

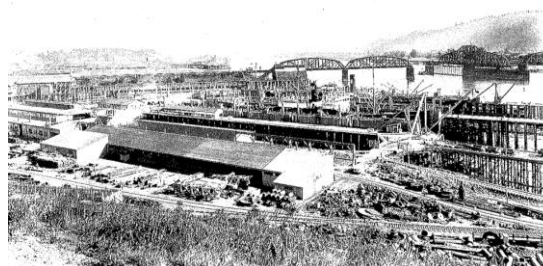
Willamette Cove

Trail Alignment Refinement Report

January 12, 2010 revised 1/28

The Willamette Cove property has been owned and managed by Metro since 1996, when Metro purchased it using funds from the 1995 Metro Open Spaces Bond Measure 26-26. Several years after Metro's purchase of the property, Oregon Department of Environmental Quality (DEQ) and the U.S. Environmental Protection Agency (EPA) included the property in the Portland Harbor Superfund Site area. Presently, Metro and the Port of Portland (Port) are working cooperatively with DEQ to clean-up the contamination on the site.

A multi-use trail alignment through the natural area is shown on the City's comprehensive plan and is part of the regional trail plan adopted by Metro. The proposed trail is part of the longer Willamette River Greenway, which was adopted as Goal 15 in Oregon's Statewide Planning Goals & Guidelines in 1973. As a step towards trail refinement, Portland Parks & Recreation contracted with Alta Planning + Design to refine the alignment. Once the contamination is cleaned-up, there will be future considerations of who will develop and manage the trail.

