



Bureau of Planning and Sustainability

Innovation. Collaboration. Practical Solutions.

---

## MEMO

**DATE:** April 26, 2012  
**TO:** Planning and Sustainability Commissioners  
**FROM:** Eric Engstrom, BPS Principal Planner  
**CC:** Susan Anderson, BPS Director; Joe Zehnder, BPS, Chief Planner  
**SUBJECT:** West Hayden Island Project Briefing

---

In July 2010 City Council passed Resolution 36805 (attached), directing the Bureau of Planning and Sustainability to develop a legislative proposal for annexation of West Hayden Island into the City, with the intent to protect at least 500 acres as open space, and no more than 300 acres for future deep water marine terminal development. We currently have our first hearing with PSC scheduled for July 24, 2012 at which time we would be presenting the draft legislative package, including an Ordinance for annexation, Comprehensive Plan designations, Plan District/zoning designations for WHI, and updated intergovernmental agreements between the City and the Port of Portland. The purpose of this briefing is to provide an update on project activities and highlight some of key project issues that we are working on at this time.

Over the past 18 months the City has completed a number of studies to respond to City Council's questions and aid in their review of the legislative package (list of studies is attached). One of the recent milestones for this project is the completion of the concept plan by our consultant, WorleyParsons. This concept plan serves as the basis for many of the studies we have completed, as well as the planning base to draft zoning recommendations and an annexation agreement for PSC and City Council consideration. During the briefing staff will review the concept plan and our progress toward drafting zoning code and development agreements for this project. Some of the key issues we will focus on during the discussion include:

-Transportation system changes: WHI bridge or the reclassification of Hayden Island Drive



City of Portland, Oregon | Bureau of Planning and Sustainability | [www.portlandonline.com/bps](http://www.portlandonline.com/bps)  
1900 SW 4th Avenue, Suite 7100, Portland, OR 97201 | phone: 503-823-7700 | fax: 503-823-7800 | tty: 503-823-6868

*Printed on 100% post-consumer waste recycled paper.*

-Infrastructure needs and strategies to pay for and implement them (sewer, water, roads, trails)

-Community impacts and potential mitigation measures for noise, traffic, air quality, light

-Natural resources mitigation for development impacts: shallow water habitat, wetlands, forest, and grassland

-Passive recreation: timing of and balancing with natural resource protection, and the potential for more active recreation on East Hayden Island



## RESOLUTION No. 36805 As Amended

Direct the Bureau of Planning and Sustainability to develop a legislative proposal for annexation of West Hayden Island to the City with the intent to protect at least 500 acres as open space, and identify no more than 300 acres for future deep water marine terminal development (Resolution)

WHEREAS, West Hayden Island (WHI) is located on the south shore of the Columbia River approximately nine miles north of downtown Portland and includes approximately 814 acres of land (measured landward of the ordinary high water mark, 15' NGVD) abutting approximately 240 acres of shallow water habitat; and

WHEREAS, WHI is located within Multnomah County outside of the City boundary and is zoned by Multnomah County as Multiple Use Forest 19 with a Significant Environmental Concern overlay zone; and

WHEREAS, most of WHI, above the ordinary high water line, is owned by the Port of Portland and is bisected by several utility corridor rights of way; and

WHEREAS, WHI contains approximately 165 acres of existing development, including a sewer treatment outfall facility, BPA, PPL, and PGE utility corridors, a Port of Portland dredge material placement site, and several Division of State Lands leases for barge and log staging; and

WHEREAS, WHI was brought into the Metro Urban Growth Boundary in 1983 to “satisfy a long term regional need for water-dependent, deep water marine terminal and industrial facilities.” (Metro Ordinance No. 83-151); and

WHEREAS, WHI was designated by Metro in 2004 as a Regionally Significant Industrial Area, an area “with site characteristics that are relatively rare in the region that render them especially suitable for industrial use” (Metro Ordinance 04-104B; MC 3.07.130); and

WHEREAS, Metro has completed a draft Urban Growth Report: 2009-2030 Employment and Residential, January 2010 that assumes approximately 380 acres on WHI is available for large lot future industrial development; and

