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Alder Creek Restoration Project

2021 Monitoring Report Year 6

Wildlands PNW
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WILDLANDS

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Reporting Period	November 1st of the preceding year (2020) through October 31st of the current year (2021).

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 6 Habitat Monitoring Report/Annual Report for the Alder Creek Project

I. OVERVIEW

This report serves as the Year 6 (2021) 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 (2020) through October 31st of the current year (2021). This report documents the sixth 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:	Greg Lohse, Wildlands Bill Roper, Wildlands Staff Biologists, Turnstone Environmental
Land Management:	Greg Lohse, Wildlands Pat Stephens, Wildlands Luc Reid, 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. In November 2019, the oak-dominated upland forest required adaptive management and was replanted. Table 1 provides a summary of habitat acreages from the 100% design drawings and the final as-built drawings. Table 2 provides information regarding the planting efforts on the site including the replanting effort completed in 2019.

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

There is only one performance standard for Year 6:

- Annual inspection to document any fish barriers.

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, 2020 to October 31, 2021) is discussed further in the "Habitat Data/ Results" section.

In Year 6, a Wildlands' representative regularly visited the site to assess trespass, trash, invasive species, erosion, and to conduct general inspections of the site. Luc Reid, an independent contractor, was on the site weekly during the summer months to perform land management and maintenance duties including checking and repairing signs and fencing, 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 1** for the Maintenance Activity Log.

A replant of the oak-dominated upland forest was conducted in November 2019 to address a significant loss of planted trees and shrubs. The planted trees and shrubs were irrigated in 2020 and 2021, and irrigation is expected to continue in 2022 starting in June or July. While this habitat has not yet met the Year 2-5 performance standard for native herbaceous cover in the oak-dominated upland forest, no corrective actions were taken in Year 6. For Year 6, the main goal for this habitat, was to continue efforts to establish the native woody vegetation. The results of supplemental data collection done in Year 6 suggest that native herbaceous cover is increasing, so hand removal of invasive species will continue.

G. RECOMMENDATIONS FOR CORRECTIVE OR REMEDIAL ACTIONS

The Year 5 monitoring showed that the emergent marsh habitat was not meeting the 30% native herbaceous performance standard with 22.15% native herbaceous cover documented; however, the data from Years 1 through 5 show the average native herbaceous cover in the emergent marsh is 30.47% which narrowly meets the greater-than-30% cover standard. During Year 6, the emergent marsh habitat was spot checked and appeared to have greater than 30% native herbaceous cover in most areas, although plot data was not collected. While the percent cover of native herbaceous vegetation is expected to fluctuate from year to year due to varying conditions, it appears to be on an overall positive trajectory towards meeting the cover standards in future years. As a result, no adaptive management is planned for this habitat. Formal monitoring will be conducted in Year 7.

Year 5 monitoring identified that the riparian forest and cottonwood-dominated upland forest habitat did not meet the native woody species density performance standard for Year 5. The density decreased from 1204 per acre in Year 4 to 1017 per acre in Year 5, while the performance standard is 1200 per acre. Since the performance standard changes from density to cover in Year 7, Wildlands assessed the habitat in Year 6 to determine whether the site is on a trajectory to meeting the Year 7 cover performance standard of 50% native woody species. The supplemental data collected in the vegetation plots in Year 6 showed an increase in woody native plants per acre to 1097/acre which is likely due to natural recruitment as well as resprouting of some plants that had previously been recorded as dead or mostly dead. The cover of native woody species was recorded at 27.67 percent which will serve as the baseline for future monitoring events to determine whether the habitat is on a positive trajectory towards meeting performance standards without adaptive management. Formal monitoring will be conducted in Year 7 and the results will be assessed to determine if a targeted replanting effort appears to be necessary or if the habitat appears to be on track to meet performance standards, even if slightly delayed.

In Year 6, supplemental data was collected in the oak-dominated upland forest for native woody plant density and native herbaceous cover. The data suggest that the habitat is developing as expected. Irrigation in this area will continue in Year 7. Invasive species management activities are ongoing and will focus on hand removal until the chemical and/or mechanical control methods can be used without harming the recently planted woody species. No additional corrective or remedial actions are recommended for the oak-dominated upland forest.

II. HABITAT MONITORING REQUIREMENTS

Monitoring requirements, including past, current, 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 3). 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 3. 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 for LWD retention	Years 2, 3, 5, 7, 10								X				
Visual Inspections for any fish barriers	Annual								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 3). 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 and 5. 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.

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

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.

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.

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. Five years after planting, mortality rates are expected to be minimal given the ideal conditions which are 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 outcompeting 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 only formal monitoring and performance standard for Year 6 on the Alder Creek Project was a visual inspection to document any fish barriers. Additionally, as discussed with the Trustees, Wildlands collected supplemental data in three habitats: Riparian Scrub-Shrub and Riparian Forest (ACM); Riparian Forest and Cottonwood-Dominated Upland Forest; and Oak-Dominated Upland Forest. See below for details on the supplemental data collected in Year 6.