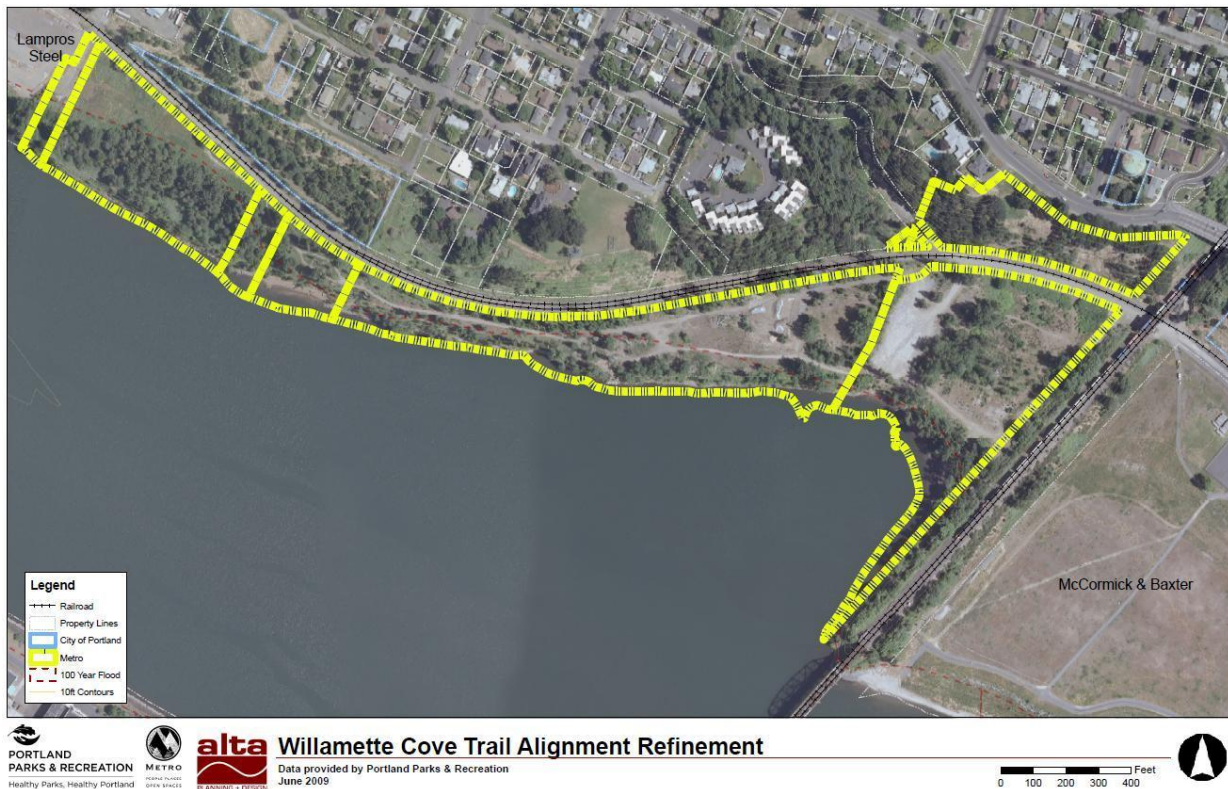


Historical photo of industry in Willamette Cove

Alta is specifically tasked with: assessing site opportunities and constraints for trail construction, refining the trail alignment (including a connection to the Peninsula Crossing Trail) and defining basic trail design parameters.

Opportunities and Constraints

The property consists of 27 acres bound by the Willamette River to the southwest, Lampros Steel to the northwest, Union Pacific Rail (UP) on the north and Burlington Northern Santa Fe Rail (BNSF) to the east. Formerly an industrial site, buildings have been removed, the land has begun to re-vegetate, and the site now presents a significant open space opportunity along the riverfront though constrained by contamination hot spots.



Project study area

Plans and Zoning

All parcels are currently zoned for Open Space (OS) and are covered by Greenway overlay zones (gq). The Open Space zone is intended to preserve and enhance public and private open, natural, and improved park and recreation areas identified in the Comprehensive Plan. According to the City of Portland, the River General (g) overlay allows for uses and development which are consistent with the base zoning, which allow for public use and enjoyment of the waterfront, and which enhance the river's natural and scenic qualities. The River Water Quality (q) overlay zone is designated to protect the functional values of water quality resources by limiting or mitigating the impact of development in the setback.

Willamette Cove is listed as an improvement project (Project # RS7) in the draft North Reach River Plan (Dec. 2009) and is under consideration by the City as a potential mitigation site. The draft North Reach River Plan shows a trail connecting the BES Water Lab to Willamette Cove, and allows ecologically sensitive trails to the river.

Portland Parks is slated to receive federal flexible funds to complete a master plan for the Willamette Greenway Trail (including Willamette Cove) from the Steel Bridge to North Columbia Blvd. Although there is a possibility that it will be moved up, the plan is currently scheduled to be completed by 2012.

Natural Resources

Pacific Habitat Services conducted a Natural Resource Assessment of the site in 1999 (see Appendix A). The document outlines habitat preservation efforts including protection of mature native trees and control of invasive species. Presently, Metro and the City of Portland are developing a restoration plan for the site based on current soil and vegetation assessments. Restoration of the Oregon white oak and madrone plant community in the uplands is a key objective of the joint agency plan. The restoration work will be conducted in concert with the remediation and mitigation measures that are being planned for the property. The attached map highlights areas where vegetated communities currently exist. Native species found on site include: Oregon white oak (*Quercus garryana*) madrone (*Arbutus menziesii*), bigleaf maple (*Acer macrophyllum*) and black cottonwood (*Populus trichocarpa*). Efforts should be made to route the trail alignment without disturbing habitat areas.

Topography

The majority of the Willamette Cove site is a relatively flat plateau. The first exception to this occurs at the river's edge. Here, a vertical difference of approximately 10 feet occurs. This natural elevation change limits access to the water in places. Beaches occur as shown on the attached map in areas with gentle slopes and are natural draws for the public. Despite available views and the scenic quality of the Cove's beaches, issues of contamination risk make access a complicated issue. Near the Union Pacific Rail right-of-way is a berm which also limits trail placement. The next topographic challenge is the BNSF berm between the Willamette Cove site and the McCormick & Baxter site. While the BNSF berm limits locations where a trail may pass through, it also presents an opportunity for a grade separated crossing of the Union Pacific line. Lastly, the Peninsula Crossing Trail exists approximately 112 feet above the point where the trail is assumed to emerge from the Willamette Cove property. 2240 linear feet of trail are needed to meet this grade change while staying within ADA guidelines.