WHEREAS, the City has completed a draft Economic Opportunities Analysis that indicates by 2035, the expected demand for industrial land in the City will exceed the supply by approximately 600 acres for the mid-range employment forecast; and

WHEREAS, in 2005, Metro adopted the “Nature in the Neighborhoods” program as a regional approach to meeting the requirements of Statewide Land Use Goal 5; and

WHEREAS, because WHI had both high riparian habitat values (Class I Riparian Habitat) and high development value, Metro designated WHI as a moderate Habitat

Conservation Area and required that the City develop a District Plan for WHI in cooperation with the owner, the Port of Portland, to establish site-specific habitat conservation measures that protect natural resources and mitigate the environmental impacts of industrial development (Metro Code § 307.1330.B.4.b); and

WHEREAS, anticipating eventual annexation of WHI, since 1996 the City of Portland has provided planning and zoning services to West Hayden Island through an Intergovernmental Agreement with Multnomah County (Ordinance No. 170585); and

WHEREAS, the City and the Port of Portland entered into an agreement (IGA) on May 29, 2009, to prepare a long-term vision for West Hayden Island, which included establishment of a Community Working Group (CWG) (Ordinances No. 182856 and No. 183884); and

WHEREAS, the Mayor charged the CWG “to advise City Council on how marine industrial, habitat, and recreational uses might be reconciled on WHI; and, if the CWG determines that a mix of uses is possible on WHI, to recommend a preferred concept plan” (CWG Charter); and

WHEREAS, the Bureau of Planning and Sustainability and Bureau of Environmental Services have worked with a consultant (ENTRIX, Inc.) to prepare several Foundation Studies, and supporting technical memorandums, outlining relevant economic and environmental factors for the Council’s consideration; and

WHEREAS, the Economic Foundation Studies found that water-dependent industries are linked to other industries in the harbor and elsewhere throughout the metro region; and

WHEREAS, the Economic Foundation Studies found that cargo and manufacturing activities dependent on waterborne transportation contribute significantly to the metro region’s economy; and

WHEREAS, the Economic Foundation Studies found that marine-related economic activity generates approximately 20,000 direct, indirect, and induced jobs and \$1.4 billion in income, while economic activity in the overall harbor area may support approximately 100,000 direct, indirect, and induced jobs and \$3.5 billion in regional income annually; and

WHEREAS, the Economic Foundation Studies found that the most recent and conservative forecasts estimate marine cargo growth rates varying from 0.2 percent to 3.7 percent annually (2007-2040); and

WHEREAS, the Economic Foundation Studies found that ship size is increasing for most cargo types, resulting in larger desired berth lengths and deeper river depth; and

- WHEREAS, the Economic Foundation Studies found that the trend towards larger trains for grain and international/national dry bulk cargoes means that larger sites (100+ acres) are expected to be necessary for future competitiveness and many of Portland's existing marine facilities do not have these characteristics; and
- WHEREAS, the Economic Foundation Studies found that to capture economic growth opportunities in marine-industrial cargo, Portland will need to have large parcels for marine industrial growth; and
- WHEREAS, the Economic Foundation Studies found that without larger development-ready sites, it is expected that Portland would lose opportunities to expand marine-related economic activity and would forfeit a portion of the associated jobs and income; and
- WHEREAS, preliminary estimates indicate that a 300 acre deep water marine terminal on WHI would create over 1,000 jobs in the region (including on-terminal jobs, as well as related and induced jobs that directly serve the terminal), generating over and generate up to \$20 million in additional tax revenue for the state; and
- WHEREAS, WHI is uniquely located close to many significant transportation facilities, including a deep water 43-foot federally maintained navigation channel at the confluence of the Willamette and Columbia Rivers, rail lines, and Interstate 5; and
- WHEREAS, the Economic Foundation Studies found that the economic value of WHI is increased by proximity to other deep water marine terminal infrastructure in the Portland/Vancouver Harbor; and
- WHEREAS, the Environmental Foundation Studies found that WHI provides high quality habitat for a diversity of wildlife, in a unique location at the Columbia River/Willamette River confluence; and
- WHEREAS, the Environmental Foundation Studies found that the value of the habitat on WHI is increased by its size, diversity of habitats, proximity to other natural areas, and location at the confluence of the Willamette and Columbia Rivers; and
- WHEREAS, the Environmental Foundation Studies found that WHI includes mature cottonwood ash stands, wetlands, grasslands, and 5.8 miles of critical habitat shoreline for threatened and endangered salmonid species; and
- WHEREAS, the Environmental Foundation Studies found that in larger rivers such as the Columbia, that serve as migratory corridors for salmon, the continuity of habitats and presence of shallow water along the shoreline is very important; and
- WHEREAS, the Environmental Foundation Studies found that WHI is a large undeveloped tract amidst a fragmented urban landscape that provides nesting and stopover opportunities for migratory birds using the Pacific Flyway; and

