%	10%	0%	2%	0%	0%	2%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Lactuca serriola	Prickly lettuce	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Lotus corniculatus	Birds-foot trefoil	0%	1%	0%	0%	0%	0%	16%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

		Oak Dominated Upland Forest										Riparian and Cottonwood Dominated Upland Forest															Riparian Scrub-Shrub/Forest (ACM)														
		2	6	7	8	10	11	12	39	40	41	1	3	4	5	9	14	15	16	17	18	19	20	22	29	37	13	21	23	24	25	26	27	28	30	31	32	33	34	35	36	38
Mentha pulegium	Pennyroyal	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%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Parentucellia viscosa	Yellow glandweed	0%	0%	0%	0%	0%	2%	1%	2%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	6%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Plantago lanceolata	English plantain	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%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Polygonum persicaria	Ladysthumb	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%	0%	0%	0%	0%	0%	0%	20%	0%	0%
Tanacetum vulgare	Common tansy	0%	0%	0%	0%	0%	2%	1%	0%	1%	13%	0%	0%	0%	25%	2%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Trifolium arvense	Hare's-foot clover	0%	0%	3%	5%	0%	0%	1%	0%	1%	0%	0%	0%	7%	0%	0%	0%	0%	0%	7%	2%	0%	0%	8%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Verbascum thapsus	Common Mullein	0%	0%	0%	0%	0%	0%	0%	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%	0%	0%	0%	0%	0%	0%
Vulpia sp.	Annual fescue	15%	0%	14%	59%	0%	0%	16%	0%	16%	13%	0%	0%	0%	0%	0%	9%	13%	0%	0%	12%	1%	13%	20%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
INVASIVE HERBACEOUS SPECIES																																								
Cirsium arvense	Canada thistle	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	27%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Cirsium vulgare	Bull thistle	0%	0%	3%	0%	0%	0%	3%	0%	3%	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%
Convolvulus arvensis	Field bindweed	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%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Hypericum perforatum	St. Johnswort	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Iris pseudacorus	Yellow-flag	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%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Rubus armeniacus	Himalayan blackberry	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	2%	2%	8%	0%	0%	0%	0%	0%	0%	0%	8%	8%	0%	47%	10%	0%	0%	0%	0%	2%	0%	2%	0%	0%	11%	0%	0%	3%
Senecio jacobaea	Ragwort Tansy	1%	6%	0%	0%	11%	0%	0%	12%	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%	0%
Ventenata dubia	Ventenata grass	0%	1%	0%	0%	0%	0%	0%	0%	0%	13%	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%
REED CANARYGRASS																																								
Phalaris arundinacea	Canarygrass	1%	1%	3%	0%	0%	0%	0%	0%	0%	0%	0%	11%	0%	11%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%	53%
INVASIVE WOODY SPECIES																																								
Crataegus monogyna	English Hawthorn	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	3%	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%
Cytisus scoparius	Scot's broom	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Absolute cover		90%	70%	70%	90%	75%	70%	95%	80%	85%	80%	90%	80%	75%	85%	85%	75%	85%	85%	85%	80%	90%	80%	65%	90%	55%	80%	80%	50%	90%	85%	95%	90%	75%	95%	85%	70%	75%	70%	90%	70%	90%

APPENDIX 5

Tree Plot Count Data

Alder Creek Mitigation Bank
2022 (Year 7)
Woody Plants
Plot Data

		Oak Dominated Upland Forest										Riparian and Cottonwood Dominated Upland Forest																Riparian Scrub-Shrub/Forest (ACM)													
Species	**Common name**	**2**	**6**	**7**	**8**	**10**	**11**	**12**	**39**	**40**	**41**	**1**	**3**	**4**	**5**	**9**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**22**	**29**	**37**	**13**	**21**	**23**	**24**	**25**	**26**	**27**	**28**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**38**
Acer macrophyllum	Big Leaf Maple																							1	2																	
Alnus rubra	Red Alder		1																																						
Arbutus menziesii	Madrone						1																																		
Cornus sericea	Redosier Dogwood																																								
Corylus cornuta	Beaked Hazel																																								
Crataegus douglasii	Black Hawthorn		2	1			2	4		2	1						1	1			4	1				2		1												1	
Fraxinus latifolia	Oregon Ash	12	1	1		3	1	1	8	6	3	3		3	2		1	5	7	3	9	6	1	3	2	2	1	2	5		16	3	3	8			13	9	19		16	
Mahonia aquifolium	Tall Oregon Grape			1	2		6			2	3				3	12																									
Mahonia nervosa	Dwarf Oregon-grape								1																																
Malus fusca	Western Crabapple																																								
Oemleria cerasiformis	Indian Plum/Osoberry																																								
Physocarpus capitatus	Pacific Ninebark		5		2		2		2	1	2				1											2															
Populus balsamifera ssp. Trichocarpa	Black Cottonwood				1										10		4	31		12	9		6	2	25	11		11	1		6	8	3	4			6	2	3		16	
Quercus garryana	Oregon White Oak	1	1	1	3	3	6	5	12	7	8																														4
Ribes divaricatum	Gooseberry														2	11																									
Rosa gymnocarpa	Baldhip Rose		3		2	9	10	4	7	10	8					1	14										4									20				10?
Rosa pisocarpa	Swamp Rose																														8						9			
Rubus parviflorus	Thimbleberry																																							
Rubus spectabilis	Salmonberry															2																									
Rubus ursinus	Trailing Blackberry											100		2			4				2		2		5			4											1	
Salix fluviatillis/exigua	Sandbar Willow																														1	1	3						1	
Salix lucida ssp lasiandra	Pacific Willow		13																				2						7		1	8	7	6				2	5		1	4
Salix scouleriance	Scouler Willow		5																5										5		4		2			9	3			5	5
Sambucus racemora	Red Elderberry																																							
Spirea douglassi	Douglas' Spirea																												6		3	1	20	14					5			17
Symphoricarpos albus	Snowberry	1	4	1	13	8	1	4	5	11	6	100				1	4	2			2		1		1			5													
	Tree Count	**14**	**35**	**5**	**23**	**23**	**29**	**18**	**35**	**39**	**31**	**203**	**0**	**5**	**18**	**27**	**28**	**39**	**12**	**15**	**26**	**7**	**12**	**6**	**35**	**17**	**1**	**27**	**24**	***N/A**	**30**	**29**	**36**	**35**	***N/A**	***N/A**	**28**	**36**	**41**	**N/A**	**41**	**30**

*Vegetation is too dense to accurately count trees/shrubs

APPENDIX 6

Turnstone 2022 Report

Alder Creek Wildlife Monitoring Surveys

Top Photo: Daphne Day

TURNSTONE
ENVIRONMENTAL CONSULTANTS

2021-2022 **Report:**

Fish & Wildlife Monitoring Surveys

for the

Alder Creek Restoration Project

Sauvie Island
Multnomah County, Oregon

Submitted to:
Portland Harbor Holdings II, LLC
520 SW 6th Avenue, Suite 1210
Portland, OR 97204

Submitted by:
Turnstone Environmental Consultants, Inc.
PO Box 83362
Portland, OR 97283

Date:
December 7, 2022

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INTRODUCTION

Portland Harbor Holdings II, LLC. (PHH) retained the services of Turnstone Environmental Consultants, Inc. (Turnstone) to perform post-restoration (Year 7) monitoring surveys on Sauvie Island in Portland, Oregon in support of the Alder Creek Restoration Project (Project). Surveys were conducted for juvenile salmonids, mink (*Neovison vison*), and bald eagles (*Haliaeetus leucocephalus*) and other raptors located within and adjacent to the survey area.

PROJECT OVERVIEW

Survey Area

The survey area is located in the Portland Harbor, at the southernmost tip of Sauvie Island where the confluence of Multnomah Channel and the Willamette River occurs (Figure 1). Formerly a 64-acre sawmill complex before restoration activities took place, the area now includes restored side channels, roughly nine acres of improved beaches, mudflats, and marsh habitat, 27 acres of riparian habitat, and 13 acres of oak woodland habitat with several large snags.

Figure 1. Survey area and monitoring locations

Statement of Work

Fish Monitoring

Turnstone conducted fish monitoring to document the presence of native fish, specifically juvenile salmonids, within the created side channels. Per the monitoring plan, surveys take place in Years 1, 3, 5, 7, and 10. Due to visibility and safety issues, underwater video (GoPro) monitoring, in combination with visual shoreline surveys, is used as a substitute for the snorkel surveys outlined in the original monitoring plan.

Mink Monitoring

Mink usage monitoring was conducted along the waterways, including mainstem shorelines, backwater areas, and side channels, of the Restoration Project including a 50-foot buffer from each waterway. Per the monitoring plan, surveys take place for at least 12 weeks in the spring and summer in Years 3, 5, 7, and 10. Survey methods include camera traps at three locations with scent stations to lure animals into camera view as well as searches for tracks, scat, and den sites in designated areas with potential for mink use.

Eagle Surveys

Bald eagle surveys were conducted to obtain bald eagle presence/absence and behavior (if present). The objective is to document any changes in bald eagle use or behavior at the site over time. Per the monitoring plan, weekly breeding season surveys take place in Years 3, 5, 7, and 10. Although these surveys are targeting bald eagle, other raptor sightings (including osprey) and behavior were also recorded.

METHODOLOGY

Surveys were conducted from December 2021 to August 2022 by qualified personnel. Turnstone Project Manager, Jeff Reams, and Lead Biologist, Daphne Day, worked with Lindsey Sanders, Caitlin Bowman, and Sarah McCord to complete the post-restoration monitoring surveys. Professional resumes for project personnel are located in Appendix B. During monitoring efforts for specific species, any observation or sign of other Target Species was documented.

Fish Monitoring

Monitoring was conducted at standard locations within the newly created channels two times per month from February through May of 2022. Specific monitoring days were scheduled to account for weather and other ecological factors and were rescheduled as necessary based on field conditions. Biologists conducted visual shoreline surveys combined with stationary underwater video recording (GoPro). During monitoring, habitat conditions were recorded, including any aquatic plants (species, location, and relative abundance), shade, cover, depth, substrate, and water quality (including water temperature, dissolved oxygen, turbidity). Water quality measurements were taken where fish monitoring occurred and at locations in the Willamette River and Multnomah Channel adjacent to the Project site.