Contamination

The Willamette Cove property and adjacent river were fully occupied by industry for several decades which resulted in contamination issues that are being investigated and cleaned up by Metro and the Port of Portland. An investigation and risk assessment of the upland areas is being overseen by the DEQ. The investigation and clean up of the Willamette River adjacent to the Willamette Cove property will be managed by the EPA. The DEQ has determined that an area of unacceptable risk to site visitors exists at the western portion of the property due to Polycyclic Aromatic Hydrocarbons in these soils. (Additional information regarding the investigation and cleanup can be found at the DEQ Environmental Site Cleanup Information (ECI) website as site #2066.) The Willamette Cove shoreline is also being investigated. In Willamette Cove itself, near the Burlington Northern Railroad abutment, Cove sediments are elevated in Poly Chlorinated Biphenols (PCBs) at hot spot concentrations. Early cleanup of the river sediments adjacent to Willamette Cove is planned, but work may be years away. DEQ recommends that site investigation, risk assessment, and any cleanup actions deemed necessary be completed before public access to the Willamette Cove property is encouraged. This would also protect workers maintaining the trail from being subject to contaminate exposure.

Connections

A multi-use trail through the site will be part of the longer Willamette River Greenway. Access to a future trail is anticipated from North Edgewater Street and will require a railroad crossing. The street will probably need to be rebuilt for safe use as an interim trail connection. A connection to the Peninsula Crossing Trail is also highly desired. Access from area residents may occur from N. Richmond Avenue. A connection across the Willamette River to Northwest Portland via the BNSF Bridge could also be pursued in the future.

(See attached Opportunities & Constraints maps.)

Trail Design Recommendations

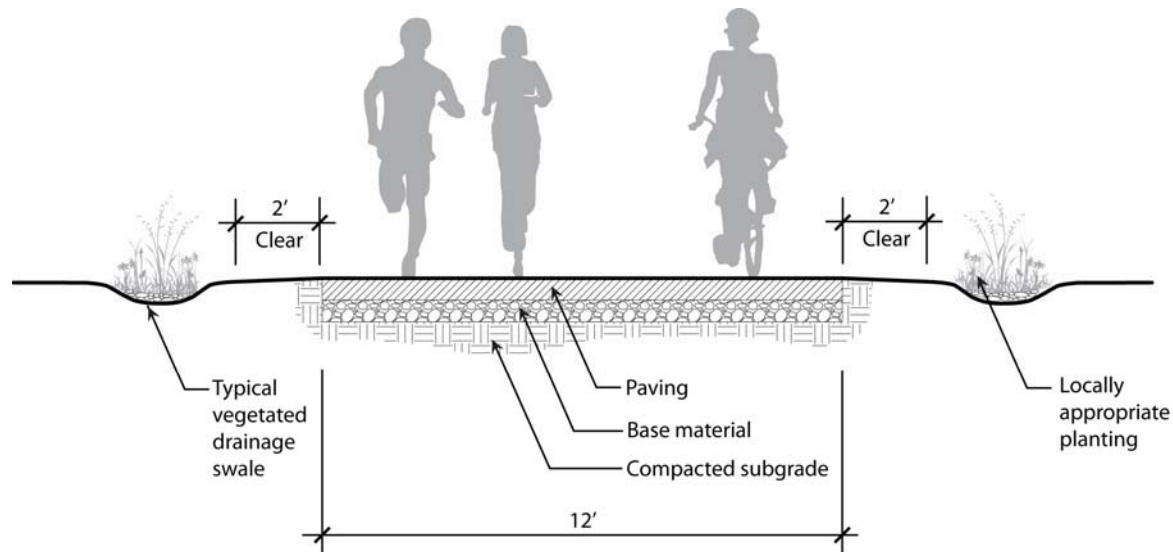
It is anticipated that this segment of trail be used by a wide variety of user types including: walkers, joggers, cyclists, skaters and those with mobility impairments. The trail is part of the regional system and will be built to the walking and biking (Trail Type L) standards in the PP&R Trail Design Guidelines. Comparable trails in other parts of the city have seen a high volume of bicycle use and a similar amount is expected here. The City of Portland Bureau of Transportation conducts annual bike counts based on manual peak-hour counts or 24-hr hose counts. These counts reveal that daily bicycle trips on the Springwater on the Willamette ranged from 2500 in 2007 to nearly 2800 in 2009. At SE Clay & Water, a street nearby the Eastbank Esplanade, 655 daily bicycle trips were counted in 2009. N Willamette Blvd is near the future trail in North Portland and it posted counts of 610 and 765 in 2008 and 2009 respectively. Given the attractiveness and directness of a river level trail, proximity to population centers, employment centers and nearby streets, one could make the projection that this section of the North Portland Greenway could have over 2000 daily bicycle trips per day similar to those documented along the river in Southeast Portland

