

# City of Olympia

## West Bay Environmental Restoration Assessment

### Executive Summary

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# EXECUTIVE SUMMARY

The West Bay Environmental Restoration Assessment provides a science-based assessment of environmental restoration opportunities for the West Bay shoreline in Olympia, WA. The assessment supports the implementation of habitat restoration and water quality strategies. The strategies inform the prioritization of restoration projects by the City of Olympia (City), Port of Olympia (Port), Squaxin Island Tribe (Tribe), and other interested parties. Also included are evaluations of recreational opportunities within the project study area, particularly in West Bay Park and the lagoon located south of the developed park.

## Need for Restoration

Historically, West Bay supported shallow water with extensive mudflats during low tides. The Deschutes River as well as the smaller Garfield and Schneider Creeks discharged to West Bay resulting the mixing of salt and fresh waters typical of high quality estuaries. The vast mudflats supported key shellfish species including Olympia oysters, clams and crabs, and provided productive habitat for many marine organisms. These organisms provided the diets of fish, birds and mammals and served to filter the sediment and water, thereby contributing to water quality in the estuary. The shoreline was forested with coniferous trees and shrubs that provided habitat, shading, erosion control, and foraging opportunities.

Shorelines, mudflats, and watersheds within the 1.8 mile long study area (5th Avenue Dam to the north by the City limit) have been heavily altered from natural conditions. Ample opportunity exists for environmental restoration. Historical ecological impacts to the shoreline include disconnecting uplands habitats from the marine waters, converting shallow mudflats into both deeper waters and uplands, reducing sediment supply and large wood inputs from bluffs and rivers/creeks, reducing water quality, and degrading the shoreline by filling, placing shoreline, armor, and contamination from past land uses.

The restoration strategy revolves around reversing ecological impacts to the extent possible under the existing developed conditions. The assessment focuses primarily on City, Port, and Tribe-owned properties along West Bay. However, private properties are also considered for potential restoration. Property owner agreement would be necessary.

## Methodology

Habitat restoration focuses on improving impaired habitat functions. This assessment identified and studied nine reaches or sub-areas along West Bay based upon physical and habitat characteristics as well as property ownership. Initial restoration concepts for each reach were developed to address existing limiting factors and restoration objectives through a design workshop. These initial concepts were then refined based upon additional analysis and design as well as input from the City, Port, and Tribe.

Restoration concepts include improving the connection between upland and marine habitats, removing historical fill, rebuilding natural beaches, and creating salt marshes. Better connecting

uplands with more natural beaches also provides an opportunity for improved sea level rise adaptation and recreation.

Semi-quantitative and qualitative measures were developed and scores assigned to restoration alternatives. The mix of measures provide both science and professional judgement based evaluation and decision-making.

## **Outcome**

Twelve restoration alternatives were developed and 18 potential stormwater improvements identified. Taken as a whole, the potential restoration projects provide the opportunity to enhance the ecological functions of West Bay. Connecting the restoration sites would promote natural coastal processes and resiliency compared to piecemeal efforts at isolated sites. The concepts also include overlays of recreation opportunities that would accommodate increased public use of the shoreline.

The Lagoon Alternative 4 restoration may provide the largest overall habitat restoration opportunity, but Alternative 2 has a higher habitat value per dollar spent. Both alternatives would remove portions of the railroad berm at the lagoon resulting in improved tidal circulation and sediment processes within the lagoon. Conversely, Lagoon Alternative 1 provides relatively little habitat value. Regardless of lagoon alternative, historical fill beneath the 4<sup>th</sup> Avenue Bridge pushes water flows from Capitol Lake to the north and east of the lagoon. The fill would continue to influence flows with or without future Deschutes estuary re-establishment.

Improving public access and recreation in the lagoon area could be accomplished through a range of trail alternatives including an option along West Bay Drive. Regardless of the restoration alternative selected for the lagoon, coordination of restoration and recreation elements during permitting, design and construction will be important. Coupling restoration and recreation improvements could provide an opportunity to leverage multiple funding sources. Construction access to the lagoon area would require a comprehensive constructability evaluation.

Opportunities to improve Budd Inlet water quality by treating stormwater include both small end-of-pipe retrofits and larger upstream retrofits. The larger drainage basins such as Garfield Schneider Creeks include sites appropriate for upstream treatment facilities.

As proposed, creating mudflat and marsh habitats connected with vegetated upland areas is compatible with sea level rise adaptation in West Bay. Such features provide a natural buffer that is adaptable through natural processes. Incorporating sea level rise adaptation within the restoration strategy for West Bay may provide additional funding opportunities.

## **Implementation**

Conceptual level design and construction costs are estimated for the restoration alternatives. The estimated cost for the restoration of West Bay ranges from \$24.7 million to \$33 million, depending upon the alternatives selected for each shoreline area. Similarly, conceptual public access and recreation improvement costs range from about \$3.8 million to \$11 million. Finally, stormwater improvements in watersheds associated with the study area may range from \$11 million to \$16 million. Implementation and cost sharing could occur as part of restoration,

mitigation, capital improvements, or private development activities along the shorelines of West Bay. Multiple grant funding sources may be available to help implement West Bay restoration. The identified restoration, recreation, and stormwater management opportunities broaden the number of potential funding sources.

Due to the relatively disjointed nature of existing habitat along the shoreline, implementation of the various projects can be accomplished independently or in phases. Cost savings are expected if both recreation and restoration elements are implemented concurrently.

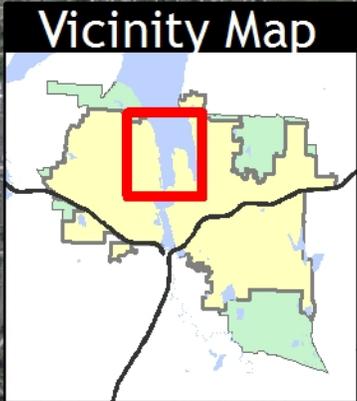
### **Next Steps**

While limited in its scope and level of detail, this restoration assessment can support future planning and design work along the West Bay shoreline. The environmental methodology, engineering approaches, and cost-estimating protocols are consistent with established restoration practices. Detailed site-specific restoration project designs can build upon the work provided in this assessment.



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## Study Area



0 0.125 0.25 Miles 1 inch = 1,250 feet

Map printed 3/11/2016  
 For more information, please contact:  
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This map is intended for 8.5x11" portrait printing.

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