Mink Monitoring

Camera Traps

Camera traps (using remote, motion-sensor cameras) and scent stations (using mink bait) were set at three separate locations along the shoreline of the survey area on May 11. Camera photos were analyzed by Turnstone personnel through September 2. Cameras were visited six times in order to download photos and reapply mink bait. The downloaded photos were then individually searched for captured

photos of mink and other wildlife species. The numbers of individuals of each species were recorded and at least one photo of each species observed was archived.

Visual Surveys

Visual surveys for tracks, scat, and den sites were conducted along the shoreline of the survey area six times between May and September in 2022. Particular attention was given to aquatic and terrestrial large wood and other cover structures during monitoring to capture use of den sites, foraging areas, and travel corridors. Identification characteristics that were investigated are summarized below (GDNR 2013).

Scat:	Dark brown or black, 5-6 inches long, roughly cylindrical, with occasional segmentation and bits of fur or bone; found on beaver lodges, rocks, logs, and near dens
Den Sites:	Burrow holes in streams/riverbanks are roughly four inches in diameter
Tracks:	Nearly round with a width of 1¼ - 1¾ inches for the front feet and 2¼ inches long for the hind feet. Stride length is 12-26 inches apart and both hind and forefeet prints almost touch.

Eagle Surveys

Turnstone and Wildlands biologists conducted raptor monitoring surveys at vantage points with the best visibility for observing bald eagle use at the project site. Each survey was conducted for a total of two hours, varying between dawn and dusk and other daylight hours. Surveys were conducted along the prescribed survey route, including ten minutes at each of the five monitoring stations. Surveys were performed once per week December 2021 through August 2022. Behavioral characteristics were recorded when possible for all observations. During site visits, biologists looked for any potential bald eagle or osprey nests.

RESULTS

Fish Monitoring

Details on the eight fish monitoring visits are outlined in Table 1 below. Juvenile salmonids were observed on several occasions (Figure 7), along with minnows and other unidentified species. Less than ideal visibility during visual surveys yielded low levels of fish observation and hindered species identification, though the number of observations has increased since adopting stationary GoPro video stations in 2018 rather than roving shoreline camera surveys.

Table 1. Fish Monitoring Details by Visit

Date	Underwater Visibility	Average Turbidity (NTU)[1]	Juvenile Salmonid Observation(s)	Other Species Observed
2/17	Moderate	6.68	No	None
2/25	Moderate	5.81	No	None
3/24	Moderate	9.47	No	None
3/29	Moderate	1.51	No	None
4/14	Moderate	1.80	No	None
4/29	Moderate	10.34	UNSA	UNK1

[1] Average turbidity of all measurements on site and adjacent to the site.

Date	Underwater Visibility	Average Turbidity (NTU)[1]	Juvenile Salmonid Observation(s)	Other Species Observed
5/21	Moderate	12.29	No	None
5/27	Moderate	6.80	Coho, UNSA	Killifish, minnow, UNSA, UNK1, UNK3

UNSA = Juvenile salmonid, unknown species
UNK1 = Not identifiable from video
UNK2 = Possible juvenile salmonid
UNK3 = Not indicative of salmonid

Figure 2. Screen Capture of Underwater Video Depicting Juvenile Coho Salmon on May 27, 2022

Mink Monitoring

Camera Traps

In 2022, the cameras were installed from May 11 through September 21; however, a high water event rendered the cameras non-functional beginning approximately June 10. New cameras were installed on July 7 after the water receded, resulting in a total of 14 weeks of camera monitoring for the year. Turnstone conducted six camera maintenance visits during this period, with the final visit occurring on September 2. No mink were observed on any camera photos. Other wildlife species noted included American crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorus*), beaver (*Castor canadensis*),

Canada goose (*Branta canadensis*), coyote (*Canis latrans*), California quail (*Callipepla californica*), Western painted turtle (*Chrysemys picta bellii*), great-blue heron (Ardea herodias), striped skunk (Mephitis mephitis), black-tailed deer (*Odocoileus hemionus*), raccoon (*Protor lotorus*), fox squirrel (*Scurius niger*), song sparrow (*Melodius melospiza*), and brush rabbit (*Sylvilagus bachmani*). Photos between September 2 and September 21 were analyzed by Wildlands personnel and species observed included black-tailed deer, raccoon, and unidentified small birds.

Visual Surveys

During the 2022 survey period, Turnstone conducted six mink sign surveys. Possible mink tracks were noted on May 21 along the Multnomah Channel shoreline, nearest to Camera 1. On September 2, possible mink tracks were noted just north of Camera 2. In addition, Wildlands personnel noted possible mink tracks on May 11 north of Camera 2. No individuals, scat, or den sites were found during field sign investigation surveys. Other wildlife signs noted included Canada goose, black-tailed deer, raccoon, nutria (*Myocastor coypus*), coyote, and river otter (*Lutra canadensis)*.

Figure 3. Locations of possible mink tracks in 2022

Figure 4. Possible mink tracks recorded in 2022 on May 11 (left), May 21 (center), and September 2 (right)

Eagle Surveys

During the 2021-2022 survey period, 38 total eagle surveys were conducted. A total of 40 bald eagle sightings and 122 raptor sightings were recorded over the 38 visits. Other raptor species regularly observed included osprey (*Pandion haliaetus*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*). Additionally, northern harrier (*Circus hudsonius*), cooper's hawk (*Accipiter cooperii*), peregrine falcon (*Falco peregrinus*), and barn owl (*Tyto alba*) individuals were recorded in limited numbers. Turkey vultures (*Cathartes aura*) were also observed during many of the visits, but are not included in the official raptor counts. The spatial distribution of eagle observations recorded throughout the season is displayed in Figure 5. During a single survey, the highest number of eagle individuals observed was three – two adults and one juvenile on March 29. Eagles were observed on site, either flying over or perched, for 58 percent of all observations. Eagles were generally observed flying over the site or channel, but were occasionally observed perching in the cottonwood trees near the shore. Raptors were regularly observed perching and hunting throughout the site and the restored channels. Eagles and other raptors were observed most often between March and May (Figures 5, 6).

A female red-tailed hawk was observed sitting in a nest, being attended by a male red-tailed hawk, in the northwest corner of the site on March 16, and again on April 22. No other raptor nests were observed on or near the site.

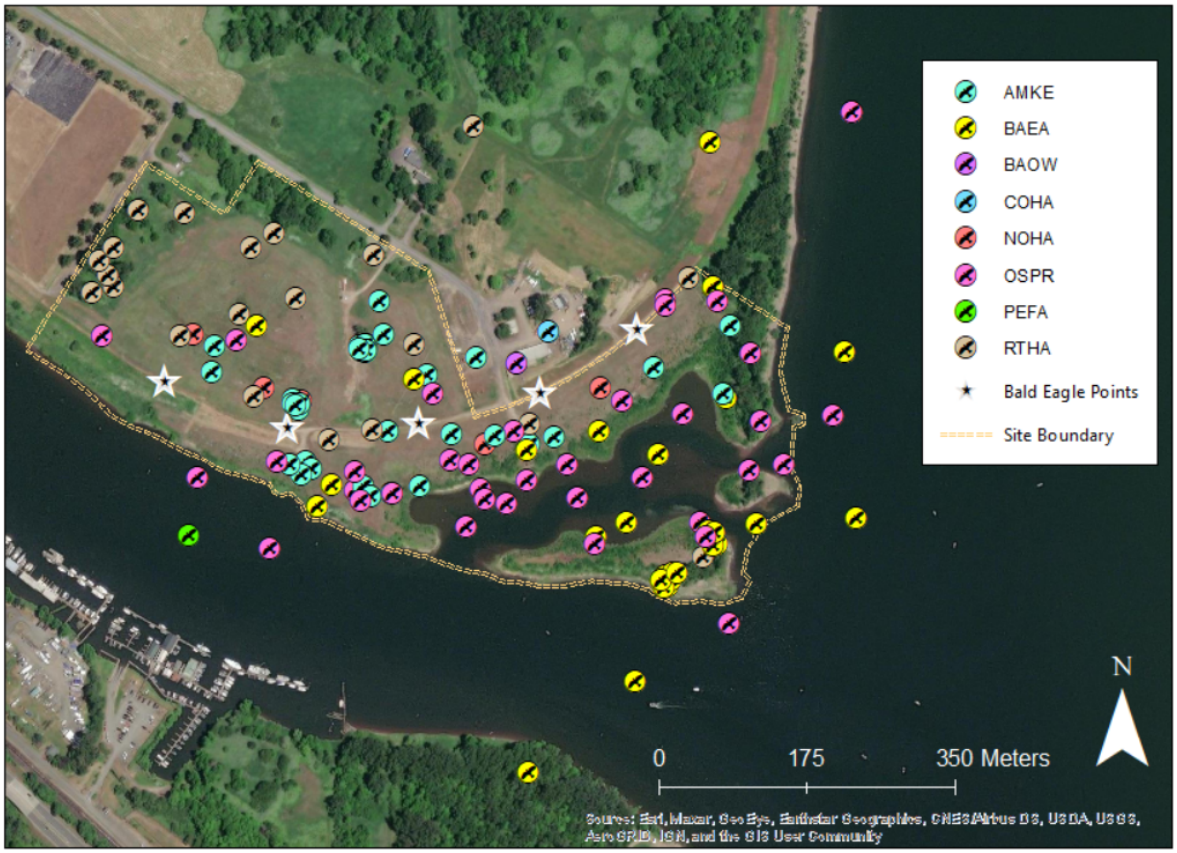

Figure 5. Estimated locations of eagle and other raptor observations, December 2021 through August 2022