Multi-Use Trails

The main trail through the Willamette Cove site is recommended to be twelve feet in width with two feet of horizontal clearance on each side. Trail width may be reduced to eight feet for short distances where obstacles occur. Eight feet minimum vertical clearance should be maintained, although ten feet is preferred. This area should be free from tree limbs and any other obstructions that may interfere with pathway use. A hard surface material should be used so that the trail acts as a barrier or cap to any areas of contaminated soil. In areas where risk is not significant enough to warrant a cap, permeable asphalt or permeable concrete should be considered.

A 2% cross slope away from the river will resolve most drainage issues on a multi use path. The shoulder ballast can then be used to treat the water. Along cut sections where uphill water must be collected, it should be directed to a catch basin, and then diverted under the trail in a drainage pipe of suitable dimensions. No sharp curves are anticipated along the trail. Culverts should be employed in areas with gullies or drainage concerns to avoid excessive water on the trail or associated erosion issues.

Steep grades of 1:20 (5%) or more should be avoided on any multi-use trail. The federal Americans with Disabilities Act Accessibility Guidelines (ADAAG) require that any part of an accessible route with a slope greater than 5% shall be considered a ramp. ADAAG ramp standards require a level landing 5 foot in length for every 2.5 feet in rise and 30 feet in run.



A typical multi-use trail cross section with 12' of paved path and 2' shoulders.

Recommended Alignment

Several possible trail alignments were considered for the Willamette Cove site. Each option was evaluated against several criteria including:

- Restoration potential and protection of natural resources
- Risks to users from contamination
- Challenges of connections to other regional trails
- Operations & maintenance – potential trail flooding, exposure to chemical contaminants
- Interaction with railroad – yes/no to easements
- Quality of trail user experience
- Neighborhood Concerns
- Cost Feasibility



With the industry of Lampros Steel in the foreground, the open meadow provides panoramic views of the St Johns Bridge.

Starting at the northwestern most edge of the project study area, the trail connection point is the Richmond Avenue right of way between the natural area site and the Lampros Steel property. This alignment is adjacent but not in railroad right of way. From here, the recommended alignment travels adjacent to the railroad tracks. This area has panoramic views of the St. Johns Bridge and Forest Park.

The alignment allows for greater setback as desired by the Bureau of Environmental Services (BES), Metro and requisite permitting entities to enable restoration opportunities. BES and Metro's preference is to locate the trail adjacent to the railroad right of way in order to minimize disturbance to contaminated areas and maximize restoration opportunities. To maximize restoration opportunities and minimizing impacts to natural resources, the alignment farther from the river was selected for this section.



A mature stand of madrone trees span the area adjacent to the railroad in the central portion of the site.



The approx. 4' tall berm in the foreground complicates implementation of a trail near the railroad tracks.

Moving east to the narrowest piece of the Cove property, a 200' river setback is not possible. Also, closer to the rail corridor there is a mature stand of madrone. A berm closely follows the rail corridor and complicates the implementation of a trail. An existing disturbed corridor already exists between the water's edge and established vegetation, and is therefore recommended as a better route for the trail. In addition to restoration and setback issues, one also has to be cognizant of the cumbersome process of working with the

railroad. Adding another variable to their already complex operation is not the first thing on the railroads list of desires. It can sometimes be a long and drawn out process to convince them that both rail and bicycle/pedestrian trails can safely co-exist.

Moving farther east, the property begins to widen allowing for more trail alignment options. An alignment closer to the river would provide a superior trail user experience from an aesthetic point of



Looking south through the mid section of the site one can see a section of open land with recently remediated soils. The existing disturbed corridor runs adjacent to the established vegetation on the left side of the photo.

view. Opportunities for upland and shoreline restoration, and concerns for contamination risk, make an alignment farther from the river preferred. A connection to North Edgewater Street is recommended due to existing usage patterns and infrastructure.



The mid section of the site contains a disturbed corridor presenting a significant opportunity for a trail.

