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MEMORANDUM

To: Sean Sheldrake, U.S. Environmental Protection Agency **Date:** October 31, 2013
From: Elizabeth Appy and Anna Spooner, Anchor QEA, LLC
Cc: Kelly Madalinski, Port of Portland
Lance Peterson, CDM Smith
Re: Terminal 4 Phase I Removal Action—Potential Alternate Mitigation General
Descriptions

INTRODUCTION AND BACKGROUND

This memorandum is an update to the Port of Portland's (Port) February 22, 2011 "Terminal 4 Phase I Removal Action Mitigation General Description" memorandum (Anchor QEA) and describes the potential alternate mitigation sites that the Port is considering to meet its compensatory mitigation requirements associated with the Terminal 4 Phase I Removal Action project. This memorandum is in response to the U.S. Environmental Protection Agency's (EPA) letter dated August 30, 2013, requesting the Port to submit an updated memorandum that removes projects that are no longer viable and adds any new sites identified by the Port.

The Port will continue to pursue the purchase of credits from a habitat restoration project being developed by Wildlands, Inc. (Wildlands) at the Alder Creek site on the southern tip of Sauvie Island. The Alder Creek site offers the opportunity to create, restore, enhance, and protect a substantial amount of aquatic, riparian, and upland forest habitats to benefit salmonid species occurring in the Lower Willamette River, as well as providing benefits to other aquatic, avian, and terrestrial species. The Port will continue to work with EPA and facilitate discussions between EPA and Wildlands regarding the use of credits from the Alder Creek site as mitigation for the Terminal 4 Phase I Removal Action impact.

As requested by EPA, this memorandum summarizes potential alternate mitigation sites identified through this mitigation process. In addition to the Port-preferred Alder Creek restoration project, the Port has evaluated sites with the potential to enhance or preserve

0.39 acre of habitat containing functions that were impacted in Wheeler Bay by the placement of the riprap cap armor as part of the Terminal 4 Phase I Removal Action.

POTENTIAL ALTERNATE MITIGATION SITES

The three sites listed in the Port's February 22, 2011 memorandum continue to be potentially viable options based on this most recent review and update. Furthermore, the Port did not identify additional sites or mitigation projects that would meet the general conditions and requirements associated with this mitigation process. These three potential sites are as follows:

- Downstream End of Ross Island (Figure 1)
- Swan Island Beach South (Figure 2)
- Swan Island Beach North (Figure 3)

The general concepts for the three sites include enhancement and/or preservation within and adjacent to the active channel margin along the Lower Willamette River. The specific type of potential mitigation being considered depends on site-specific details for each of the three sites. These details and specific mitigation actions for each location are further outlined in this memorandum. Finally, as the Port further reviews these sites, it may be determined that a site is not available or suitable for mitigation use.

Downstream End of Ross Island

The Port owns the land associated with this site down to the ordinary high water (OHW) elevation on the downstream end of Ross Island. For this location, the Port is considering preservation and enhancement of the site (Figure 1), including areas in the active channel margin. Preservation would be accomplished by permanently protecting the area using an appropriate real estate or other legal mechanism. The potential enhancement activities would include removal of invasive plant species and replacement with native vegetation.

The Ross Island site under consideration as an alternate mitigation site would include approximately 3.0 acres of riparian upland habitat and approximately 3.0 acres of the active channel margin. The Port's Ross Island site would provide high quality habitat, and the preservation of this site would maintain the habitat value and functions in perpetuity.

This potential preservation and enhancement would offset the impacts at typical mitigation ratios for preservation projects in the Pacific Northwest and across the country that have been identified ranging between 10:1 and 20:1 (Commonwealth of Virginia DEQ 2008; USACE; Ecology, USACE, and USEPA 2006). The City has ownership of 45 acres of Ross Island. As part of the preservation option, the Port would consider transferring its Ross Island parcel to the City to manage and conserve the site.

The Ross Island site is zoned with two land uses. The northern portion of the site (less than a half-acre) is zoned as General Commercial. The remaining area is zoned as Open Space, which allows agriculture, parks, and other open areas, such as boat ramps, parking, recreational fields, golf courses, and cemeteries. As shown by the photographs on Figure 4, this site offers high-quality nearshore and riparian habitat with foraging and nesting opportunities for various species of fishes, birds, and mammals within an urbanized environment.