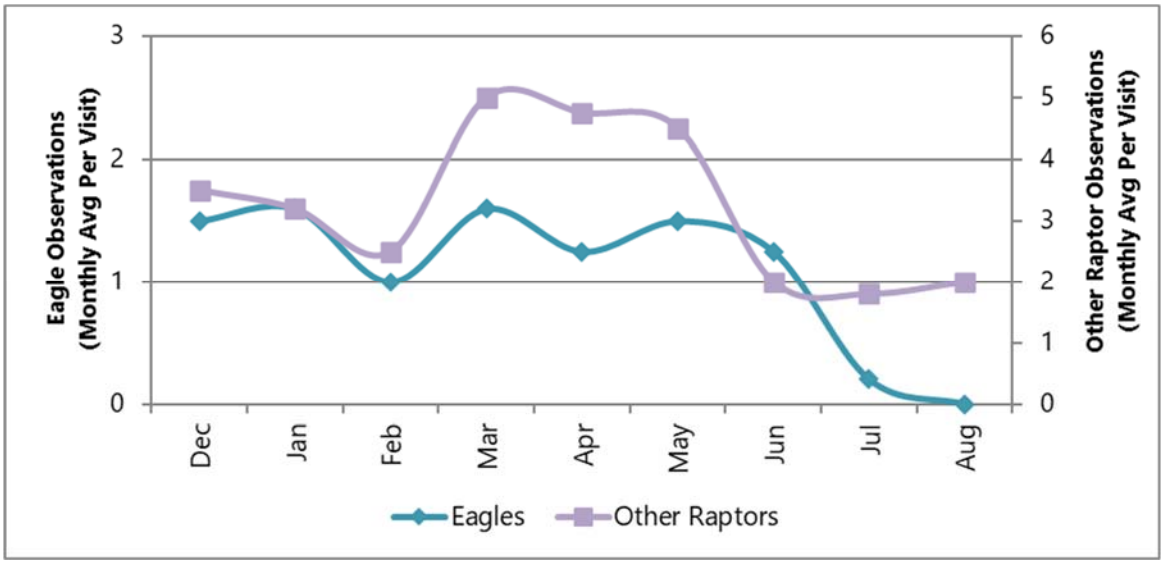

Figure 6. Mean bald eagle and other raptor observations, December 2021-August 2022, by month[2]

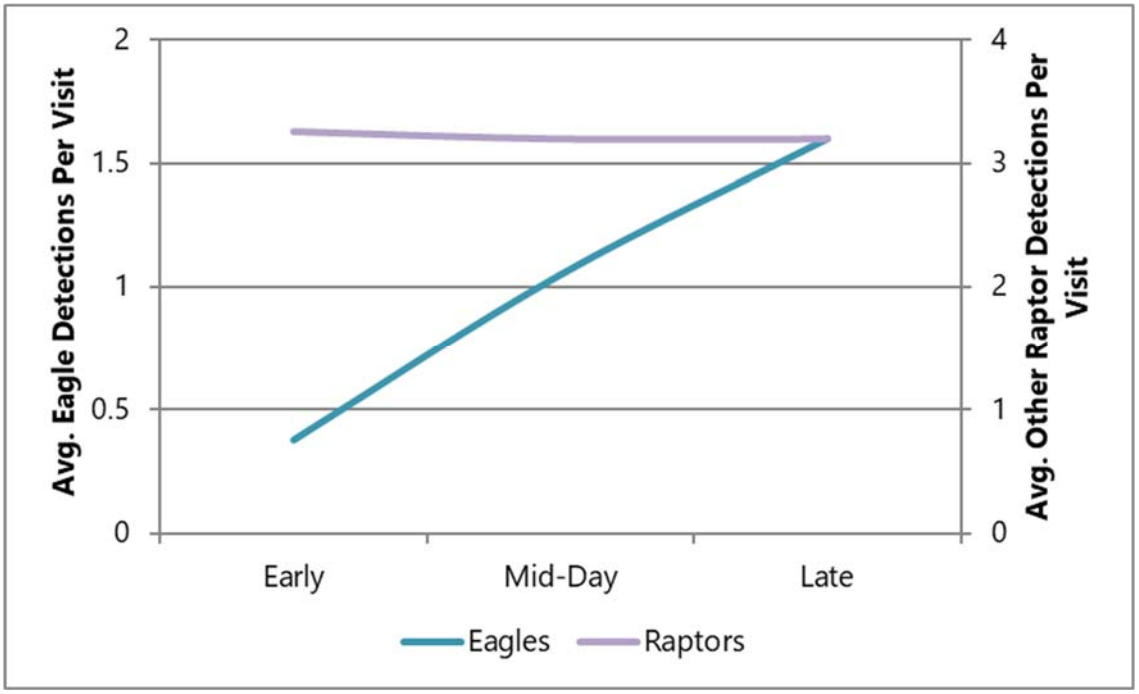

Figure 7. Mean bald eagle and other raptor observations December 2021-August 2022, by time of day[2,3]

[2] Number of other raptor observations does not include turkey vulture sightings.

[3] Early = state time before 10 am; Mid-Day = start between 10am-2:59pm, Late = start time 3pm or later

ANALYSIS & CONCLUSIONS

Turnstone conducted baseline monitoring in 2013 and 2014, prior to restoration efforts, for bird assemblages, eagles and raptors and mink. In 2017 and 2018, Turnstone conducted post-restoration monitoring for juvenile salmonids and bird assemblages. For the 2019-2020 period, monitoring conducted by Turnstone included eagle/raptor surveys, bird assemblage point count surveys, and fish monitoring. Finally, for the most recent 2021-2022 period, monitoring conducted by Turnstone included eagle/raptor surveys, mink sign and camera monitoring, and fish monitoring.

A comparison of data collected over time is included for fish and mink monitoring and eagle survey data. Bird assemblage data is not discussed, since no monitoring was conducted in 2022.

Eagle Surveys

Turnstone did not conduct post-restoration surveys in 2018; thus, the data from those surveys is not included in this comparative discussion. When comparing 2013/2014 and 2019/2020 survey data, eagle use of the site seems to have decreased slightly despite the restoration efforts, with 52 detections recorded during baseline surveys compared to 46 in 2019/2020 and 40 recorded in the most recent survey effort. In all monitoring seasons, one or two, sometimes up to three, individuals were seen on or around the site. Accipiter species seem to be no longer using the site as frequently, with no detections recorded in 2020. In their place, American kestrels have started utilizing the area, with a pair seen regularly early in the year. Ospreys and red-tailed hawks continue to be regular visitors, regularly seen perching and hunting throughout the site. In addition, a northern harrier was observed on several occasions, which seems to be taking advantage of the new, wide-open habitat available post-restoration.

Mink Monitoring

Turnstone did not conduct post-restoration surveys in Year 3 or 5; thus, the data from those surveys is not included in this comparative discussion. However, a Turnstone biologist did observe mink tracks along the shore during an eagle monitoring visit on July 13, 2020. In addition, potential mink tracks were observed in May and September of 2022 during sign surveys. While the camera monitoring did not yield any mink observations, it seems likely that mink utilize the project area to some degree.

Fish Monitoring

Turnstone did not conduct pre-restoration fish monitoring. Post-restoration, biologists have recorded juvenile salmonids in 2017, 2020, and 2022. No detections occurred in 2018; however, this is likely due to extremely low visibility due to high turbidity levels. In addition, overall fish observations increased dramatically when stationary GoPro video stations were adopted in 2020. In 2017, a juvenile coho salmon was captured during beach seine surveys. In 2020 and 2022, juvenile salmonids that could not be identified to species were recorded during multiple monitoring visits. In addition, juvenile coho salmon were recorded on GoPro video during multiple monitoring visits in 2022. Results suggest that juvenile salmonids regularly use the restored channels for resting and feeding.

REFERENCES

Huff, Mark H.; Bettinger, Kelly A.; Ferguson, Howard L.; Brown, Martin J.; Altman, Bob. 2000. A habitat-based point-count protocol for terrestrial birds, emphasizing Washington and Oregon. Gen. Tech. Rep. PNW- GTR-501. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 39 p.

APPENDIX A: DATA TABLES

Table 2. Mink Visual Survey Data Summary Table

Visit Date	Mink Observations			
	Tracks	Scat	Den	Individual
21-May	1	0	0	0
04-Jun	0	0	0	0
21-Jul	0	0	0	0
05-Aug	0	0	0	0
17-Aug	0	0	0	0
02-Sep	1	0	0	0

Table 3. Mink Camera Summary Table

Camera	Start Date	End Date	Mink Y/N	Other SP 1	Other SP 2	Other SP 3	Other SP 4	Other SP 5	Other SP 6	Human/ Domestic	Notes
1	05/11/22	5/21/22	N	CAGO	GBHE	PRLO					Cameras installed on 05/11/22
2	05/11/22	5/21/22	N	CALA	LOCA	SQSP	SYBA				
3	05/11/22	5/21/22	N	AMRO	CACA	ODHE	PRLO	SYBA			
1	05/21/22	06/04/22	N	CAGO	UNK2	UNK2	UNK3			Y	UNK1 – likely CAGO; UNK2 – likely CACA, UNK3 – unknown bird.
2	05/21/22	06/04/22	N	CALA	ODHE	PRLO	SCNI	SYBA	UNK1	Y	UNK1 – likely domestic cat.
3	05/21/22	06/04/22	N	AMRO	CACA	CAGO	CACA			Y	
1	06/04/22	06/10/22	N	CAGO	PRLO						Camera failure due to high water on approximately 6/10
2	06/04/22	06/10/22	N	CHPICBE							
3	06/04/22	06/10/22	N	CACA							
1	07/07/22	08/05/22	N	ODHE						Y	
2	07/07/22	08/05/22	N	CALA	ODHE	PRLO	SYBA	WESJ			No bait station 7/7-7/21
3	07/07/22	08/05/22	N	CALA	CAQU	MEME	ODHE	PRLO			No bait station 7/7-7/21

Camera	Start Date	End Date	Mink Y/N	Other SP 1	Other SP 2	Other SP 3	Other SP 4	Other SP 5	Other SP 6	Human/ Domestic	Notes
1	08/05/22	08/17/22	N	ODHE	PRLO					Y	
2	08/05/22	08/17/22	N	CALA	CAQU	ODHE	PRLO	SCNI	SYBA		
3	08/05/22	08/17/22	N	AMCR	CALA	CAQU	ODHE	PRLO	SYBA	Y	
1	08/17/22	09/02/22	N	ODHE							
2	08/17/22	09/02/22	N	AMCR	CALA	ODHE	PRLO	SCNI		Y	
3	08/17/22	09/02/22	N	AMCR	CALA	GBHE	ODHE			Y	