Access to the trail from North Edgewater Street should include a paved trail connection. This would also involve an at-grade trail crossing where Edgewater Street currently crosses the Union Pacific line. Existing passive warning devices such as railroad crossing signs (MUTCD R 15-1) alert trail users to proceed with caution. An expanded area of paving at the railroad/roadway intersection would allow for additional pavement markings. The number of people using the crossing is not anticipated to be great

enough to require active warning devices such as bells, flashing lights, automatic gates, or other devices triggered by the presence of an approaching train. However, an engineering study considering key factors such as volume of trail users, train frequency and speed, sight distance and other train operating characteristics may be desirable to determine the best combination of warning devices.

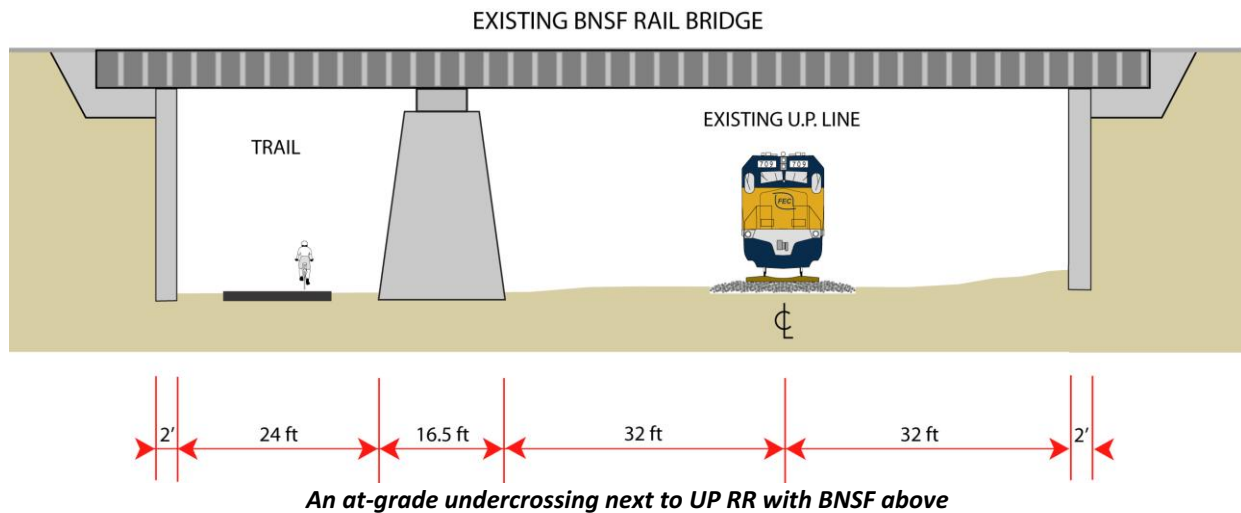
From here, the recommended alignment follows the access road parallel to the Union Pacific line to the opening in the BNSF railroad berm.



The existing rail crossing at North Edgewater includes concrete paving and railroad crossing warning signs.

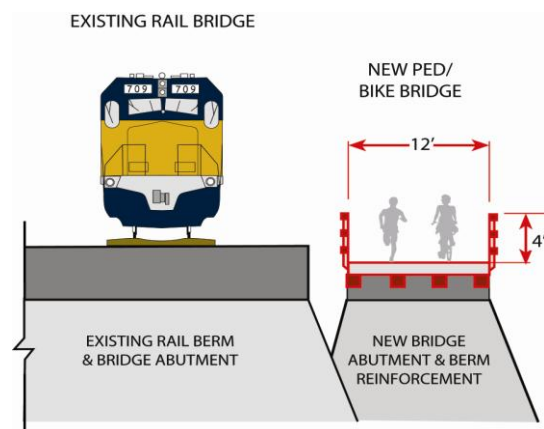
The BNSF rail line passes between the Willamette Cove site and the McCormick and Baxter superfund site above grade on a constructed berm and bridge. The Union Pacific line passes beneath it following

the northern edge of the project site. The recommended trail alignment will cross beneath the Burlington Northern line and next to the Union Pacific line as shown in the section below.



Investigation of Multnomah County assessment maps show that the Union Pacific right of way is 60' wide at this point. This allows for safe passage of the trail outside of the Union Pacific right of way in the 24' clear space between the southwest bridge abutment and intermediate concrete pier. Further investigation of right of way as it relates to N Edgewater Street, UP Railroad, and BNSF Railroad should take place before final construction drawings are completed.