A. MONITORING RESULTS

1. AERIAL PHOTO INTERPRETATION

Aerial photography was not required for Year 6. Aerial photography will be conducted in Year 7 (2022).

2. PHOTO DOCUMENTATION

Photo documentation was not required for Year 6. Photo-documentation will be conducted during Year 7 (2022).

3. HYDROLOGY AND GEOMORPHOLOGY

While no hydrology monitoring was required in Year 6, informal visual surveys throughout 2021 indicated that there has not been erosion, washouts, or sedimentation that would lead to significant changes in elevations on site. To document the geomorphology of the site, annual visual inspections to document any fish barrier are required. Visual surveys conducted in September confirmed that there were no fish passage barriers that could prevent fish from entering or exiting the site. Hydrology and Geomorphology monitoring will be conducted in Year 7.

4. NATIVE VEGETATION

Emergent Marsh

Vegetation monitoring of the emergent marsh was not required in Year 6; however, while the Wildlands' biologist was onsite collecting supplemental information, the emergent marsh was spot-checked in several locations (plot data was not collected). While the Year 5 monitoring identified that the native emergent cover was 22.15% which is below the required ≥30% native emergent cover for Year 5, the average native emergent cover for Years 2 through 5 is just above 30%. The spot-checks were to generally assess the emergent marsh area to identify any significant deficiencies prior to the Year 7 monitoring. The spot-checks suggest that the native emergent cover is near or above 30% which indicates that the marsh is on a positive trajectory to meeting the Year 7 cover performance standard of 40% cover (even if slightly delayed) without adaptive management.

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. Vegetation monitoring of the emergent marsh will be conducted in Year 7 (2022).

Riparian Scrub-Shrub and Riparian Forest (ACM)

No vegetation monitoring was required within the riparian scrub-shrub and riparian forest with the ACM on the Project in Year 6. However, Wildlands collected supplemental data in this habitat on September 15, 2021 (see **Table 4**). The supplemental data was collected by plot and included number of native woody species, native woody plant cover, and native herbaceous cover in each plot (not separated out by species). See **Appendix 2** for the data. The main purpose for collecting the supplemental data in this habitat was to establish a baseline percent cover of native woody species in preparation for the Year 7 monitoring. This will allow Wildlands to compare native woody cover in Year 6 to native woody cover in Year 7 to determine whether there is a positive trajectory for the establishment of this habitat. Formal vegetation monitoring will be conducted in Year 7.

During supplemental data collection, 1,365 native woody plants per acre were observed, down from 1,422 trees per acre in Year 5), with 50.38 percent cover of native woody species. As the Year 7 performance standard for native woody cover is 55%, the supplemental data suggests the habitat is on track to meet the native woody cover standard in Year 7. In Year 6, native herbaceous vegetation was observed at 23.94% cover, down from 33.54% in Year 5, which is currently meeting the Year 5 and 7 native herbaceous cover performance standard of ≥10%. Formal vegetation monitoring of the riparian scrub-shrub and riparian forest (ACM) will be conducted in Year 7 (2022).

Table 4.

Riparian Scrub Shrub and Riparian Forest (ACM)				
	Performance Standards Years 2-5	Performance Standards Year 7	Measured Yr. 6	Measured Yr. 5
Native Herbaceous Vegetation	≥ 10%	≥ 10%	23.94%	33.54%
Woody plants / acre	≥ 1200	--	1,365	1422
Native Woody Cover	--	≥ 55%	50.38%	--

[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

No vegetation monitoring within the riparian forest and cottonwood-dominated upland forest on the Project was required in Year 6. However, Wildlands collected supplemental data in this habitat on September 15, 2021 (see **Table 5**). The supplemental data was collected by plot and included number of native woody species, native woody plant cover, and native herbaceous cover in each plot (not separated out by species). See **Appendix 3** for the data. The purpose for collecting the supplemental data in this habitat was to establish a baseline percent cover of native woody species in preparation for the Year 7 monitoring. This will allow Wildlands to compare native woody cover in Year 6 to native woody cover in Year 7 to determine whether there appears to be a positive trajectory for the establishment of this habitat. Vegetation monitoring will be conducted in Year 7.

During supplemental data collection, 1,097 native woody plants per acre were observed, up from 1,017 trees per acre in Year 5), with 27.67 percent cover of native woody species. The increase in plants per acre is likely due to a combination of natural recruitment and resprouting of some plants that were counted as dead or mostly dead during Year 5 monitoring. The Year 5 performance standard for native woody species was a minimum of 1,200 plant per acre, which was not met in Year 5 or Year 6. In Year 7, the performance standard for native woody changes to 50% cover. While the native woody plant cover documented in Year

6 (27.67%) is well below the Year 7 performance standard, the Year 6 data will provide baseline conditions for comparison with the Year 7 data in order to determine whether the habitat is on a trajectory to meeting the Year 7 performance standard, even if delayed, without adaptive management. In Year 6, the native herbaceous cover was observed at 21.93%, up from 16.10% in Year 6 which meets both the Year 5 and Year 7 performance standards. Vegetation monitoring of the riparian scrub-shrub and riparian forest (ACM) will be conducted in Year 7 (2022).