Table 4. Eagle Data Summary Table

Date	Start Time	BAEA	On-Site Use?	OSPR	BAOW	NOHA	SSHA	COHA	RTHA	AMKE	PEFA	UNRA
12/17/21	11:52	1	Yes	-	-	1	-	-	-	2	-	-
12/23/21	11:36	2	Yes	-	-	1	-	1	-	2	-	-
1/2/22	12:37	1	Yes	-	-	1	-	-	1	2	-	-
1/9/22	13:05	1		-	-	-	-	-	-	2	-	-
1/16/22	11:59	2	Yes	-	-	1	-	-	1	2	-	-
1/21/22	14:15	2	Yes	-	1	-	-	-	-	1	-	-
1/27/22	15:30	2	Yes	-	-	-	-	-	-	3	-	1
2/3/22	15:30	0		-	-	-	-	-	-	2	-	-
2/11/22	13:25	2	Yes	-	-	-	-	-	1	2	-	1
2/17/22	15:00	2	Yes	-	-	-	-	-	-	-	-	-
2/25/22	9:51	0		-	-	-	-	-	1	3	-	-
3/3/22	16:01	1	Yes	-	-	-	-	-	1	2	-	-
3/9/22	15:22	2	Yes	-	-	-	-	-	1	1	-	-
3/16/22	9:31	0		2	-	-	-	-	2	1	-	-
3/22/22	17:18	1	Yes	-	-	1	-	-	1	2	-	-

Date	Start Time	BAEA	On-Site Use?	OSPR	BAOW	NOHA	SSHA	COHA	RTHA	AMKE	PEFA	UNRA
3/29/22	16:10	4	Yes	6	-	-	-	-	2	1	2	-
4/8/22	9:58	2		2	-	-	-	-	1	1	-	-
4/14/22	13:25	1	Yes	7	-	-	-	-	1	2	-	-
4/22/22	10:56	2	Yes	1	-	-	-	-	1	-	-	-
4/29/22	11:42	1	Yes	1	-	-	-	-	1	-	-	-
5/6/22	16:19	0	Yes	2	-	-	-	-	-	1	-	-
5/13/22	15:04	4	Yes	2	-	-	-	-	-	1	-	-
5/21/22	14:49	0		1	-	-	-	-	-	2	-	-
5/27/22	14:15	2	Yes	5	-	-	-	-	2	2	-	-
6/4/22	11:30	2		-	-	-	-	-	-	1	-	-
6/8/22	10:30	2		1	-	-	-	-	-	-	-	-
6/18/22	11:00	1	Yes	1	-	-	-	-	-	-	-	-
6/24/22	11:15	3	Yes	1	-	-	-	-	1	-	-	-
7/2/22	10:08	0		2	-	-	-	-	-	-	-	-
7/7/22	10:32	0		-	-	-	-	-	1	-	-	-
7/12/22	17:51	0		-	-	-	-	-	-	-	-	-
7/21/22	13:08	0		2	-	-	-	-	-	-	-	-
7/29/22	8:00	1	Yes	2	-	-	-	-	1	1	-	-
8/5/22	8:12	0		-	-	-	-	-	1	-	-	-
8/12/22	7:41	0		2	-	-	-	-	-	2	-	-
8/17/22	10:32	0		1	-	-	-	-	-	-	-	-
8/26/22	6:07	0		2	-	-	-	-	-	-	-	-
8/31/22	8:17	0		1	-	-	-	-	1	-	-	-

APPENDIX B: PERSONNEL BIOGRAPHIES

Name **JEFF REAMS**

Education BS, College of Agricultural Sciences, Oregon State University, 1990

Relevant Project History

- Terrestrial Wildlife and Avian Surveys, including Survey & Manage and special-status species such as red tree voles and Washington ground squirrels, and raptors and neotropical migrants for multiple clients including City of Salem, Benton County Public Works, Benton County Parks & Rec, Army Corps of Engineers, WEST, Inc., Symbiotics, LLC./Riverbank Power, Wildlands, Inc., Oregon Eagle Foundation, Eugene Water and Electric Board, and Umatilla Power Company (1996-2022)
- Marbled Murrelet Surveys in Oregon and Washington for multiple clients such as Trout Mountain Forestry, Washington Department of Natural Resources, BLM, Weyerhaeuser, The Campbell Group, Oregon Department of Forestry, Forest Capital Partners, City of Corvallis, City of Cannon Beach, West Inc., CH2M Hill, Shapiro, Inc., Miami Corporation, and Bonneville Power Administration (1997-2022)
- Northern Spotted Owl Surveys and Habitat Assessments in Oregon and Washington for multiple clients, including Bureau of Land Management, Center for Natural Lands Management, The Campbell Group, Hancock Forest Management, Pacific Forest Trust, Forest Capital Partners, Miami Corporation, Eugene Water and Electric Board, CH2M Hill, Weyerhaeuser Corp., and USDA Forest Service (2004-2022)
- Environmental Compliance/Natural Resource Assessments and Wetland Delineation/Permitting for BPA Bonneville-Hood River, Salem-Albany, and Keeler-Tillamook Transmission Line Rebuild Projects (2012-2020)
- Mitigation/Enhancement Projects, including Pier 3 for the Port of Astoria, Claremont Road & Johnson Farm Mitigation Banks for Warrenton Fiber, Alder Creek Restoration Project for Wildlands, Inc., Muddy Creek Mitigation Bank, Pier 3 Permitting for the Port of Astoria, and a Willamette Valley Habitat Restoration Design Project for a confidential client (2007-2022)
- Wetland delineations for BPA projects (Marion-Alvey, Silver Creek and Longview Substations, Big Eddy-Knight, Bandon-Rogue), pipeline projects (Oregon LNG, Alaska Natural Gas Development Authority), local/state governments (Washington Military Dept., City of Salem, Benton County PWD) and various private landowners/developers (2006-2022)
- Botanical Survey Projects, including many large-scale and linear projects, for clients including USDA Forest Service, Bonneville Power Administration (BPA), City of Albany, City of Salem, Parsons-Brinckerhoff, Benton County, and various private landowners (2006-2020)

Name	**DAPHNE DAY**
Education	B.S., Environmental Biology/Zoology, Michigan State University, 2009
Relevant Project History	▪ Lead Biologist, Avian Point Count Surveys for Portland Metro & Portland Parks and Recreation Department (2015, 2018-2021) ▪ Lead Biologist, Sun Pass State Forest Raptor/Woodpecker Surveys, Oregon Department of Forestry (2016-2017, 2022) ▪ Lead Biologist, Avian Nest Search Surveys, Bonneville Power Administration (2017) ▪ Lead Biologist, Burrowing Owl & Pygmy Rabbit Surveys/Assessment, Bonneville Power Administration (2018) ▪ Lead Biologist, Marbled Murrelet, Red Tree Vole & Terrestrial Mollusk Surveys, Bureau of Land Management & USDA Forest Service (2017-2022) ▪ Lead Biologist, Northern Spotted Owl Surveys for the USFS Mount Hood National Forest (2018-2022) ▪ Lead Biologist, Local Wildlife Permitting Projects in Forest Grove, Gresham, and Sandy, OR and Cle Elum, WA (2018-2020) ▪ Lead Biologist, Western Federal Highway Environmental Assessment Projects (2018-2022) ▪ Lead Biologist, Colonial Waterbird Surveys, USACE (2017) ▪ Osprey, Spotted Owl & Mollusk/Amphibian Surveys in the Willamette National Forest, Whitewater Green Energy LLC. (2014-2017) ▪ Eagle, Osprey, Northern Spotted Owl, and Peregrine Falcon Surveys, Bonneville Power Administration (2014-2020) ▪ Marbled Murrelet Surveys, Oregon Department of Forestry, Bureau of Land Management, and Bonneville Power Administration (2012-2019) ▪ Avian Demographic Monitoring, University of Hawaii (2012) ▪ Avian Demographic Monitoring, Klamath Bird Observatory (2009-2010)

Name	**CAITLIN BOWMAN**
Education	B.A., Biology, Vassar College Poughkeepsie, NY (2010)
Relevant Project History	▪ Field Coordinator, Marbled Murrelet Surveys, Oregon Department of Forestry (2022) ▪ Crew Leader, Marbled Murrelet Surveys, Oregon Department of Forestry (2020, 2021) ▪ Surveyor, Northern Spotted Owl Surveys, Bureau of Land Management & Oregon Department of Forestry (2020, 2021) ▪ Field Surveyor, Hawkwatch International (2021, 2022) ▪ Supervisor, Seabird Monitoring, Project Puffin (2019) ▪ Field Surveyor, Raptor surveys, West Inc. (2016-2019) ▪ Field Surveyor, Seabird Monitoring, Shoals Marine Lab (2018) ▪ Field Surveyor, Seabird Monitoring, Oregon State University (2016) ▪ Crew Leader, Sage-Grouse Surveys, USGS (2013, 2015) ▪ Field Surveyor, Wading Bird Surveys, South Carolina DNR (2014) ▪ Field Surveyor, California Condor Monitoring, California Condor Recovery Program FWS (2012) ▪ Field Surveyor, Wood Stork Surveys, AmeriCorps (2011)

Name	**LINDSEY SANDERS**
Education	M.Sc. Zoology & Physiology, University of Wyoming, 2017 B.Sc. Environmental Science, University of California, 2010
Relevant Project History	▪ Asst Project Manager, Marbled Murrelet Surveys, Oregon Department of Forestry (2022) ▪ Forest Grouse Surveys, Oregon State University (2020-2021) ▪ Marbled Murrelet Surveys, Oregon State University (2018) ▪ Badger Burrow Surveys, Small Mammal Trapping, and Avian/Vegetation Surveys, University of Wyoming (2015-2017) ▪ Sierra Nevada Red Fox Surveys, UC Davis (2014) ▪ Piping Plover/Least Tern Surveys, USGS (2014) ▪ Prairie-Chicken & Vegetation Surveys, University of Nebraska (2013) ▪ Avian Point Counts, Point Blue Conservation Science (2012) ▪ Small Mammal Trapping and Avian/Vegetation Surveys, University of Wyoming (2011) ▪ American Pika Surveys, University of Wyoming (2010)