WHEREAS, the Environmental Foundation Studies found that habitat patch size, habitat diversity, and disturbance from human activity are the key limiting factors for wildlife; and

WHEREAS, the Environmental Foundation Studies found that, given its size and unique location, WHI environmental resources cannot readily be replaced through mitigation; and

WHEREAS, the Environmental Foundation Studies found that, in general, the quality of habitat on WHI is due to the large size of the natural area, the diversity of vegetation, and the connectivity to water; and

WHEREAS, the Environmental Foundation Studies found that total ecosystem service benefits of WHI under current conditions are estimated to be valued (conservatively) from \$613,000 to \$4.7 million annually, with the majority of that value attributed to shallow water habitat; and

WHEREAS, the Environmental Foundation Studies found that there is opportunity on WHI for ecosystem services gains through restoration activities such as increasing off channel habitat connections, revegetation of forest and grassland areas, and increasing or enhancing wetlands; and

WHEREAS, the Hayden Island Community Plan found deficiencies in recreation for area residents, and portions of WHI are well suited to provide nature-based recreation and stewardship activities for Hayden Island residents and the larger Portland community; and

WHEREAS, the CWG issued its Report to the City Council dated July 29, 2010; and

WHEREAS, the CWG Report indicates that the CWG was unable to reach a consensus (requiring 75% approval under the CWG's procedures) on a recommendation to the City Council; and

WHEREAS, eight of the CWG members agreed that it was possible to reconcile a mix of meaningful Port development and habitat values, six members voted that it was not possible, one member abstained, and one member was not present; and

WHEREAS, the CWG Report outlined points of agreement, and articulated a set of evaluation principles to guide further planning; and

WHEREAS, the City and the Port agreed in the IGA that "the City Council, through resolution in July 2010, will direct staff on whether to continue planning for a mix of land uses on West Hayden Island" (IGA, Sect. 1).

NOW, THEREFORE, BE IT RESOLVED:

1. The City Council directs the Bureau of Planning and Sustainability, in coordination with

other City agencies, to take the next steps toward addressing the future of West Hayden Island, including the following:

- a. Develop a legislative proposal for annexation of WHI to the City, and bring that draft proposal to the Council for consideration by December 2011;
- b. The legislative proposal should include Comprehensive Plan and zoning designations, and Plan District regulations;
- c. The proposal should include documentation of compliance with state Goal 5 and Metro Title 13, including an ESEE Analysis, and a process to determine appropriate mitigation requirements for future development impacts to significant natural resources;
- d. The proposal should include an analysis of the infrastructure needs and a cost/benefit analysis to the public associated with those needs after annexation, and an analysis of the financial tools available to facilitate infrastructure development;
- e. The proposal should include a thorough analysis/explanation of existing marine industrial land supply, marine industrial needs in the future and the feasibility of consolidation and/or expansion of existing sites to meet those needs.
- f. Develop alternatives for how natural resource lands could be managed over the long term, including proposals for long term land ownership, and strategies to pay for land management activities;
- g. Include the industrial lands immediately east of WHI in the study area, to determine how the future use of those lands will relate to the use of WHI;
- h. Develop an access plan to serve the existing development, a 300-acre deep water marine terminal site, and anticipated nature-based recreation and habitat management areas;
- i. Supplement the recently completed Foundation Studies with an update of the cargo forecasts, additional analysis of the expected cost/benefits to the City, analysis of operational efficiencies that allow more compact deep water marine terminal facilities, and an evaluation of opportunities for increased coordination with the Port of Vancouver;
- j. Develop a public involvement plan to keep the public, regional partners, and residents of Hayden Island informed and meaningfully involved. Mayor Adams will evaluate the continued role, structure, and membership of the CWG, by September 1, 2010; and
- k. If necessary, bring amendments to the City/Port IGA, consistent with this resolution, to Council by September 15, 2010.