Swan Island Beach South

The Port is considering 0.39 acre of enhancement at the Swan Island Beach South site (Figure 2). The enhancement would occur within and just above the active channel margin and provide improved habitat quality and function. As shown by the photographs on Figure 5, an existing riprap area that has a 3 horizontal to 1 vertical (3H:1V) slope meets a sandy beach area with a gentler slope (10H:1V) at an approximate elevation of +15 feet National Geodetic Vertical Datum of 1929 (NGVD29). The riprap slope along the bank consists of scattered areas with soil and native and non-native plantings. A public greenway path is located along the top of the bank and defines the upland project limit.

The enhancement under consideration includes removal of the riprap, which occurs above an elevation of +15 feet NGVD29. The project also proposes to enhance the shoreline bank with a native riparian community. Invasive plant species would be removed and replaced with native vegetation to increase overhanging vegetation and provide a diverse canopy and riparian community. Minor grading may occur, as possible, to maximize the active channel margin habitat within the project footprint and minimize potential erosion. A log edge would be placed along elevation +15 feet NGVD29 to provide shoreline protection during high water events. A hydrodynamic assessment was completed for the Swan Island Beach

South mitigation site to determine the potential for erosion due to the removal of riprap at the site. Wave energy and subsequent wave run-up from boat wakes is a dominant cause of erosion on the Lower Willamette River. The hydrodynamic assessment found that the removal and replacement of riprap with a riparian community and a log edge is feasible at the Swan Island Beach South site.

The City of Portland (City) continues to evaluate the feasibility of doing a similar mitigation project on its parcel located south of the Port's Swan Island Beach South site as part of the City's North Reach Planning effort.

Swan Island Beach North

The Port is considering 0.39 acre of enhancement at the Swan Island Beach North site. Much like the Swan Island Beach South site, the enhancement activities would occur within and just above the active channel margin (Figure 3) and would provide improved habitat quality and function. As shown by the photographs on Figure 6, there is an existing steep, armored slope with no vegetation. Slopes in certain areas exceed 2H:1V. The depth and horizontal extent of riprap is unknown.

The potential enhancement activity would remove shoreline riprap above and below OHW. Site grading would occur to reduce over-steepened slopes and minimize potential erosion. Slopes above OHW would be graded to be a maximum steepness of 3V:1H in the uplands, where a riparian community would be established. Invasive plant species would be removed and replaced with native vegetation to increase the shade from overhanging vegetation cover and provide a diverse riparian community. Long term, the riparian community would provide habitat enhancements and shoreline stabilization measures.

Due to the existing upland use, no cut back is feasible at this site, so the creation of any additional habitat would be accomplished through the placement of material with engineered controls keeping it in place. Therefore, as possible, more gradual slopes would be graded below OHW, a smaller, habitat substrate would be placed, and an in-water berm or anchored log edge structure would need to be installed at the toe of the habitat slope to provide slope stabilization and reduce potential erosion and loss of placed material.

REFERENCES

- Anchor QEA (Anchor QEA, LLC), 2011. Memorandum to: Kelly Madalinski, Port of Portland. Subject: Terminal 4 Phase I Removal Action Mitigation General Description Memorandum. February 22.
- Commonwealth of Virginia DEQ (Department of Environmental Quality), Water Division, 2008. Guidance Memo No. 08-2009: Use of Preservation for Compensatory Mitigation in VWP Permits. Available from: <http://www.deq.virginia.gov>. June.
- Ecology (Washington State Department of Ecology); USACE, Seattle District; and USEPA (U.S. Environmental Protection Agency), Region 10, 2006. Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance (Version 1). Ecology Publication #06-06-011a. Olympia, Washington. March.
- USACE (U.S. Army Corps of Engineers), Norfolk District. Undated. Ratio Method. Cited: October 2013. Available from: http://www.conservationfund.org/wp-content/uploads/2012/10/Ref-11_Wetland_Credit_Determination-2012.pdf
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FIGURES

Q:\Jobs\050332_Portland\4\Maps\2011_02\Figure 1 - Ross Island Potential Mitigation Site ahook 02/14/2011 10:19 AM





C:\Jobs\050332_Portland\1\Maps\2011_02\Figure 2_Swan Island South Mitigation Site ahook 02/14/2011 2:06 PM

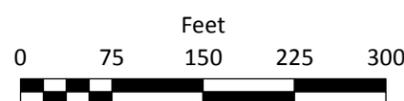


Figure 2
 Swan Island Beach South Potential Mitigation Site
 Terminal 4 Phase I Removal Action
 Port of Portland

C:\Jobs\050332_Portland\4\Maps\2011_02\Figure 3_Swan Island North Mitigation Site ahook 02/14/2011 2:06 PM