Name	**SARAH MCCORD**
Education	M.S. Studies, Fisheries and Wildlife Science, Michigan State University B.S., Fisheries and Wildlife Science, Oregon State University, Corvallis, OR, 2009
Relevant Project History	▪ Fisheries Biologist, Alder Creek Restoration Project, Wildlands, Inc. (2017-2022) ▪ Wildlife Biologist/Project Manager, ESA-listed Species Surveys and Habitat Assessments for multiple clients and Washington including Bureau of Land Management, Benton County Parks Dept., Bonneville Power Administration, Tetra Tech, Center for Natural Lands Management, and timber companies (2010-2022) ▪ Wildlife Biologist, Big Game Mammal Habitat Assessment & Management Plans, Private Landowners (2015-2022) ▪ Fisheries Biologist, Oregon Dept. of Forestry Sprague-Trask BA Project (2016-2017) ▪ Fisheries Biologist, BPA Keeler-Tillamook Rebuild Project (2014) ▪ Experimental Biology Aid, Fish Surveys, Oregon Department of Fish and Wildlife, (2010-2011) - ▪ Experimental Biology Aid, Fish Surveys, ODFW (2009) ▪ Wildlife Technician, Columbia River Avian Predation Project, Oregon State University/ Oregon Cooperative Fisheries and Wildlife Research Unit, 2009 ▪ Experimental Biology Aid, Aquatic Inventories Project, ODFW (2008)

APPENDIX C: DATA FORMS

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 12/17/21 2. Start Time: 11:52 3. End Time: 13:52 4. Duration: 2hr

5. ☑ Wintering or Nesting Season ☐

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
Other _____

General Weather & Ice Conditions:

Temperature: 39 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☑ No ☐

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☑ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Visibility ~0.5 mi

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 1 No. of Adults: 1 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 3 No. of Adults: 3 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: NOFL, RCKI, WCSJ, GBHE, DCCO, SOSP, Gull sp.

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

12/17/2021

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
12:27	AMKE	A	M	1	Perched. Later (140) seen perching on game camera at site entrance	On
12:50	AMKE	A	F	1	Perched	On
13:14	NOHA	A	F	1	Flying low over western area of site, perched briefly before flying east out of sight	On
13:34	BAEA	A	U	1	First seeing flying south down Multnomah channel then turned and perched in cottonwoods and island in site for remainder of survey	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 12/23/21 2. Start Time: 11:36 3. End Time: 13:36 4. Duration: 2hr

5. ☑ Wintering or Nesting Season ☐

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 44 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☐ Light wind (breezy or 1-7 mi/hr)
- ☑ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☑ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 2 No. of Adults: 0 No. of Immature: 2

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 4 No. of Adults: 3+ No. of Immature: U

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: AMCR, DCCO, CORA, WCSP, AMGO, BLPH, Gull spp.

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

12/23/2021

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
11:43	AMKE	A	U	1	Seen perched in multiple area through middle of site throughout survey	On
11:50	BAEA	J	U	2	Seen flying from NE, over site headed SW. 1 of 2 seen again circling over west side of site.	On
11:55	NOHA	A	F	1	Flying low over western area and middle of site for most of survey	On
12:38	AMKE	A	M	1	First seen Perched on pole off site with Female seen previously nearby. At end of survey seen hunting (hovering) on-site.	On
12:53	COHA	U	U	1	Flying off site. Possible SSHA	Off

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 1/2/22 2. Start Time: 12:37 3. End Time: 14:37 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 40 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☑

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☑ No ☐

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☐ Light wind (breezy or 1-7 mi/hr)
- ☑ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☑

Weather and General Site Comments:

Preceding week very cold with snow. Light drizzle 1420-1430

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 1 No. of Adults: 1 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 4 No. of Adults: 4 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: AMGO, KILL, MALL, DCCO, SOSP, GBHE

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

1/2/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
13:11	NOHA	A	M	1	Flying low around middle of site	On
13:13	AMKE	A	M	1	Perched	On
13:26	AMKE	A	F	1	Perched	On
14:20	RTHA	A	U	1	Being mobbed by a AMKE	On
14:36	BAEA	A	U	1	perched in cottonwoods on island in site	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 1/9/22 2. Start Time: 13:05 3. End Time: 15:05 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 51 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☑ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Sunny, breeze picking up towards end of survey

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 1 No. of Adults: 1 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 2 No. of Adults: 2 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: GBHE, SOSP, AMPE, DCCO

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

1/9/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
13:28	AMKE	A	M	1	Perched, flew to ground briefly before landing on a new perching spot. Seen hunting (hovering) near same area towards end of survey.	On
13:39	AMKE	A	F	1	Perched	On
13:58	BAEA	A	U	1	Circled over water for a moment and then took off	Off

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 1/16/22 2. Start Time: 11:59 3. End Time: 13:59 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 43 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☑ No ☐

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☑ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Fog in the NW hills

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 2 No. of Adults: 1 No. of Immature: 1

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 4 No. of Adults: 3+ No. of Immature: U

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: DCCO WESJ AMRO SPTO SOSP RWBL GCSP BEWR BCCH NOFL

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

1/16/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
12:23	BAEA	J	U	1	Flying SW , possibly flew over site before spotted	Off
13:10	AMKE	A	F	1	Perched	On
13:17	AMKE	A	M	1	Flying low and then perched in snag	On
13:24	RTHA	A	U	1	Perched in tree, took off east as approached	On
13:34	NOHA	U	U	1	Flying low over western side of site	On
13:37	BAEA	A	U	1	Flew into and perched in cottonwoods and island in site for ~15 min before heading SE	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 1/21/22 2. Start Time: 14:15 3. End Time: 16:15 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 46 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☑

Weather and General Site Comments:

Clouds just starting to break at end of survey. Man with unleashed dog walking dike.

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 2 No. of Adults: 2 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 2 No. of Adults: 2 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: NOFL DCCO SOSP

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

1/21/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
14:15	BAEA	A	U	2	Perched in cottonwoods when arrived on site. Called briefly at 15:10. 1 of 2 took off around 3:25, with 2nd gone by 15:50	On
14:20	BAOW	A	U	1	BAOW flew away from large structure as approached obs point.	Off
15:17	AMKE	A	F	1	Perched, flew to ground briefly before landing on a new perching spot.	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 1/27/22 2. Start Time: 15:30 3. End Time: 17:30 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 46 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☐ Light wind (breezy or 1-7 mi/hr)
- ☑ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☑ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 2 No. of Adults: 1 No. of Immature: 1

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 4 No. of Adults: 3+ No. of Immature: U

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: RWBL WESJ SOSP DCCO CAGO

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

1/27/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
15:31	BAEA	A	U	1	perched in cottonwoods on island in site at start of survey. Took off towards NW hills at 1700	On
15:39	BAEA	J	U	1	Perched	On
15:51	AMKE	A	M	1	Flushed off juv BAEA and then perched in its spot for a moment before flying off	On
17:15	AMKE	A	U	2	Pair. One was hunting (hovering) for a moment before they flew off.	On
17:30	UNKN	U	U	1	Unknown larger raptor hovering. Too dark to ID	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 2/3/22 2. Start Time: 15:30 3. End Time: 17:30 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 48 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☑

Weather and General Site Comments:

Partly cloudy

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 2 No. of Adults: 2 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: RWBL GBHE DCCO EUST

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

2/3/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
15:43	AMKE	A	U	2	MF pair perched on snag together	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 2/11/22 2. Start Time: 13:25 3. End Time: 15:25 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 64 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☐ Light wind (breezy or 1-7 mi/hr)
- ☑ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☑ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Light wind during first half and moderate during second half of survey

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 2 No. of Adults: 2 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 4 No. of Adults: 3+ No. of Immature: U

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: ANHU AMRO CAGO DCCO GBHE

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

2/11/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
13:37	RTHA	A	U	1	First seen circling over landowner property. Then flew to tree and perched. Called briefly.	On
2:28	AMKE	A	U	2	Pair perched in tree together. One of them seen hunting (hovering) on site, likely male but too far away to tell.	On
14:44	BAEA	A	U	2	Circling NE off site first, then circled briefly over site before heading towards NW hills	On
14:45	UNKN	U	U	1	Juv BAEA or dark morph RTHA - perched briefly before being chased off by AMKE	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 2/17/22 2. Start Time: 15:00 3. End Time: 17:30 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 51 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☑ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 2 No. of Adults: 1+ No. of Immature: U

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 0 No. of Adults: 0 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: KILL BEKI WESJ ANHU CAGO EUST CAQU SOSP.

Paused several times to take care of GoPro fish cameras. Cumulative total 30 minutes of non-survey time

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

2/1т/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
16:42	BAEA	U	U	1	Audio only	On
17:25	BAEA	A	U	1	Flying over site towards Northwest Hills	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 2/25/22 2. Start Time: 09:51 3. End Time: 11:51 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 35 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☑ No ☐

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☑ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Light ground fog in first few min of survey

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 4 No. of Adults: 4 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: AMRO KILL WESJ NOFL

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

2/25/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
10:06	RTHA	A	U	1	Perched took off as approached. Seen later on west side of site, same behavior.	On
10:17	AMKE	A	U	1	Perched	On
10:35	AMKE	A	U	2	Pair. Male perched just off site with 2 NOFL. Then flew to second perch spot on site, female joined.	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 3/3/22 2. Start Time: 16:01 3. End Time: 18:01 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 49 F *Precipitation (circle one):* None ☐ Snow ☐ Rain ☑

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☑ No ☐

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☑ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Scattered showers

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 1 No. of Adults: 1 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 3 No. of Adults: 3 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

3/3/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
16:14	BAEA	A	U	1	Perched	On
16:23	AMKE	A	F	1	Moving between various perch sites in general area of detection point. Seen in same area at end of survey.	On
16:24	AMKE	A	M	1	Hunting (hovering) over site. Later seen chasing RTHA (545). Back to hovering at end of survey.	On
17:45	RTHA	A	U	1	Flying from River oversight, immediately was chased by AMKE, continued north and left site.	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 3/9/22 2. Start Time: 15:22 3. End Time: 17:22 4. Duration: 2 hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 50 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☐ Light wind (breezy or 1-7 mi/hr)
- ☑ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☑

Weather and General Site Comments:

Partly cloudy. Wind died down towards end of survey.
Trespasser walking dog off leash in site.