BE IT FURTHER RESOLVED, The City Council intends that the following parameters should guide development of the legislative proposal:

- a. The evaluation principles developed by the CWG should serve as core values to inform the proposal;
- b. The primary feature of the proposal should be permanent protection and enhancement of at least 500 acres as open space, to be managed primarily for the benefit of the regional ecosystem;
- c. The proposal should also include zoning no more than 300 acres of land in an industrial designation for future deep water marine terminal development. The deep water marine terminal footprint should be located, to the extent feasible, over the existing dredge disposal site area. All development associated with Port Marine Terminal Facilities including but not limited to the terminal area, docks, railroad tracks, access roads, bridges and multi-use utility corridors must be included within the 300 acre footprint. The terminal should be east of the north/south PPL/PGE powerline easement, north of the east/west PGE powerline easement, and west of the City of Portland's sewer outfall corridor;
- d. The existing utility corridors, which occupy approximately 55 acres, should remain and continue to serve multiple purposes. To the extent compatible with the existing utilities, these areas should be considered for open space use, and be managed for natural resource benefits, and may contain multiple use access roads, trailheads, and maintenance roads;
- e. Any docks should be designed to avoid shallow water impacts. The proposal should not include a vertical sea wall or similar structure. The proposal will include a report on ESA, CWA, EPA (Strategic Plan—Columbia River Watershed) and the State's Estuary Partnership Management Plan along with FEMA requirements and how they may or may not be met.
- f. The proposal should include allowances for operationally viable rail access, sufficient to serve a 7,500 to 10,000-foot-long unit train;
- g. Nature based recreational uses should be evaluated in more detail. Any significant recreational structures or development footprints should be located primarily at the eastern edge of the site, and should minimize impacts on the highest value habitat areas. Within the 500 acres of open space, low impact recreational facilities may be considered as a means to direct and manage human access in ways that support habitat objectives. Options for placing more active recreational facilities east of the railroad bridge should be considered;
- h. Traffic impacts should be examined in light of the most up-to-date Columbia Crossing design options. Access plans should be designed to avoid and minimize any adverse impacts on East Hayden Island residents. The need for a dedicated



West Hayden Island access bridge should be investigated as to public cost/benefits and, if needed and determined to be feasible, integrated into planning for the Columbia Crossing project;

- i. The Plan District should incorporate and build on information from the Local Impacts report prepared by the Bureau of Planning and Sustainability. The plan should consider air quality impacts (dust and emissions), noise, light and traffic impacts; and
- j. The Plan District proposal should include a framework for consideration of mitigation actions associated with future development of less than 300 acres, developed in coordination with federal and state agencies.
- k. The proposal should include analysis of options for restoration and long-term care of the proposed natural areas, including models for financing both. This analysis includes but is not limited to, ownership of the natural area, remediation and mitigation opportunities, and the creation of an endowment for operations and maintenance of the land.

BE IT FURTHER RESOLVED, this resolution sets forth the City Council's preliminary intentions and interim directions to the Bureau of Planning and Sustainability, based on the information available at this time, and nothing in this resolution constitutes a final decision concerning any land use planning action with respect to West Hayden Island. The City Council intends that any land use planning actions for West Hayden Island will be adopted in the future as required by the statewide planning goals, state law, the City's comprehensive plan, and the City's zoning code and may include the adoption of an annexation ordinance, zoning designations and a Plan District.