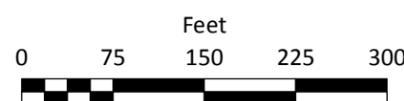
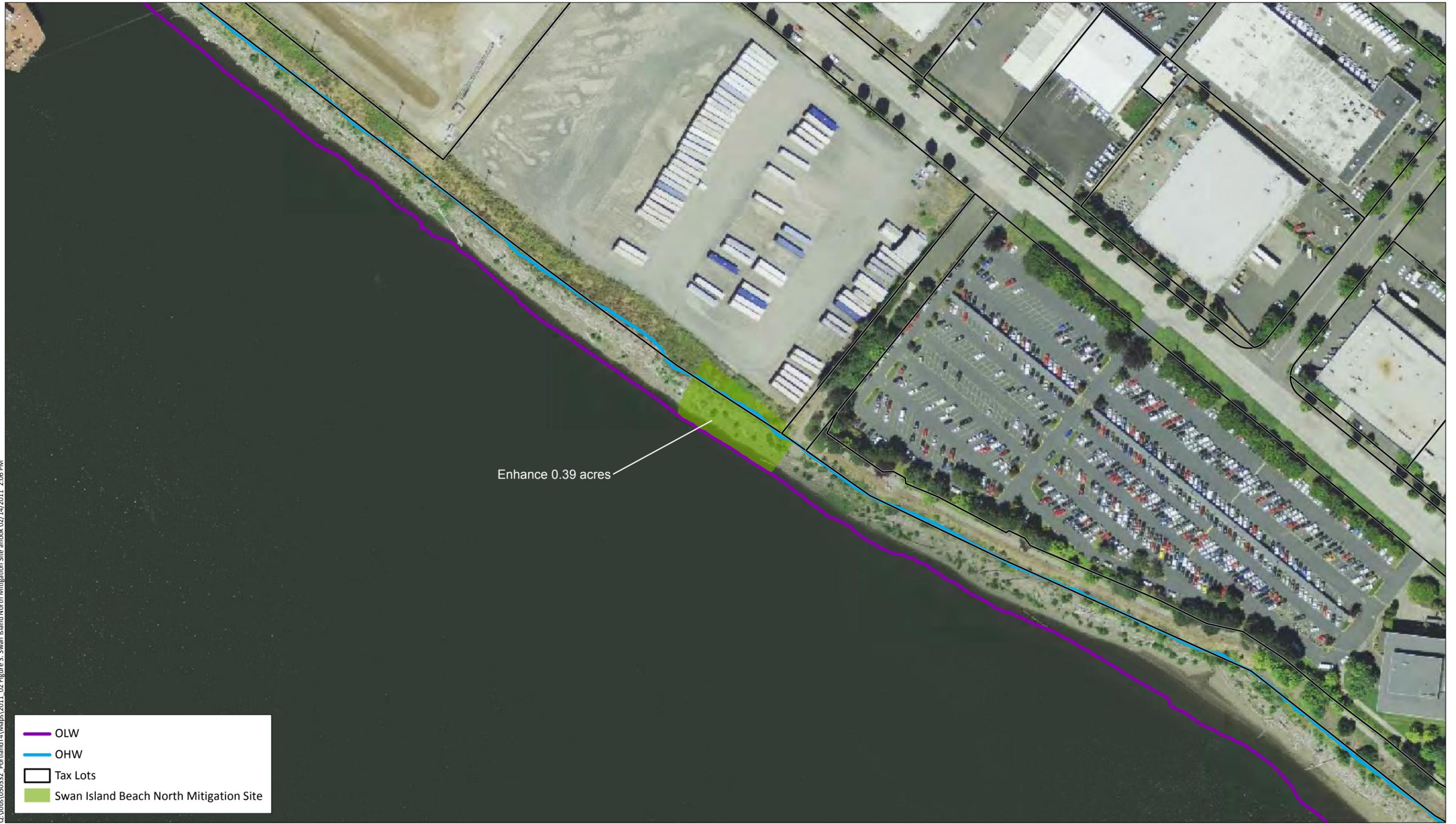


Figure 3
Swan Island Beach North Potential Mitigation Site
Terminal 4 Phase I Removal Action
Port of Portland



Downstream End of Ross Island, View west



Downstream End of Ross Island, View northwest to the tip of island and Ross Island Bridge



Swan Island Beach South, View north from Port/City property line



Swan Island Beach South, View north



Swan Island Beach North, View south



Swan Island Beach North, View north