Table 5.

Riparian Forest and Cottonwood-dominated Upland Forest				
	Performance Standards Years 2-5	Performance Standards Year 7	Measured Yr. 6	Measured Yr. 5
Native Herbaceous Vegetation	≥ 10%	≥ 10%	21.93%	16.10%
Woody plants / acre	≥ 1200	--	1,097	1,017
Native Woody Cover	--	≥ 50%	27.67%	--

Oak-Dominated Upland Forest

Monitoring of the oak-dominated upland forest was not required in Year 6; however, Wildlands collected supplemental data in this habitat to document whether the area was on a trajectory to meeting the performance standards for this habitat. The supplemental data was collected by plot and included number of native woody species and native herbaceous cover percentage in each plot (not separated out by species). See **Appendix 4** for the data. In Year 5, the oak-dominated upland was meeting all the Year 2-5 performance standards except for the native herbaceous cover, which was likely due to the recent disturbance associated with the replant in this habitat. In Year 6, supplemental vegetation monitoring within the oak-dominated upland forest was conducted on August 17, 2021. The supplemental data is showing an increase in both native woody species density and native herbaceous cover (see **Table 6**). The increase in native woody species cover 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 supplemental monitoring suggest that the habitat will likely meet the ≥ 25% native herbaceous cover performance standard. The habitat is also likely to continue to support ≥ 500 native woody plants per acre. Formal vegetation monitoring of the oak-dominated upland forest (including native woody plant cover) will be conducted in Year 7 (2022).

Table 6.

Oak-Dominated Upland Forest*			
	Performance Standards Years 2-5	Measured Yr. 6	Measured Yr. 5
Native Herbaceous Vegetation	≥ 25%	26%	15.18%
Native Woody plants / acre		895	733

* Due to the replanting effort undertaken in this habitat in 2019, habitat development is delayed. Formal vegetation monitoring will occur in Year 7. The results from the Year 7 vegetation monitoring will be assessed to determine if the habitat is meeting the Year 2 performance standards for the oak-dominated upland forest.

5. LARGE WOODY DEBRIS AND OTHER HABITAT FEATURES

Large woody debris monitoring was not required in Year 6. Large woody debris monitoring will be conducted in Year 7.

6. INVASIVE SPECIES MONITORING

Invasive species monitoring was not required in Year 6. Invasive species monitoring will be conducted in Year 7.

Wildlands' Land Management staff regularly visited the Project site during 2021 to assess the site for invasive plant species and treat them (either by hand pulling, digging, mowing, or weed whacking) as necessary. During 2021, invasive species removal primarily consisted of hand removal of yellow flag iris, Scotch broom, and a few purple loosestrife individuals. All instances of these species were removed. No giant knotweed, Himalayan knotweed, or butterfly bush were observed on the Project site.

Reed Canarygrass

Reed canarygrass was treated aggressively in the years prior to construction. No monitoring for reed canarygrass was required in Year 6; however, the site was assessed numerous times throughout the year and reed canarygrass was treated as necessary. Reed canarygrass monitoring will be conducted in Year 7.

7. FISH MONITORING

Fish monitoring was not required in Year 6. Fish monitoring will be conducted in Year 7.

8. OTHER WILDLIFE MONITORING

Bald Eagle

Bald eagle monitoring was not required in Year 6. Bald eagle monitoring will be conducted in Year 7.

Bird Assemblage Surveys

Bird assemblage surveys were not required in Year 6. The next bird assemblage surveys will be conducted in Year 10.

Mink Surveys

Mink surveys were not required in Year 6. Mink surveys will be conducted in Year 7.

Lamprey Surveys

Lamprey surveys were not conducted in Year 6. The next lamprey surveys will be conducted by U.S. Fish and Wildlife in Year 10.

9. GENERAL INSPECTIONS

Regular site visits were conducted in 2021 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 data collection, and other maintenance and management tasks. Please see the Maintenance Activity Log in **Appendix 1** 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 only monitoring required for Year 6 was a visual inspection to document any fish barriers; however, Wildlands also agreed to collect supplemental vegetation data within some of the habitats. The purpose of the supplemental vegetation data collection in the riparian scrub-shrub and riparian forest (ACM) and the riparian forest was to establish a baseline for Year 7 when native woody performance standards change from density to cover and to provide additional data in the oak-dominated upland (which was not meeting the native herbaceous cover standard in Year 5) to document the trajectory of habitat establishment and determine whether the habitats are on track to meet performance standards, even if delayed, or if adaptive management will be needed. The results of the monitoring and supplemental vegetation data collection are summarized below.