Adopted by the Council: JUL 29 2010

Mayor Sam Adams  
Prepared by: Eric Engstrom  
Date Prepared: July 22, 2010

**LaVonne Griffin-Valade**

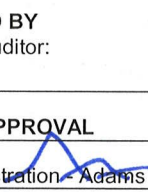
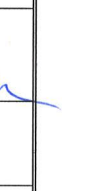

Auditor of the City of Portland

By



Deputy

Direct the Bureau of Planning and Sustainability to develop a legislative proposal for annexation of West Hayden Island to the City with the intent to protect at least 500 acres as open space, and identify no more than 300 acres for future marine terminal development. (Resolution)

<p><b>INTRODUCED BY</b> Commissioner/Auditor: <b>Adams</b></p>	<p>CLERK USE: DATE FILED <u>JUL 23 2010</u></p>
<p><b>COMMISSIONER APPROVAL</b></p> <p>Mayor—Finance and Administration - Adams </p> <p>Position 1/Utilities - Fritz</p> <p>Position 2/Works - Fish</p> <p>Position 3/Affairs - Saltzman</p> <p>Position 4/Safety - Leonard</p>	<p>LaVonne Griffin-Valade Auditor of the City of Portland</p> <p>By:  Deputy</p>
<p><b>BUREAU APPROVAL</b></p> <p>Bureau: Planning &amp; Sustainability Bureau Head: Susan Anderson </p> <p>Prepared by: Eric Engstrom Date Prepared: July 21, 2010</p>	<p><b>ACTION TAKEN:</b></p>
<p><b>Financial Impact Statement</b></p> <p>Completed <input type="checkbox"/> Amends Budget <input type="checkbox"/> Not Required <input checked="" type="checkbox"/></p>	
<p><b>Portland Policy Document</b> If "Yes" requires City Policy paragraph stated in document. Yes <input type="checkbox"/> No <input type="checkbox"/></p>	
<p><b>Council Meeting Date</b> July 29, 2010</p>	
<p><b>City Attorney Approval</b></p>	

<b>AGENDA</b>
<p><b>TIME CERTAIN</b> <input checked="" type="checkbox"/> <span style="float: right;">2 of 2</span> Start time: <u>6:00p.m.</u></p> <p><b>Total amount of time needed: 3 hrs</b> (for presentation, testimony and discussion)</p>
<p><b>CONSENT</b> <input type="checkbox"/></p>
<p><b>REGULAR</b> <input type="checkbox"/></p> <p><b>Total amount of time needed:</b> _____ (for presentation, testimony and discussion)</p>

FOUR-FIFTHS AGENDA	COMMISSIONERS VOTED AS FOLLOWS:	
	YEAS	NAYS
1. Fritz	1. Fritz <input checked="" type="checkbox"/>	
2. Fish	2. Fish <input checked="" type="checkbox"/>	
3. Saltzman	3. Saltzman <input checked="" type="checkbox"/>	
4. Leonard	4. Leonard <input type="checkbox"/>	
Adams	Adams <input checked="" type="checkbox"/>	



Bureau of Planning and Sustainability

Innovation. Collaboration. Practical Solutions.

## West Hayden Island Planning Project, Phase 2 Description of Studies (per City Council Resolution 36805)

### Consultant Studies:

**Concept Planning:** Worley Parsons developed a concept plan for West Hayden Island based upon the City Council resolution to protect at least 500 acres as open space and allow marine terminal development on up to 300 acres. This concept serves as a planning basis to draft zoning recommendations and an annexation agreement for PSC and council consideration. Key elements:

**Rail Drawings:** Several rail loop scenarios are explored to fit within the 300 acre footprint. Accommodating a rail loop in the industrial footprint is a key component of the concept planning process.

**Operational Efficiencies Study:** This report reviews innovations at Ports around the world, with an analysis of why these strategies may or may not work in Portland.

