

Port of Wilmington Turning Basin Revised Mitigation Summary

25 February 2019

Based on our meeting last week, subtidal soft bottom impacts were reevaluated using the suggested -4 m MLLW depth contour as the basis for quantifying shallow and deep water habitat impacts. Per our reanalysis, dredging would impact 3.83 acres of shallow water soft bottom habitat above -4 m and 13.93 acres of deep water soft bottom habitat below -4 m. The increase in shallow bottom impacts (2.15 acres) under the proposed -4 m criterion would require additional mitigation. In addition, it was agreed that the agencies preferred mitigation option is wetland enhancement (*Phragmites* conversion) and tidal pool creation on the Brunswick property, as opposed to a donation to the Battleship project. In addition, to provide more 401 water quality and fish benefits within PNA, additional tidal pool habitat has been proposed on the Brunswick River property. Based on all of the above, the following revisions to the mitigation plan proposed:

Impact Summary

Impacts: 1.4 acres of wetland (1.01 acres coastal marsh, 0.39 acre 404 wetlands)

PNA non-vegetated subtidal soft bottom impacts (3.83 acres < 4m; 13.93 acres > 4m)

Revised Wetland Compensation Plan (2.9:1 ratio)

1. Wetland enhancement of *Phragmites* dominated habitat adjoining the project site (adjacent NCSA owned property) – 1.75 acres enhanced to coastal tidal marsh (1.25:1 ratio). This measure will provide hydrological and vegetation enhancement via removal of fill and reestablishment of native brackish marsh species, respectively.
2. Wetland enhancement of *Phragmites* dominated habitat on NCSA owned land on Brunswick River – 2.25 acres enhanced to brackish tidal marsh (1.6:1 ratio). This measure will provide hydrological and vegetation enhancement via removal of fill and reestablishment of native brackish marsh species, respectively.

Revised PNA Compensation Measures

The following items are proposed as compensation for effects on PNA functions, HAPC, anadromous fish and for dredging in Atlantic Sturgeon critical habitat.

1. Conservation easement on +/- 30 acres of Brunswick River property, if requested.
2. For water quality and juvenile fish benefits in PNA - create 6.75 acres of shallow-water tidal pool habitat via excavation of *Phragmites* stands on Brunswick River property.
3. Hydrological connectivity – to achieve adequate flushing and fish access, existing tidal ditches/channels will be extended as needed to provide a direct surface water connection between created tidal pools and Brunswick River/Redmond Creek.

4. Donate \$800,000 for construction and monitoring of Lock and Dam #1 Rock Ramp Fish Passage modification.
5. In addition, hydrological and vegetative enhancement of tidal wetlands immediately adjacent to the project area will also provide water quality and ecological benefits within PNA functional habitat improvement through enhanced juvenile fish access.

Design and Plans and Specifications

Following issuance of permits and CRC variance, the applicant will perform elevational surveys of the enhancement areas and reference wetlands, model flow and water quality for proposed interior tidal pools and connecting ditches, and develop detailed design plans and specifications for all mitigation elements. An interagency site visit will be scheduled to review proposed design elements and garner agency input on the design specifications, construction methods, and site access.

Success Criteria and Monitoring

1. Success criteria will be developed in coordination with the resource agencies; including juvenile fish/invertebrate utilization of tidal pools and plant species composition/cover in wetland enhancement areas.
2. Fish/invertebrate utilization of all tidal pools will be monitored in accordance with NCDMF sampling protocols. Water quality monitoring will be conducted in the tidal pools and connecting ditches/canals.
3. Plant species composition/cover in all wetland enhancement areas will be monitored through the establishment of fixed plots. All wetland enhancement areas will be monitored in their entirety for Phragmites recolonization.
4. Wetland enhancement and tidal pool creation measures will be monitored for a minimum of seven years with annual reporting. Monitoring will continue beyond seven years if needed to meet established success criteria.
5. A detailed monitoring plan describing methods, procedures, and sampling design will be provided within the final mitigation plan and or design specifications to be prepared following permit issuance.
6. Sturgeon monitoring during dredging will be performed.

Adaptive Management

If the monitoring data indicate that the success criteria are not being met, remedial action will be undertaken to correct the underlying causes of failure.

Estimated total cost of mitigation measures - \$ 2.4 M