Once the alignment crosses underneath the BNSF line it will need to cross the UP line to make the connection to the Peninsula Crossing Trail. The existing BNSF berm between the Willamette Cove site and the McCormick & Baxter property presents an opportunity for a grade-separated crossing. The alignment will head southwest away from the Peninsula Crossing trail until it makes a switchback up the berm of the BNSF Willamette Bridge approach. As the alignment heads northeast again, a new bicycle/pedestrian bridge is proposed to be built alongside the BNSF Bridge over the UP line. Additional fill material should be added to the existing berm to accommodate the trail ascent. Approximately 26 feet of elevation change needs to be overcome for an overpass above the Union Pacific line. Following ADA guidelines, this will require 520 linear feet of sloped trail and depending on design, possible retaining walls. This scenario is much more likely to be approved by the rail entities than an at-grade crossing of the Union Pacific tracks.



Once the Union Pacific line has been crossed, an above grade crossing of the rail maintenance road (parallel to the BNSF line) is recommended. A new 45' long bicycle/pedestrian bridge is proposed to span the maintenance road.



Beneath Willamette Blvd the trail will need to avoid existing bridge support structure as it climbs to connect to the Peninsula Crossing Trail.

Following the Willamette Blvd bridge underpass, the recommended alignment continues to climb in elevation until it reaches the Peninsula Crossing Trail. Approximately 86' of elevation change will require over 1700 linear feet of trail to make the connection following ADA guidelines.

A roadway undercrossing is anticipated at Willamette Blvd. The trail connection will need to circumnavigate existing steel structure supporting the bridge roadway while maintaining a minimum of 8' vertical clearance (10' preferred). The trail will meet the embankment grade above the access road and rise to connect to the Peninsula Crossing Trail. The elevated trail along the embankment will require grading and retaining walls.



The trail will need over 1700 linear feet to connect to the Peninsula Crossing Trail under ADA guidelines.

After the Peninsula Crossing Trail connection, the planned Willamette Greenway Trail is shown on the comprehensive plan map to continue through McCormick & Baxter site to the employment centers of the University of Portland and Swan Island before connecting to downtown and the rest of the region.



The McCormick & Baxter superfund site stands in the foreground as one looks southeast from the side of the BNSF berm where the alignment would begin climbing to cross the Union Pacific Railroad and connect to the Peninsula Crossing trail.

The Willamette Cove Trail West—Alignment shows the option of two soft surface trails that would allow people access to the beach. At this time, the soft surface trails cannot be considered due to the contamination issues mentioned above. Instead small platforms adjacent to the trail would be constructed to allow users an opportunity to step off the main trail to enjoy the views and to watch birds and other wildlife. The viability of constructing soft surface trails to the river will be evaluated once the site contamination issues are sufficiently addressed.

Conclusions

There are a number of unknowns that affect the construction of the Willamette Cove Trail. These include:

- The clean up completion schedule is yet to be determined
- The timing and completion of site restoration
- Construction costs for rebuilding North Edgewater Street
- Construction costs for connecting the Peninsula Crossing Trail adjacent to the railroad bridge, including agreement with the railroad.

This report serves as the guiding document for future trail refinement within the shown corridor. The alignment from this plan will be used in the development of the master plan for the North Willamette Greenway Trail which is scheduled to be complete by 2012.

Finally, there are several tasks needing completion before the trail can move forward. Task 1 involves completing the cleanup of the upland portions of the site. In Task 2 any necessary site restoration and/or mitigation will take place. Finally, Task 3 includes refinement and implementation of the Willamette Cove Master Plan and regional trail construction.

Costs

Cost Estimate Note:

The cost estimate provided for this report should be viewed as a preliminary opinion. It is based on limited knowledge of on-site conditions, inter-agency coordination requirements and costs, specific permitting requirements, market conditions for materials and supplies. It is given without the full knowledge of changes that could be recommended through construction design and engineering having been completed.