**Infrastructure Analysis:** This analysis looks at infrastructure improvements needed for terminal operations including extensions (water, sewer, roads) into the site. Cost estimates were also provided to bring base infrastructure to the terminal, including on site and off site expenses. Recreational amenities per the concept plan were also estimated.

**Transportation Analysis:** This analysis, done in cooperation with PBOT, modeled the Hayden Island street network using a high impact traffic generation scenario to determine how the roadways and intersections would function and identify mitigation measures. The analysis also considers a bridge from Marine Drive to WHI.

**Harbor Lands Inventory:** The study reviews the most recent Cargo Forecasts done for the Portland Harbor to determine the potential need for marine terminal land and considers the potential redevelopment potential of certain sites along the Portland Harbor for future Marine Terminal use. In addition, the study determines whether the Port of Vancouver may have excess capacity to absorb additional demand, and analyzes ways to measure industrial land efficiency along the harbor lands.

**Public Costs and Benefits Analysis:** The study considers the benefits and costs that may accrue over time if West Hayden Island is developed in accordance with the Concept Plan. This is compared with the benefits and costs of extending the current use of WHI over the same time frame as a mostly undeveloped island that houses a dredge deposit area, utility infrastructure, and remaining open space.

### Staff Work

**Hayden Island Natural Resource Inventory (NRI):** This work includes updating the inventory of Natural Resources for all of Hayden Island as well as the south bank of the Oregon Channel. This work provided natural resource background data for the concept planning and ESEE work.



City of Portland, Oregon | Bureau of Planning and Sustainability | [www.portlandonline.com/bps](http://www.portlandonline.com/bps)

1900 SW 4th Avenue, Suite 7100, Portland, OR 97201 | phone: 503-823-7700 | fax: 503-823-7800 | tty: 503-823-6868

*Printed on 100% post-consumer waste recycled paper.*

**Economic, Social, Environment and Energy (ESEE) Analysis:** This analysis provides initial research to determine the positive, negative, mixed and neutral consequences of allowing, limiting, or prohibiting a mix of uses on WHI including industrial, recreation, and open space.

**Recreation Memo:** This memo draws on previous recreational work done for the Hayden Island plan and ENTRIX in phase 1 of this project. The memo identifies local recreational needs, opportunities to meet those needs on West Hayden Island, or on property just east of the railroad and ways to reduce the negative impacts between recreation and natural resources and recreation and marine terminals.

**Regulatory Requirements Memo:** This report reviews the Endangered Species Act, Clean Water Act, and Environmental Protection Agency's Strategic Plan for the Columbia River, the State's Estuary Partnership Management Plan and Federal Emergency Management Agency requirements and how they may or may not be met.

**Analysis of Vancouver Port Coordination:** This analysis looks at advantages and opportunities for increased coordination between the Port of Portland and Port of Vancouver as well as some research on interstate Port Authority logistics.

**Land Management Options:** This analysis discusses options for how natural resource lands could be managed over the long term, including proposals for long term ownership, and strategies to pay for land mgmt activities.





## West Hayden Island Final Base Concept Plan Key Elements

### Terminal and Operational Layout

- Bulk Products and Autos
- Location of Terminal represents the easterly most layout presented for preservation of habitat.
- Rail access from the mainline from both directions
- On site Manufacturing

### Transportation

- Access from Hayden Island Drive
- Single gate house for terminal security entry, outside rail loop
- Optional Bridge shown with connection to Marine Drive
- Potential for small road spur along east west utility corridor to access one non-motorized boat launch

### Infrastructure

- Offsite utilities available for potential terminal development.
- Sanitary Sewer will need to be upgraded.
- Per PBOT analysis existing streets on East Hayden Island stay within the regulations for the link level of service; but some intersections may need upgrades.
- Hayden Island Drive would need general system upgrades ( order of upgrades triggered by thresholds of vehicle trips and development)
  - Enhanced maintenance of roadbed (from railroad to Main)
  - Buffer/edge treatments (from railroad to Main)
  - Rebuild road way to meet city industrial design standards
  - Construct Jantzen Drive Extension