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 2 No. of Adults: U No. of Immature: U

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 2 No. of Adults: 2 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: AMRO EUST SOSP NOFL ANHU DCCO VGSW KILL

Lots of AMRO

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

3/9/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
15:40	RTHA	A	U	1	Harlan's. Perched in tree briefly and then took off to NE	On
16:01	BAEA	U	U	2	One adult and one immature. Adult chasing immature briefly, then circled together over channel several times fairly high before taking off for the northwest hills.	On
16:10	AMKE	A	F	1	Perched	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 3/16/22 2. Start Time: 09:31 3. End Time: 11:31 4. Duration: 120 min

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 51 *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☑ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Nice weather for a raptor survey. Sun peaked through the clouds on and off through survey, but reminded quite cloudy.

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 5 No. of Adults: 5 No. of Immature: 0

Observer(s)

1. Name of Recorder: Lindsey Sanders 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: American kestrel, Osprey (on nest off site), red-tailed hawk (on nest on-site)

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

3/16/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
8:35	OSPR	A	U	1	initially perched. observed grabbing nesting materials, and flying off-site to a nest structure being built on a pier. Met up with 2nd OSPR off site. Close to end of survey observed 1 individual flying up and down the channel, along the edge of the property boundary (appeared to be hunting).	On
8:42	OSPR	A	P	1	pair on old pier piling building a nest. 1 of this pair was initially observed perched onsite. Sat together on nest for much of the survey.	On
9:20	RTHA	A	P	2	female sitting in nest, male perched nearby in same clump of trees. After 10 min of ob's female flew off nest to perch in another tree clump. Nest is very visible in upper 1/2 if middle tree clump in this area. Observed both birds fly back to nest at 1055. Male appeared to pull something from nest, flew off after ~30 sec. Female perched on edge 3 min, then flew to perch nearby. Observed soaring together in general vicinity.	On
10:17	AMKE	A	M	1	observed perched on a shrub, moved between a few different shrubs in same general vicinity.	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 3/22/22 2. Start Time: 17:18 3. End Time: 19:18 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 65 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☑ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 1 No. of Adults: 1 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 4 No. of Adults: 4 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Alder Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

3/22/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
16:18	BAEA	A	U	1	Perched at start of survey until ~7	On
16:50	NOHA	A	F	1	Hunting. Seen several more times throughout survey on eastern side of site, hunting and perching	On
17:26	RTHA	A	U	1	Flew and landed in tree with nest structure after I moved away from area. No sign of anyone in nest.	On
17:12	AMKE	A	F	1	Perched. Seen at end of survey near shoreline	On
18:10	AMKE	A	M	1	Perched	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 3/29/22 2. Start Time: 16:10 3. End Time: 18:50 4. Duration: 120 min

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 59 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☑ Cloudy ☐

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 4 No. of Adults: 3 No. of Immature: 1

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 11 No. of Adults: 11 No. of Immature: 0

Observer(s)

1. Name of Recorder: Caitlin Bowman 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

The following raptor and non-raptor species were observed during the survey: BAEA, RTHA, AMKE, OSPR, PEFA, GBHE, TUVU, AMRO, DCCO, EUST, FOSP, MODO, NOFL, SAVS, TRES.

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

3/29/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
15:21	RTHA	A	U	1	Foraging. Seen flying to nest in NW portion of the field site carrying a small rodent.	On
15:10	BAEA	A	P	2	Foraging.	On
15:27	OSPR	A	U	1	Foraging.	On
15:33	RTHA	A	U	1	Perched on branch.	On
15:38	PEFA	A	P	2	Flying through in NW flight path above the river.	Off
16:07	OSPR	A	U	1	Flying through on SW flight path.	On
16:33	AMKE	A	M	1	Perched on fence post.	On
16:55	BAEA	J	U	1	Soaring.	Off
16:55	OSPR	A	U	2	Foraging.	Off
16:55	OSPR	A	U	2	Foraging.	Off
17:37	BAEA	A	U	1	Flying through on a NW flight path up river.	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 4/8/22 2. Start Time: 09:58 3. End Time: 11:58 4. Duration: 2 hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 52F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☑ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 2 No. of Adults: 1 No. of Immature: 1

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 4 No. of Adults: 4 No. of Immature: 0

Observer(s)

1. Name of Recorder: Lindsey Sanders 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: American Kestrel, Turkey Vulture, Red-tailed Hawk, Osprey

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

4/8/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
9:08	BAEA	A	U	2	1 adult and 1 2nd year (likely, has minimal white patch on back) perched in the upper 1/3 of a tree. heard calling.	Off
9:16	RTHA	A	U	1	originally seen flying in and perched in alders on island in SE corner of property. 30 min later seen perched in trees along northern edge of property. Then flew to tree clump with known RTHA nest (this location). Heard calling from very close to nest.continued to fly all around property for remainder of survey.	On
10:11	AMKE	A	M	1	hunting over meadow flying around general area and along water. also observed perched onan alder.	On
10:20	OSPR	A	P	2	circling above site hunting. observed 1 adult diving and catching fish! Then both flew off site inland with fish.	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 4/14/22 2. Start Time: 13:25 3. End Time: 15:55 4. Duration: 2 hrs

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 46 F *Precipitation (circle one):* None ☐ Snow ☐ Rain ☑

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☑ No ☐

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☐ Light wind (breezy or 1-7 mi/hr)
- ☑ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☑

Weather and General Site Comments:

Period of 40 minutes of Light Rain and some hail.

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 1 No. of Adults: 1 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 10 No. of Adults: 10 No. of Immature: 0

Observer(s)

1. Name of Recorder: Caitlin Bowman 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: AMKE, OSPR, RTHA, GBHE, NOFL, TUVU, DCCO, KILL, AMRO, EUST, TRES, SOSP

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

4/14/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
12:25	OSPR	A	U	1	Perched on shore and then flying north.	On
12:35	OSPR	A	U	2	Pair flew in from the NE together and split with one heading west and the other individual circling SE	On
12:37	AMKE	A	U	1	Perched on snag and then foraging.	On
12:55	OSPR	A	U	1	Flying through.	On
12:57	OSPR	A	U	1	Perched in tree.	On
13:29	RTHA	A	U	1	Foraging.	On
13:44	OSPR	A	U	1	Foraging.	Off
13:49	OSPR	A	U	1	Foraging.	On
14:11	AMKE	A	F	1	Perched.	On
14:34	BAEA	A	U	1	Foraging above river.	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 4/22/22 2. Start Time: 10:56 3. End Time: 12:56 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 54 *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☑ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 1 No. of Adults: 1 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 3 No. of Adults: 3 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

4/22/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
10:10	BAEA	A	U	1	Called briefly while perched in Cottonwood's before flying over eastern side of site and circling for a while.	On
10:14	RTHA	A	F	1	Circling over site. Later seen sitting on nest.	On
11:07	OSPR	A	U	1	Gathering nest material from trees near bldg just off site. Assumed to be same bird seen 30 min later circling over site with another OSPR	Off
11:35	OSPR	A	U	1	Circling over site w/ OSPR1	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 4/29/22 2. Start Time: 11:42 3. End Time: 14:12 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 60 f *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☑ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 1 No. of Adults: 0 No. of Immature: 1

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 3 No. of Adults: 3 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

4/29/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
11:53	RTHA	A	U	1	Soaring	On
11:53	BAEA	J	U	1	Soaring	On
12:07	AMKE	A	F	1	Perched then hunting (hovering)	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 5/6/22 2. Start Time: 16:19 3. End Time: 18:19 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 58 F *Precipitation (circle one):* None ☐ Snow ☐ Rain ☑

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☑ No ☐

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☐ Light wind (breezy or 1-7 mi/hr)
- ☑ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☑ Foggy ☑ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Rain 16:19-17:00, heavy rain 17:13-17:36

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 3 No. of Adults: 3 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

5/6/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
15:20	OSPR	A	U	2	Circling over site and channel, one calling. One seen again circling over middle of site around 515	On
15:33	AMKE	A	M	1	Perched	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 5/13/22 2. Start Time: 15:04 3. End Time: 17:04 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 56 *Precipitation (circle one):* None ☑ Snow ☐ Rain ☑

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☑ No ☐

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☑ Cloudy ☑

Weather and General Site Comments:

Dry 3-4, light rain 4-5

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 4 No. of Adults: 4 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 3 No. of Adults: 3 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: SOSP VGSW SAVS NOFL

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

5/13/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
16:12	BAEA	A	U	2	Circling, one was being chased by a gull. One was seen again at 522 flying low over west side of site	On
14:24	AMKE	A	F	1	Perched, flew off to another perch as approached	On
14:32	OSPR	A	U	1	Flying over site west to east	On
14:35	OSPR	A	U	1	Fish carry. Fought off 2 BAEA trying to take!	On
14:36	BAEA	A	U	2	Sparring with OSPR with fish, then took off south.	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 5/21/22 2. Start Time: 14:49 3. End Time: 17:06 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 70 F *Precipitation (circle one):* None ☑ Snow ☑ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☐

Was there precipitation at any time during the count (circle one)? Yes ☑ No ☐

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☐ Light wind (breezy or 1-7 mi/hr)
- ☑ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☑ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Paused for 17 minutes to check mink cams

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 3 No. of Adults: 3 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

5/21/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
14:12	AMKE	A	F	1	Perched	On
14:13	AMKE	A	M	1	Perched	On
14:47	OSPR	A	U	1	Circling and calling	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 5/27/22 2. Start Time: 14:15 3. End Time: 18:15 4. Duration: 2 Hrs