In Year 6, visual inspection of the site occurred in September to document any fish barriers; however, no fish barriers were detected during the inspection.

In Year 6, the emergent marsh was spot-checked in several locations. The spot-checks suggest that the native emergent cover is near or above 30% which indicates that the marsh is on a positive trajectory to meeting the Year 7 cover performance standard of 40% cover (even if slightly delayed) without adaptive management.

In Year 6, supplemental vegetation data was collected in the riparian scrub-shrub and riparian forest (ACM) habitat. The supplemental vegetation data suggests that this habitat is on track to meet Year 7 performance standards including native woody cover and native herbaceous cover.

The supplemental vegetation information collected within the riparian forest and cottonwood-dominated upland forest in Year 6 suggests that the habitat is on track to continue meeting the native herbaceous cover standard in Year 7. However, although the native woody plant density had increased from the Year 5 totals, the native woody cover was recorded as 27.67% which is well below the native woody cover performance standard of 50% cover for Year 7. The supplemental data collected regarding native woody plant cover will serve as a baseline to compare to the Year 7 monitoring results to determine whether there appears to be a positive trajectory for the establishment of this habitat. This information will be used to determine if a targeted replant will be necessary to meet future native woody cover performance standards.

Within the oak-dominated upland forest area, the Year 6 supplemental data collected revealed that both the native woody plant density and the native herbaceous cover had increased over the results of the Year 5 monitoring. The results of the supplemental monitoring suggest that the habitat will likely meet the ≥ 25% native herbaceous cover performance standard. The habitat is also likely to continue to support ≥ 500 native woody plants per acre. Both cover and density of native woody species will be recorded during the Year 7 monitoring. Irrigation of the woody plants will continue in 2022 as well as hand removal of invasive species. Once the risk of damaging the young plants has decreased to an acceptable level, chemical and/or mechanical control of non-native species will be employed, as necessary.

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.

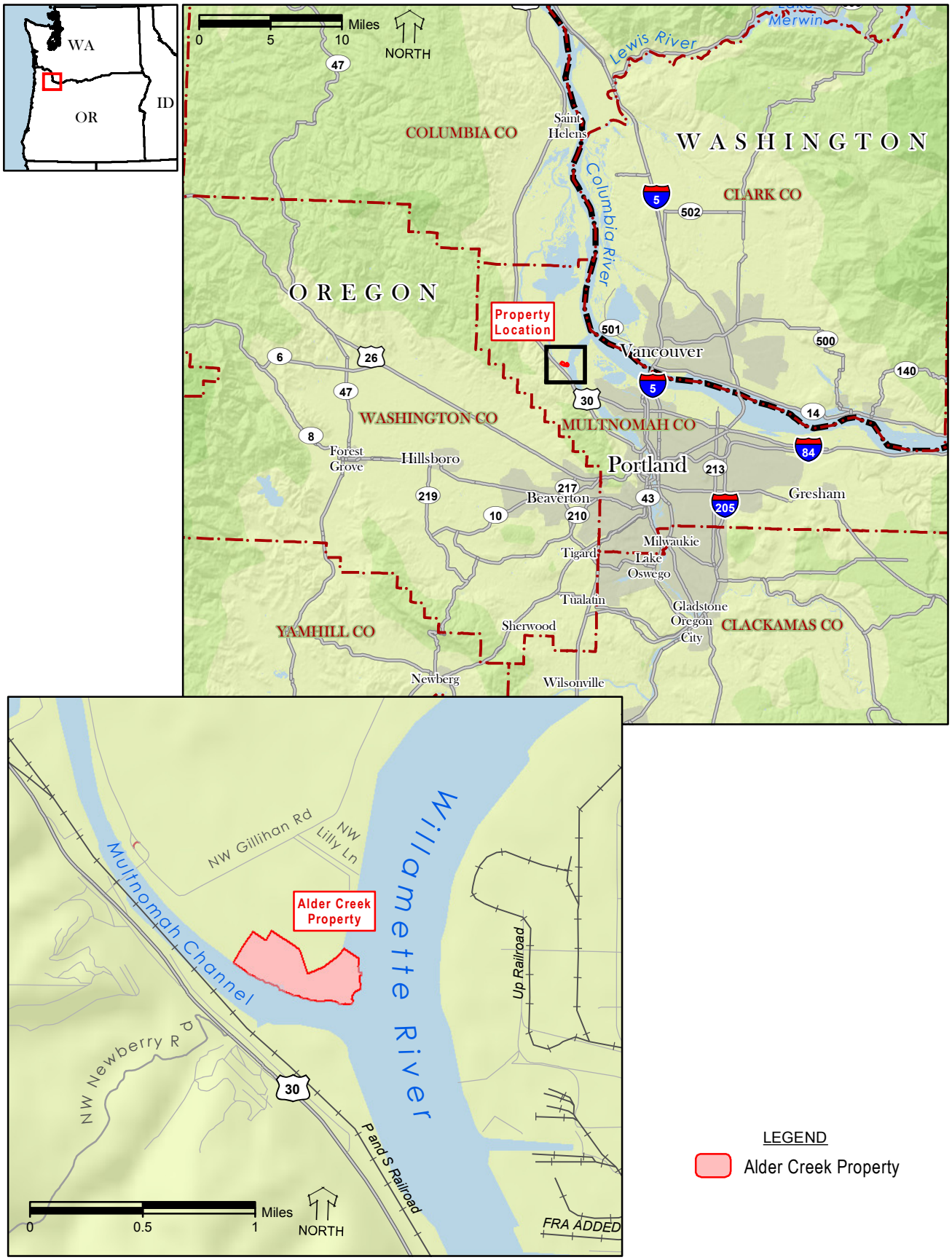
- Lamprey Monitoring Funding – No lamprey monitoring was conducted in Year 6 so no funding was required.