### Recreation

- Limited recreational opportunities on west side of island with no trail access to west end of island
- ADA access trail along the north beach, adjacent to the terminal, extends nearly to Benson Pond
- Small Parking area and comfort station at north trail head near BES facility
- Non-motorized Boating options along slough
- Viewpoints
- Additional trails along east west power corridor up to Benson Pond and connecting to ADA trail and beach access

### Habitat Restoration and Enhancement

- Habitats on island are currently highly functioning
- Increasing shallow water habitat by creating back water channels and expanding existing wetlands
- Improving forest habitats near edges; controlling invasive species
- Enhancing sparsely vegetated (grass and shrubland); removing non-native species



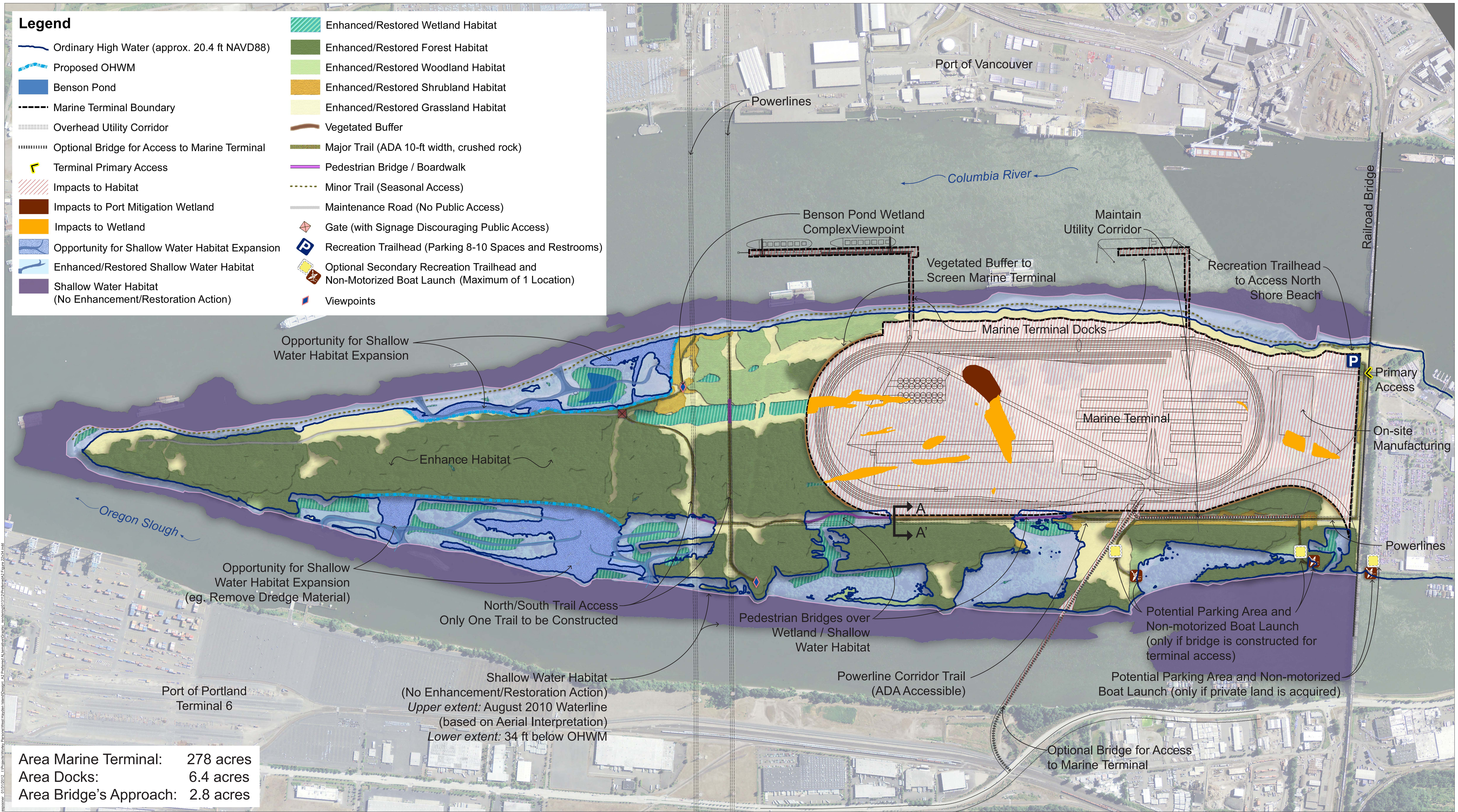
## WHI Cost Summary (Based on Worley Parsons Report) BPS, 4/19/12