Portland Parks & Recreation Estimate for Willamette Cove Trail Construction Costs:

ESTIMATE SUMMARY		WILLAMETTE COVE TRAIL CONSTRUCTION	
TOTAL PROJECT ESTIMATE	Estimated in 2009 Dollars	Estimated in 2011 Dollars	% of Project Cost
PROBABLE TOTAL CONTRACT COST	\$551,584	\$578,668	66.1%
Probable Mandatory Program Obligations	\$14,249	\$14,949	1.7%
Probable External Soft Costs	\$105,337	\$110,509	12.6%
Probable Internal Soft Costs	\$163,934	\$171,984	19.6%
TOTAL PROBABLE PROJECT COST	\$835,104	\$876,110	
ESTIMATED ANNUAL O&M AT 3% OF TOTAL CONTRACT		\$17,000	

Notes:

This is a low level confidence estimate based on preliminary planning information.

Costs are for construction of multi-use trail only.

Property acquisition or easement fees are not included.

Fees for permitting, design and cleanup activities are not included.

Costs exclude geotechnical investigation and slope stabilization.

Costs are expressed in 2009 dollars. An inflation factor will need to be applied according to year of construction.

Costs do not include any additional planning, connection to the Peninsula Crossing Trail, or upgrading N.

Edgewater.

Cost Estimate		Peninsula Crossing at NP GW	
Date		14-Apr-10	Resources Consulted:
Prepared By		Kip Wadden	Alta Estimate/Metro design staff
Review By:		Wojtanik, R; Patterson, J	Build a connecting trail from Willamette Cove to Peninsula Crossing trail
			This is preliminary estimate for trail construction.

Summary					
Description	Unit	Quantity	Unit Price	Estimated Cost	
Maximum Estimated Construction Contract				5,270,845	

Itemized	Description	Unit	Quantity	Unit Price	Estimated Cost
	Paved trail - 12 feet paved width with 2 foot gravel shoulders	3,500 LF		\$ 70	245,000
	Grading	9,292 CY		\$ 15	139,377
	Pedestrian Bridge 145 X 12	1 LS			870,000
	Erosion control	1 LS			20,000
	30' Prefab bridge over access road	1 LS			300,000
	4 foot retaining wall	3,500 LF		225	787,500
	Bench, Bollards & Way finding	Varies	LS		35,000
	Mobilization & Profit (14%)				335,562
	Construction Contract Subtotal				2,732,439
	Project Costs Land Use, Environmental				897,750
	Railroad fess				50,000
	Construction Contingency 50%				1,366,219
	Project contingency & overhead 25%				224,437
	Conceptual Project Estimate				5,270,845

SAUVIE ISLAND

KELLEY POINT
PARK

WILLAMETTE RIVER

COLUMBIA RIVER

BYBEE LAKE

SMITH LAKE

Willamete Cove

npGREENWAY Vision

npGREENWAY envisions a trail system providing access to and along the Willamette River enveloping the north riverfront from the Steel Bridge in downtown Portland to Kelley Point Park on the Columbia River. Our goal is to link north Portland neighborhoods with the Willamette river for recreation and access to jobs. This expansion of the Willamette Greenway will include a network of trails used for activities such as walking, running, cycling, in-line skating, skateboarding, fishing, boating and wildlife viewing. The North Portland Greenway Trail will connect with the existing Willamette River trail system serving residents and visitors throughout the region.

npGREENWAY will work collaboratively with community stakeholders to realize this goal.