A. TRANSFER OF CREDITS AND ENDOWMENT FUND DEPOSITS

A copy of the Credit Ledger documenting Credit sales through January 2022 is included in **Appendix 5**. 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 6 (2016-2021).

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.

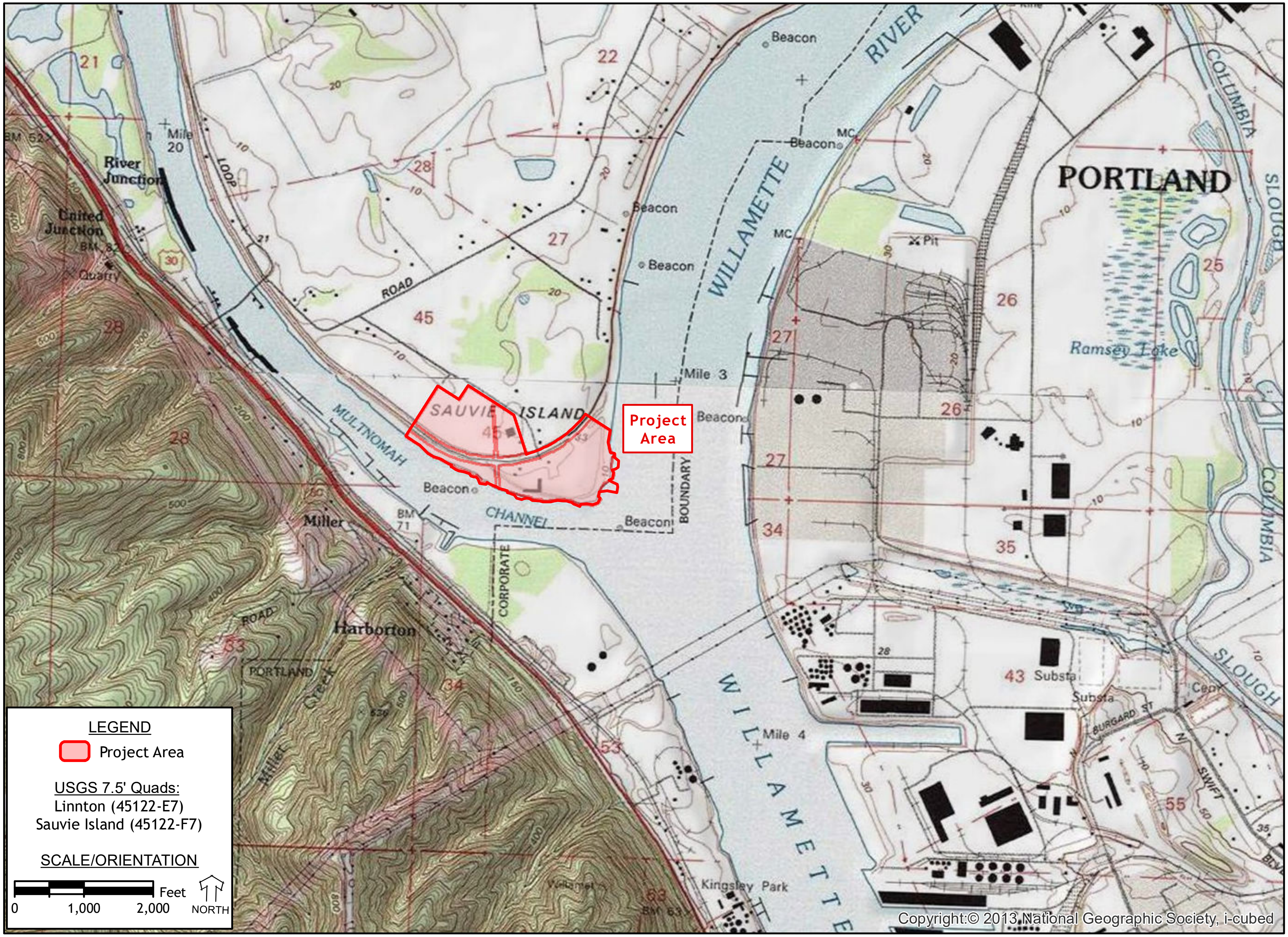
Figures



WILDLANDS

Alder Creek Restoration Project
2021 Monitoring Report

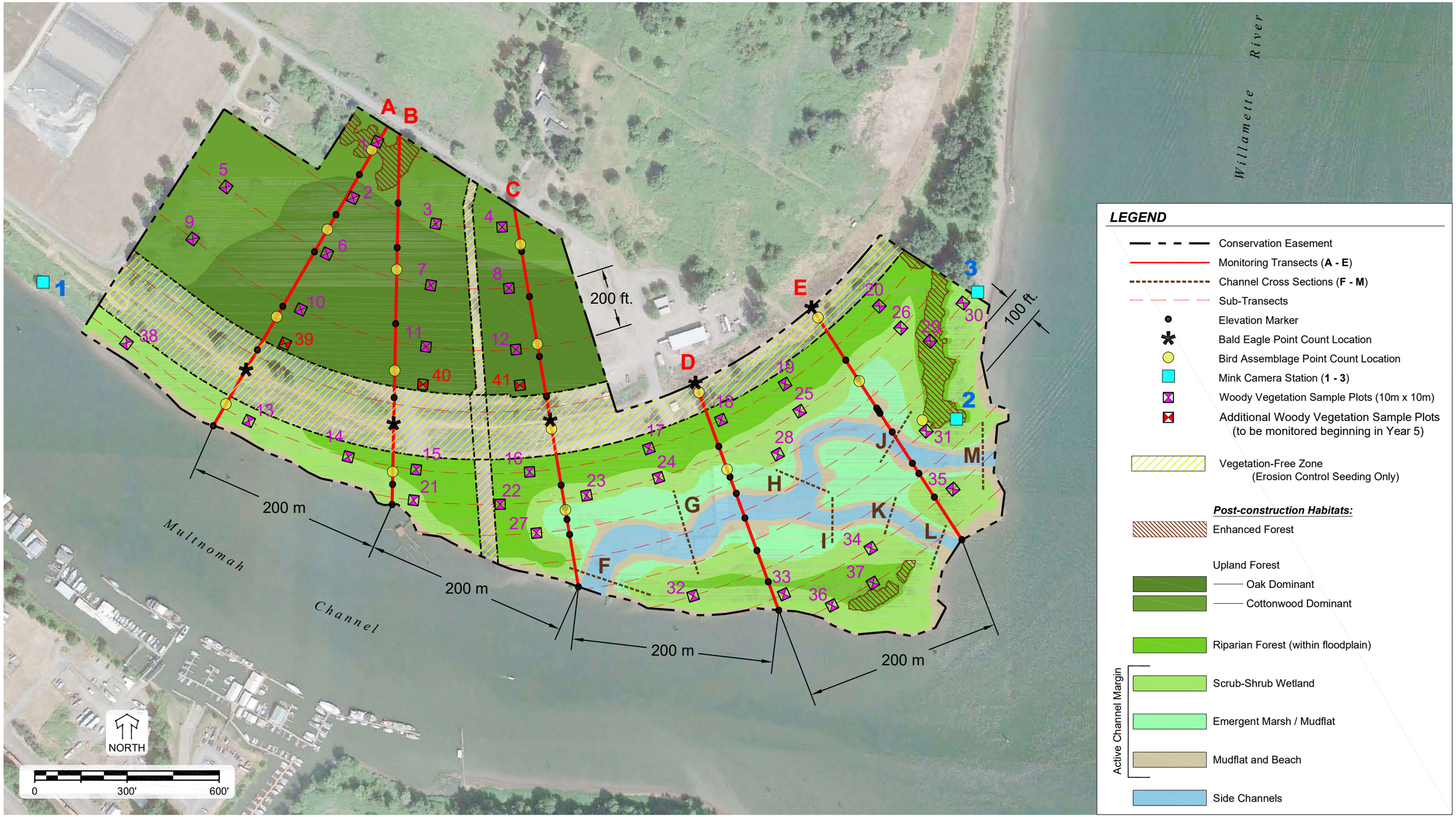
Figure 1
Location Map



WILDLANDS

Alder Creek Restoration Project
2021 Monitoring Report

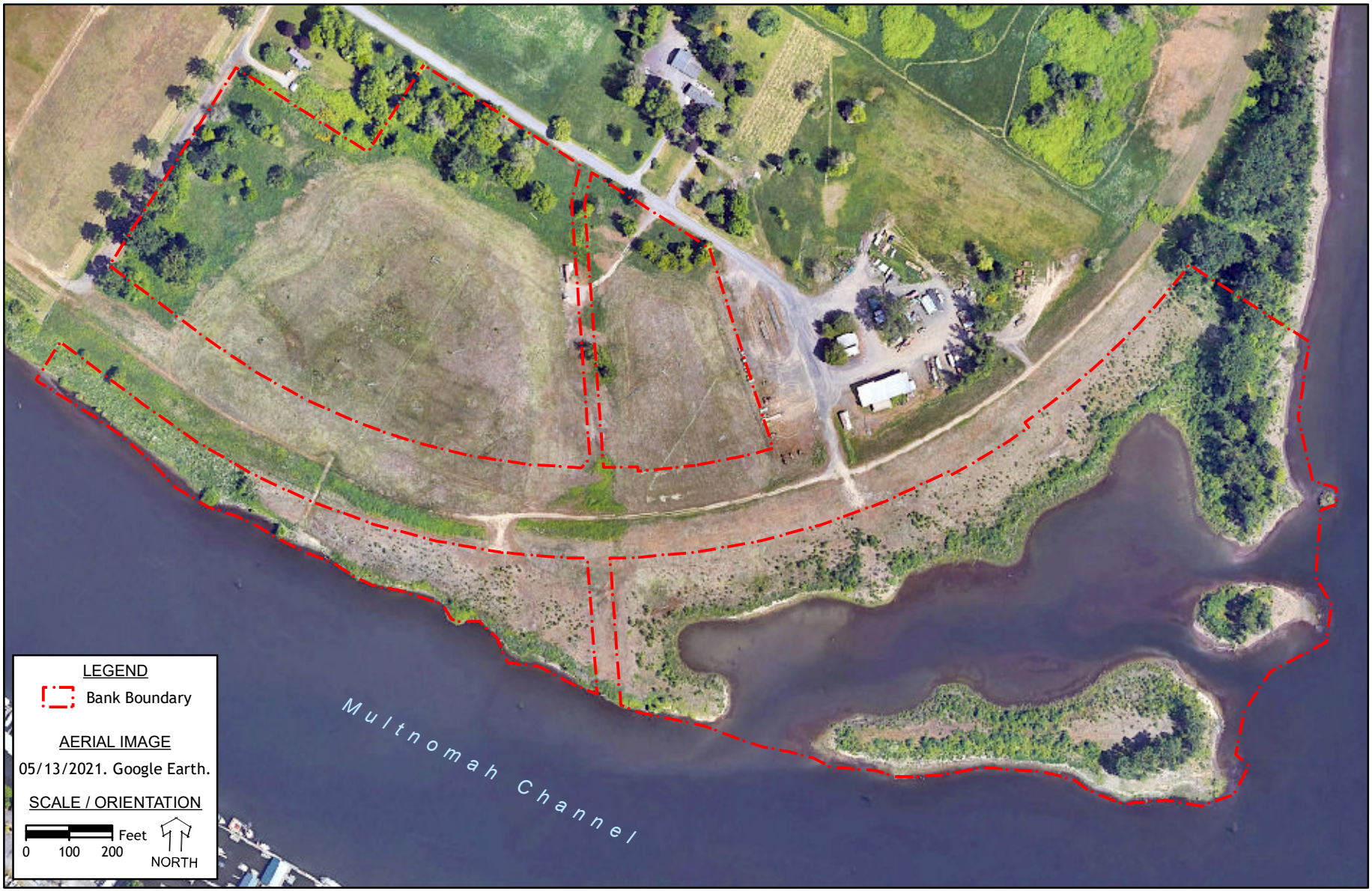
Figure 2
USGS Quad



WILDLANDS

Alder Creek Restoration Project
2021 Monitoring Report

Figure 3
Post-construction Monitoring



WILDLANDS

Alder Creek Restoration Project
2021 Monitoring Report

Figure 4
2021 Aerial Photo

APPENDIX 1

Maintenance Log

Alder Creek NRDA Bank
2021 (Year 6)
Maintenance Log

Visit Date:	Visited By: (Name/Initials)	Primary Purpose of Visit	Fencing	Signage	Trash & Trespass	*Invasives	Other
3/18/2021	Greg Lohse	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
5/25/2021	Bill Roper	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	Irrigation system repair
5/25/2021	Patrick Stephens	Maintenance/Land Management					Irrigation system repair
6/14/2021	Bill Roper	Maintenance/Land Management	Checked	Checked	Checked	Checked	Irrigation system maintenance and setup
6/14/2021	Patrick Stephens	maintenance/Land Management					Irrigation system maintenance and setup
6/15/2021	Bill Roper	Maintenance/Land Management	Checked	Checked	Checked	Checked	Irrigation system maintenance and setup
6/15/2021	Patrick Stephens	Maintenance/Land Management					Irrigation system maintenance and setup
6/15/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
6/16/2021	Bill Roper	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
6/16/2021	Patrick Stephens	Maintenance/Land Management	Checked	Checked	Checked		oak planting irrigation
6/16/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
6/17/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
6/18/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Removed	Treated/Removed	oak planting irrigation