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 62 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☑ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 2 No. of Adults: 2 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 9 No. of Adults: 9 No. of Immature: 0

Observer(s)

1. Name of Recorder: Caitlin Bowman 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: AMKE, RTHA, OSPR, GBHE, MODO, RWBL, ROPI, NOFL, EUST, MALL, CANG, AMGO, GREG, COYE, SAVS, TRES

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

5/27/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
13:18	BAEA	A	U	1	Soaring.	Off
13:24	AMKE	A	U	1	Foraging.	Off
13:47	OSPR	A	U	1	Soaring, immediately flew west over river.	On
14:26	AMKE	A	M	1	Foraging, then displaying territorial and antagonizing behavior towards adult RTHA flying through.	On
14:30	RTHA	A	U	1	Interacted with territorial AMKE, the RTHA flew away to the north and perched near nest.	On
14:41	RTHA	A	U	1	Perched in tree.	On
15:16	OSPR	A	U	1	Flying through.	On
15:19	OSPR	A	U	1	Foraging.	On
15:33	OSPR	A	U	1	Foraging.	On
17:02	BAEA	A	U	1	Foraging. Being harassed by osprey.	On
17:07	OSPR	A	U	1	Harassing BAEA.	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 6/4/22 2. Start Time: 09:30 3. End Time: 11:30 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 60 F *Precipitation (circle one):* None ☐ Snow ☐ Rain ☑

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☑ No ☐

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☐ Light wind (breezy or 1-7 mi/hr)
- ☑ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☑

Weather and General Site Comments:

Light intermittent rain. Mostly moderate wind with periods of light wind.

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 2 No. of Adults: 2 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 1 No. of Adults: 1 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

6/4/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
9:46	AMKE	A	F	1	Hunting (hovering) on site	On
10:02	BAEA	A	U	2	Perched in cottonwoods on island. One started calling and took off along willamette	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 6/8/22 2. Start Time: 10:30 3. End Time: 12:30 4. Duration: 120 min

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 70 *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☑ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 3 No. of Adults: 3 No. of Immature: 0

Observer(s)

1. Name of Recorder: Lindsey Sanders 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: OSPR, TUVU

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

6/8/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
9:41	OSPR	A	U	1	flying / circling, flying down length of river corridor	On
10:50	OSPR	A	U	2	2 additional osprey seen soaring /circling overhead (3 seen at same time, so confident these were 2 new individuals)	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 6/18/22 2. Start Time: 11:00 3. End Time: 13:00 4. Duration: _____

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 60 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☑

Was there fog at any time during the count (circle one)? Yes ☑ No ☐

Was there precipitation at any time during the count (circle one)? Yes ☑ No ☐

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☑

Weather and General Site Comments:

Light rain on and off throughout survey. Moderate rain and fog from 11:45-12.

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 3 No. of Adults: 3 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

6/18/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
10:25	OSPR	A	U	1	Circling over restored channel	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 6/24/22 2. Start Time: 11:05 3. End Time: 14:18 4. Duration: 2 hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 82 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☐ Light wind (breezy or 1-7 mi/hr)
- ☑ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☑ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 2 No. of Adults: 2 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 3 No. of Adults: 3 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Paused during survey to check mink cameras.

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

6/24/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
11:48	BAEA	A	U	1	Perched in cottonwoods on island	On
11:10	BAEA	A	U	2	Circling over restored channel, then perched in cottonwoods on island. Possibly chasing the OSPR. One later seen over west end of site, first being chased by a RTHA and then a little while later being chased by an OSPR	On
11:09	OSPR	A	U	1	Flying over restored channel. Possibly being chased by BAEA	On
11:24	RTHA	A	U	1	Chasing BAEA over middle of site. Then flew off to NW hills	On
11:55	OSPR	A	U	1	Circling over water with another OSPR assumed to be same one previously detected. Later one OSPR seen chasing BAEA on west end	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 7/2/22 2. Start Time: 10:08 3. End Time: 12:08 4. Duration: 2 hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 61 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☑

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 2 No. of Adults: 2 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

7/2/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
9:18	OSPR	A	U	1	Flying over site	On
10:29	RTHA	A	U	1	Audio detection only	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 7/7/22 2. Start Time: 10:32 3. End Time: 12:58 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 68 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☑ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Humid

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 1 No. of Adults: 0 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Paused survey for cumulative total of 26 min to reinstall mink cams

Bald Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

7/7/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
9:38	OSPR	A	U	1	Flying over restored channel. Seen again at 12:07 diving in same area.	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 7/12/22 2. Start Time: 17:51 3. End Time: 19:51 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 82 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☐ Light wind (breezy or 1-7 mi/hr)
- ☑ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☑ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Mostly sunny, just a few scattered clouds

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 0 No. of Adults: 0 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: 1 TUVU

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 7/21/22 2. Start Time: 13:08 3. End Time: 15:08 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 81 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☑ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 2 No. of Adults: 2 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

7/21/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
12:24	OSPR	A	U	1	Circling over site and river	On
12:36	RTHA	A	U	1	Circling over site	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 7/29/22 2. Start Time: 08:00 3. End Time: 10:00 4. Duration: 120 min

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 75 *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☑ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Temperature warmed considerably during 2 hr period-- from 70F at start to 80F at end

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 1 No. of Adults: 1 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 4 No. of Adults: 4 No. of Immature: 0

Observer(s)

1. Name of Recorder: Lindsey Sanders 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: AMKE, OSPR, RTHA, TUVU

Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

7/29/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
7:03	BAEA	A	U	1	perched in upper portion of tree. around 830 flew out over main meadow of study area, circled, then flew back to island trees to perch again.	On
7:10	OSPR	A	U	1	seen flying over meadow and calling. flew off quickly to north	On
7:20	OSPR	A	U	1	first seen in meadow with other OSPR (def 2 individuals), flew south to small island and began dive bombing BAEA. interaction went on for 5 min before OSPR flew off. seen flying over meadow and down river corridor periodically throughout survey. at one point seen carrying fish.	On
7:39	AMKE	A	M	1	seen circling over meadow, carrying mouse	On
8:44	RTHA	A	U	1	seen soaring over meadow, then flew off property, later seen circling at north end of property.	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 8/5/22 2. Start Time: 08:12 3. End Time: 10:12 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 63 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☑ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Mostly clear, very few scattered clouds in distance

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 1 No. of Adults: 1 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

8/5/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
8:52	OSPR	A	U	1	Circling over water	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 8/12/22 2. Start Time: 07:41 3. End Time: 09:41 4. Duration: 120 min

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 65 *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☑

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 4 No. of Adults: 4 No. of Immature: 0

Observer(s)

1. Name of Recorder: Lindsey Sanders 2. No. of Observers: 2
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: TUVU

Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

8/12/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
6:48	AMKE	A	P	2	perched together on a tall branch	On
7:08	OSPR	A	U	2	2 birds circling and flying around fishing just outside site boundary, then flew into property with fish	On

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 8/17/22 2. Start Time: 10:32 3. End Time: 12:32 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 83 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☐ No wind (calm or <1 mi/hr)
- ☑ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☑ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Scattered clouds off in distance, none over site

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 1 No. of Adults: 1 No. of Immature: 0

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Other Species Observed: TUVU

Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

8/17/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
10:24	OSPR	A	U	1	Circling over channel and calling	Off

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 8/26/22 2. Start Time: 06:07 3. End Time: 08:07 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 61 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☐ No ☑

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☑ No wind (calm or <1 mi/hr)
- ☐ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☐ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☑

Weather and General Site Comments:

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 2 No. of Adults: 1+ No. of Immature: U

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

8/26/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
5:20	OSPR	A	U	1	Flying down river	Off
5:13	RTHA	U	U	1	Audio only	Off

Alder Bald Eagle Survey Form

1. Site Name: Alder Creek

2. Drainage or Body of Water: Willamette River

3. County: Multnomah County

Survey Procedures:

1. Survey Date: 8/31/22 2. Start Time: 06:17 3. End Time: 08:17 4. Duration: 2hr

5. ☐ Wintering or Nesting Season ☑

6. Continuous Route, Fixed Point, or both (circle one)

7. Survey Method (circle all that apply) Road Vehicle Foot travel Fixed Point Vehicle/Fixed Point
   Other _____

General Weather & Ice Conditions:

Temperature: 64 F *Precipitation (circle one):* None ☑ Snow ☐ Rain ☐

Was there fog at any time during the count (circle one)? Yes ☑ No ☐

Was there precipitation at any time during the count (circle one)? Yes ☐ No ☑

Wind (circle one):
- ☑ No wind (calm or <1 mi/hr)
- ☐ Light wind (breezy or 1-7 mi/hr)
- ☐ Moderate Wind: (windy or 8-18 mi/hr)
- ☐ Strong Wind: (gusty to >18mi/hr)

Cloud Cover (circle one): Clear ☑ Foggy then Clear ☐ Foggy ☐ Partly Cloudy ☐ Cloudy then Clearing ☐ Cloudy ☐

Weather and General Site Comments:

Scattered Low-lying ground fog at start of survey

Survey Results – Bald Eagles:

1. Total Bald Eagles Counted: 0 No. of Adults: 0 No. of Immature: 0

Survey Results – Other Raptors Observed:

1. Total Raptors Counted: 2 No. of Adults: 1+ No. of Immature: U

Observer(s)

1. Name of Recorder: Daphne Day 2. No. of Observers: 1
2. Address: 8638 N Lombard St, STE #5
   City: Portland Zip: 97231 E-mail: daphne@turnstoneenvironmental.com Phone: 503-283-5338
   Organization: Turnstone Environmental Consultants, Inc.