Improvement	Private Investment		Public Investment			TOTAL
	Private (Terminal Developer)	Private (Railroads, NGO's)	Port	Public (Local Gov.)	Public (State or Federal)	
Site Clearing and initial preparation						\$566,000
Fill, Excavation & Erosion Control						\$33,600,000
Rail – Mainline to loop						\$910,800
Rail – Interior Loop						\$9,702,000
Street improvements to directly access property						\$450,000
<b>Street improvements off-site w/ no bridge</b>						\$20,500,000
Street/Road access within site						\$3,630,000
Overpass over rail						\$10,000,000
<b>Optional Bridge across Slough</b>						\$100,000,000
Terminal Development – bldgs, docks, gatehouse, etc						\$90,250,000
Water System on-site						\$3,136,000
Water System off –site						\$100,000
Sewer System on-site						\$1,431,000
<b>Sewer System off-site*</b>						\$5,900,000
Stormwater						\$2,558,000
Power / Electrical						\$1,910,000
Recreation – Trails, lookouts, benches, amenities						\$988,000
Recreation – Access, comfort station & parking						\$604,000
Buffer Landscaping						\$320,000
Environmental Mitigation (State/Federal)						\$8,500,000
Environmental Mitigation (Local)						\$16,000,000
Follow-up planning for the 500 acres						\$150,000
Community Benefit Investments						\$2,500,000
Full enviornmental enhance (beyond mitigation)						\$20,000,000
<b>SUBTOTAL</b>						<b>\$234m(no bridge )</b>
<i>Design, eng., const. management (8%)</i>						\$19m
<i>Contingency (30%)</i>						\$70m
<b>TOTAL</b>	<b>\$150m+</b>	<b>\$5m - \$10m</b>	<b>\$100m +</b>	<b>\$10m - \$20m</b>	<b>\$30m - \$80m</b>	<b>\$323m</b>

\*If Port handles process water on site through permitting process with DEQ then the only off site need would be extending 4" main on Hayden Island drive into site. This cost would be approximately \$240,000

**Legend**

- Ordinary High Water (approx. 20.4 ft NAVD88)
- Proposed OHWM
- Benson Pond
- Marine Terminal Boundary
- Overhead Utility Corridor
- Optional Bridge for Access to Marine Terminal
- Terminal Primary Access
- Impacts to Habitat
- Impacts to Port Mitigation Wetland
- Impacts to Wetland
- Opportunity for Shallow Water Habitat Expansion
- Enhanced/Restored Shallow Water Habitat
- Shallow Water Habitat (No Enhancement/Restoration Action)
- Enhanced/Restored Wetland Habitat
- Enhanced/Restored Forest Habitat
- Enhanced/Restored Woodland Habitat
- Enhanced/Restored Shrubland Habitat
- Enhanced/Restored Grassland Habitat
- Vegetated Buffer
- Major Trail (ADA 10-ft width, crushed rock)
- Pedestrian Bridge / Boardwalk
- Minor Trail (Seasonal Access)
- Maintenance Road (No Public Access)
- Gate (with Signage Discouraging Public Access)
- Recreation Trailhead (Parking 8-10 Spaces and Restrooms)
- Optional Secondary Recreation Trailhead and Non-Motorized Boat Launch (Maximum of 1 Location)
- Viewpoints



Area Marine Terminal: 278 acres  
 Area Docks: 6.4 acres  
 Area Bridge's Approach: 2.8 acres

Source: Habitat and wetland locations provided by the City of Portland's Natural Resource Inventory (2011)

Final Base Concept Plan