6/21/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
6/22/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
6/23/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
6/24/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
6/25/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
6/28/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
6/29/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
6/30/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/1/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/2/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/5/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/6/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Removed	Treated/Removed	oak planting irrigation
7/7/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/8/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/9/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/12/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/13/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/14/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/15/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/16/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/19/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/20/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/20/2021	Bill Roper	Biological Monitoring	Checked	Checked	Checked	Checked	Gen inspection of invasive plant species
7/21/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/22/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/23/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/26/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/27/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/28/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/29/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
7/30/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/2/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/3/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/4/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/5/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/6/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/9/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/10/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/11/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/12/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/13/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/16/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/17/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/17/2021	Bill Roper	Biological Monitoring	Checked	Checked	Checked	Checked	Suplimental monitoring
8/18/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/19/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/20/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	oak planting irrigation
8/23/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
8/25/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
8/26/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
8/27/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
8/30/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
8/31/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
9/1/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
9/2/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
9/3/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
9/7/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
9/8/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
9/9/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
9/10/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
9/13/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
9/14/2021	Lucus Ried	Maintenance/Land Management	Checked	Checked	Checked	Treated/Removed	
9/15/2021	Lucus Ried	Biological Monitoring	Checked	Checked	Checked		
9/15/2021	Bill Roper	Biological Monitoring	Checked	Checked	Checked	Checked	tree monitoring and drone flights
11/10/2021	Bill Roper	Biological Monitoring	Checked	Checked	Checked	Checked	final general monitoring/site visit of 2021

*invasive plant treatment/removal primarily consisted of hand removal of Scots broom and yellow-flag iris