Updated April 2009

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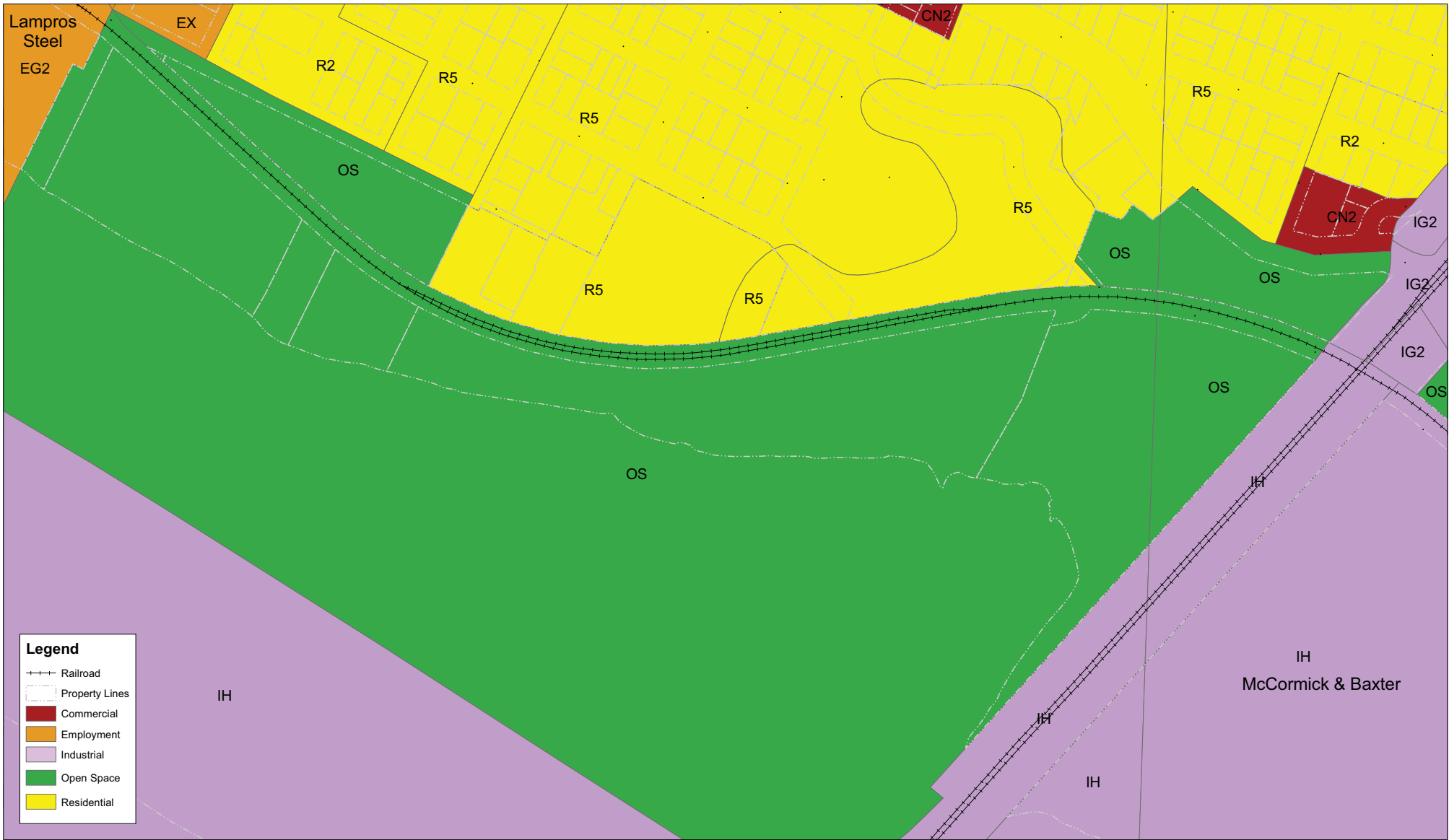
DOWNTOWN
PORTLAND

- EXISTING TRAILS
- FUNDED TRAIL
- PROPOSED ALIGNMENT
BIKE / WALK
- EXISTING SIDEWALK
- MAX STATION
- VIEW POINT
- PARKING
- BIKE ROUTES
- 35 GREELEY
- 44 MOCKS CREST
- 72 KILLINGSWORTH/82ND
- 75 39TH AVE/LOMBARD
- 85 SWAN ISLAND

APPROXIMATELY 1 MILE

Cathedral Park • St. Johns • University Park • Willamette Cove • Portsmouth • North I
• Arbor Lodge • Boise • Eliot • Boise • Eliot • Overlook • Kenton • East Bank Es
Swan Island • Lloyd • Adams • Lloyd • Center • Kelley Point Park • East Bank Esplanade
Rose Quarter • Lloyd • Boise • University of Portland • Audubon • McClellan & B
• East Bank Esplanade • Rose Quarter • North Beach • University of Portland • Waud

npGREENWAY





Willamette Cove TEES Site Assessment--Vegetation Communities



Willamette Cove Primary Contamination Concern Areas

Carcinogenic PAHs
(HartCrowser 2003, Fig. 7)

Heavy Metal Contamination, Remediated in 2008
(Ash Creek Associates, Removal Action Report 2008)

PCBs in sediments of cove
(Interview with PM Kenneth Theissen, 2009)

Legend

- Willamette Cove
- 5 ft. contours









Willamette Cove Trail East -- Alignment

Data provided by Portland Parks & Recreation and Environmental Services
January 12, 2010