Survey Comments/Observations:

Eagle Survey Form (Page 2)

Individual Eagle/Raptor Behavior Observed *(describe field observation for each individual below Note whether the bird was observed on/over the site or on an adjacent site.)*

8/31/2022

Time	Species	Age	Sex	Number	Behavior & Other Notes	On/Off Site?
5:25	RTHA	U	U	1	Direct line flight north over site while calling	On
7:11	OSPR	A	U	1	Circling over river	Off

Alder Creek Post-Construction Fish Monitoring Data

Date: 2/17/22 Observer(s)/Affiliation: Daphne Day

Start Time: 15:10 End Time: 17:40 Tide Stage: Flood Precipitation: None Wind (BS): 1

Habitat Conditions	*Shade (%)*	*Cover (%)*	*Depth (m)*	*Substrate*	*Temperature (F)*	*DO2*	*Turbidity (NTU)*
Sampling Area 1	0	0	1	mud	10.9 C	2.7	6.9
Sampling Area 2	0	0	1	mud	9.8 C	2.8	6.3
Sampling Area 3	0	0	1	mud	11.3 C	3.1	5.7
Willamette Reference Site					9.2 C	2.5	9.8
Multnomah Reference Site					9.6 C	2.5	4.7

	Fish Captured/Observed				**Aquatic Plants Present**		
		Species	#Adult	#Juv		Species	Abundance
Sampling Area 1	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 2	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 3	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		

NOTES:

Moderate visibility.

Alder Creek Post-Construction Fish Monitoring Data

Date: 2/25/22 Observer(s)/Affiliation: Daphne Day

Start Time: 9:55 End Time: 12:36 Tide Stage: Flood Precipitation: None Wind (BS): 2

Habitat Conditions	*Shade (%)*	*Cover (%)*	*Depth (m)*	*Substrate*	*Temperature (F)*	*DO2*	*Turbidity (NTU)*
Sampling Area 1	0	0	1	mud	5.8 C	0.93	7.32
Sampling Area 2	0	0	1	mud	6.7 C	0.96	5.71
Sampling Area 3	0	0	1	mud	5.9 C	1.02	3.92
Willamette Reference Site					6.1 C	0.99	6.49
Multnomah Reference Site					6.9 C	0.88	5.62

	Fish Captured/Observed				**Aquatic Plants Present**		
		Species	#Adult	#Juv		Species	Abundance
Sampling Area 1	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 2	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 3	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		

NOTES:

Moderate visibility

Alder Creek Post-Construction Fish Monitoring Data

Date: 3/24/22 Observer(s)/Affiliation: Daphne Day

Start Time: 15:00 End Time: 17:00 Tide Stage: Ebb Precipitation: None Wind (BS): 2

Habitat Conditions	*Shade (%)*	*Cover (%)*	*Depth (m)*	*Substrate*	*Temperature (F)*	*DO2*	*Turbidity (NTU)*
Sampling Area 1	0	0	1	mud	U	1.63	7.66
Sampling Area 2	0	0	1	mud	U	1.45	8.15
Sampling Area 3	0	0	1	mud	U	1.59	7.45
Willamette Reference Site					U	1.66	7.6
Multnomah Reference Site					U	1.77	16.5

	Fish Captured/Observed				**Aquatic Plants Present**		
		Species	#Adult	#Juv		Species	Abundance
Sampling Area 1	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 2	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 3	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		

NOTES:

Thermometer not working. Boat went by @ high speed causing wake prior to Mult Channel sample.

Alder Creek Post-Construction Fish Monitoring Data

Date: 3/29/22 Observer(s)/Affiliation: Caitlin Bowman

Start Time: 16:10 End Time: 18:50 Tide Stage: High Precipitation: None Wind (BS): 2

Habitat Conditions	*Shade (%)*	*Cover (%)*	*Depth (m)*	*Substrate*	*Temperature (F)*	*DO2*	*Turbidity (NTU)*
Sampling Area 1	0	0	1	mud	U	1.35	6.23
Sampling Area 2	0	0	1	mud	U	1.45	6.37
Sampling Area 3	0	0	1	mud	U	1.55	8.02
Willamette Reference Site					U	1.59	6.92
Multnomah Reference Site					U	1.61	8.14

	Fish Captured/Observed				**Aquatic Plants Present**		
		Species	#Adult	#Juv		Species	Abundance
Sampling Area 1	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 2	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 3	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		

NOTES:

Moderate visibility. Temperature meter not working at time of survey.

Alder Creek Post-Construction Fish Monitoring Data

Date: 4/14/22 Observer(s)/Affiliation: Caitlin Bowman / Turnston Environmental

Start Time: 13:22 End Time: 15:41 Tide Stage: Flood Precipitation: Light Rain Wind (BS): 3

Habitat Conditions	*Shade (%)*	*Cover (%)*	*Depth (m)*	*Substrate*	*Temperature (F)*	*DO2*	*Turbidity (NTU)*
Sampling Area 1	0	0	1	mud	49	1.84	6.58
Sampling Area 2	0	0	1	mud	48	1.76	7.96
Sampling Area 3	0	0	1	mud	50	1.77	6.88
Willamette Reference Site					45	1.84	6.54
Multnomah Reference Site					46	1.81	8.20

	Fish Captured/Observed				**Aquatic Plants Present**		
		Species	#Adult	#Juv		Species	Abundance
Sampling Area 1	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 2	*Spp 1*	Unknown salmonid		1	*Spp 1*	None	
	Spp 2	Unknown fish (1)			*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 3	*Spp 1*	Unknown Salmonid		13	*Spp 1*	None	
	Spp 2	Unknown fish (2)			*Spp 2*		
	Spp 3	Possible salmonid		4	*Spp 3*		
	Spp 4	Coho		6	*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		

NOTES:

Moderate visibility.

Alder Creek Post-Construction Fish Monitoring Data

Date: 4/29/22 Observer(s)/Affiliation: Daphne Day

Start Time: 12:05 End Time: 14:42 Tide Stage: Ebb Precipitation: None Wind (BS): 2

Habitat Conditions	*Shade (%)*	*Cover (%)*	*Depth (m)*	*Substrate*	*Temperature (F)*	*DO2*	*Turbidity (NTU)*
Sampling Area 1	0	0	1	mud		0.48	12.8
Sampling Area 2	0	0	1	mud		0.51	10.1
Sampling Area 3	0	0	1	mud		0.53	8.13
Willamette Reference Site						0.47	12.91
Multnomah Reference Site						0.58	9.12

	Fish Captured/Observed				**Aquatic Plants Present**		
		Species	#Adult	#Juv		Species	Abundance
Sampling Area 1	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 2	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 3	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		

NOTES:

Moderate visibility

Alder Creek Post-Construction Fish Monitoring Data

Date: 5/21/22 Observer(s)/Affiliation: Daphne Day

Start Time: 14:45 End Time: 17:45 Tide Stage: Ebb Precipitation: None Wind (BS): 4

Habitat Conditions	*Shade (%)*	*Cover (%)*	*Depth (m)*	*Substrate*	*Temperature (F)*	*DO2*	*Turbidity (NTU)*
Sampling Area 1	0	0	1	mud	59	0.28	5.41
Sampling Area 2	0	0	1	mud	58	0.33	9.82
Sampling Area 3	0	0	1	mud	59	0.78	14.3
Willamette Reference Site					59	0.78	17.0
Multnomah Reference Site					58	0.84	14.9

	Fish Captured/Observed				**Aquatic Plants Present**		
		Species	#Adult	#Juv		Species	Abundance
Sampling Area 1	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 2	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 3	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		

NOTES:

Moderate visibility

Alder Creek Post-Construction Fish Monitoring Data

Date: 5/27/2022 Observer(s)/Affiliation: Caitlin Bowman

Start Time: 1403 End Time: 1715 Tide Stage: High Precipitation: None Wind (BS): 1

Habitat Conditions	*Shade (%)*	*Cover (%)*	*Depth (m)*	*Substrate*	*Temperature (F)*	*DO2*	*Turbidity (NTU)*
Sampling Area 1	0	0	1	mud	56	.27	8.15
Sampling Area 2	0	0	1	mud	57	.25	4.88
Sampling Area 3	0	0	1	mud	58	.26	5.8
Willamette Reference Site					55	.25	7.04
Multnomah Reference Site					55	.22	8.15

	Fish Captured/Observed				**Aquatic Plants Present**		
		Species	#Adult	#Juv		Species	Abundance
Sampling Area 1	*Spp 1*	Unknown salmonid		6	*Spp 1*	None	
	Spp 2	Coho		14	*Spp 2*		
	Spp 3	Unknown fish (25)			*Spp 3*		
	Spp 4	Killifish (1)			*Spp 4*		
	Spp 5	Unkn, non-salmon (3)			*Spp 5*		
	Spp 6	Small-mouth bass		1	*Spp 6*		
Sampling Area 2	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		
Sampling Area 3	*Spp 1*	None			*Spp 1*	None	
	Spp 2				*Spp 2*		
	Spp 3				*Spp 3*		
	Spp 4				*Spp 4*		
	Spp 5				*Spp 5*		
	Spp 6				*Spp 6*		

NOTES:

Moderate visibility. Sample area 1 - also many minnow fry

APPENDIX 7

Credit Ledger

ALDER CREEK RESTORATION PROJECT
CREDIT INVENTORY LEDGER

Date of Transaction	Alder Creek Contract No.	Credit Purchaser Name Address Phone Number Contact	Reference Number (if applicable)	734.2 Total DSAYs Authorized[1]			Accepted for use in a Settlement? Y/N	Endowment Amount
				# Released for Sale	# Sold and Debited[2]	# Remaining for Sale		
2/25/2015	n/a	15% Initial Credit Release (Deed Restriction & Securities)	n/a	112.45		112.45	n/a	$ -
3/23/2015	ACRP-15-01	City of Portland 1221 SW Fourth Ave., Room 430 Portland, OR 97204 Jan Betz, (503) 823-4047	n/a		35.00	77.45	N	$ 30,170.00
12/1/2017	n/a	35% Second Credit Release (As-Built Drawings)	n/a	255.01		332.46	n/a	$ -
8/27/2020	n/a	Partial 30% Third Credit Release (Year 2 Performance)	n/a	176.00		508.46	n/a	$ -
		Total Number of Credits Credited/Debited		543.46	35.00			
		Total Number of Remaining Credits Available for Sale				**508.46**		**$ 30,170.00**

[1]A modified total of 734.2 DSAYs are subject to the Credit Release Schedule (Exhibit E of the Restoration Plan)

[2]Any mitigation requirement specified as an acreage amount shall be deducted from the available Credits/DSAYs at a ratio of 1 acre = 14.34 Credits/DSAYs.