** irrigation withing the oak planting area was rotated to different irrigation zones, allowing any given area to be irrigated approximately once per week.

APPENDIX 2

Riparian Scrub-Shrub and Riparian Forest (ACM)

Supplemental Data

Riparian Shrub Scrub/Forest (ACM) - Supplemental Data Collected 9/15/2021

Plot	2020 Tree/shrub Count	2021 Tree/shrub Count	Native Woody Canopy Cover	Native Herbaceous Cover
13	4	3	1	1
21	20	20	25	20
23	23	25	20	20
24	35	45	70	25
25	27	27	60	30
26	37	36	70	15
27	39	42	60	20
28	38	40	85	20
30	38	38	90	1
31	23	2	30	50
32	33	34	55	45
33	53	35	65	5
34	36	35	30	70
35	94	100	90	1
36	42	35	35	50
38	20	22	20	10

2020 Native Tree/Shrub Count Total	562	(1422 Plants/Acre)
2021 Native Tree/Shrub Count Total	539	(1365 Plants/Acre)
2021 Average Native Woody Canopy Cover	50.38%	
2020 Average Native Herbaceous Cover	33.54%	
2021 Average Native Herbaceous Cover	23.94%	

APPENDIX 3

Riparian Forest and Cottonwood-Dominated Upland

Supplemental Data

Riparian and Cottonwood Dominated Upland Forest - Supplemental Data Collected 9/15/2021

Plot	2020 Tree/shrub Count	2021 Tree/shrub Count	Native Woody Canopy Cover	Native Herbaceous Cover
1	163	200	95	1
3	0	0	0	10
4	5	6	30	8
5	8	11	25	1
9	14	8	50	15
14	19	25	15	25
15	21	22	40	35
16	11	12	15	50
17	15	14	25	20
18	16	17	10	30
19	12	8	5	40
20	18	13	10	30
22	7	7	10	20
29	56	55	80	35
37	12	9	5	9

2020 Native Tree/Shrub Count Total	377	(1017 Plants/Acre)
2021 Native Tree/Shrub Count Total	407	(1097 Plants/Acre)
2021 Average Native Woody Canopy Cover	27.67%	
2020 Average Native Herbaceous Cover	16.10%	
2021 Average Native Herbaceous Cover	21.93%	

APPENDIX 4

Oak Upland Supplemental Data

Oak Dominated Upland Forest - Supplemental Vegetation Data Collected 8/17/2021

Plot	2020 Tree/shrub Count	2021 Tree/shrub Count	Native Herbaceous Cover
2	1	21	15
6	32	35	30
7	1	6	30
8	11	15	25
10	20	21	30
11	25	25	20
12	20	16	20
39	23	34	15
40	19	20	40
41	29	28	35

2020 Native Tree/Shrub Count Total	181	(733 Plants/Acre)
2021 Native Tree/Shrub Count Total	221	(895 Plants/Acre)
2020 Average Native Herbaceous Cover	15.18%	
2021 Average Native Herbaceous Cover	26%	

APPENDIX 5

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.