



TECHNICAL MEMORANDUM

# **Recreation Participation, Development Potential, and Current Value On and Around West Hayden Island**

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FINAL

JUNE, 2010

PREPARED BY



**ENTRIX**

Down to Earth. Down to Business.™

ENTRIX, Inc.  
111 SW Columbia Street, Suite 950  
Portland, OR 97201  
T 503.233.3608 • F 503.575.3314



ENTRIX, Inc.  
111 SW Columbia St. #950  
Portland, OR 97201  
(503)233-3608 | Fax (503)575-3340  
www.entrix.com

## Final Technical Memorandum

**Date:** June 1, 2010

**To:** Technical Advisory Pool,  
Bureau of Planning and Sustainability, Port of Portland

**From:** Barbara Wyse and Lee Elder

**RE:** **Recreation Participation, Development Potential,  
and Current Value On and Around WHI**

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### 1.0 INTRODUCTION

The Columbia and Willamette Rivers provide opportunities for water-based recreation activities, including kayaking, sailing, motorized boating, fishing, and swimming. Several land-based recreation opportunities are also enhanced by the proximity of the waterways, including wildlife viewing, beach use, picnicking, walking, and hiking. Located in the Columbia River near the confluence of the Willamette River, West Hayden Island (WHI) has significant potential as a recreation area.

Currently, authorized recreation access on WHI itself is limited to the beaches. Land-based recreation activities in the vicinity are concentrated at other public recreation sites. However, there are water-based activities occurring in the Columbia River surrounding WHI, including sailing, motorized boating, kayaking, canoeing, and fishing. There are several marina and other water access points on East Hayden Island, from other islands in the Columbia River, as well as access points on the Willamette River in Portland.

The purpose of this technical memorandum is to inform the WHI planning process by providing information regarding the recreational context and recreational development opportunities on WHI. There are four objectives of this recreation analysis:

1. Describe current recreation on and around Hayden Island and water-based recreation in the greater Portland area,
2. Identify potential future recreation activities for WHI (noting that this is a very preliminary analysis as no recreation needs assessment has been conducted),
3. Identify general compatibility amongst recreation uses, between recreation and habitat preservation, and between recreation and marine terminal activities, and
4. Discuss the potential magnitude of economic value of current and potential future recreation activities on and around Hayden Island.

The document is organized around these four objectives.

## 2.0 CURRENT RECREATION ON AND AROUND HAYDEN ISLAND

Primary factors determining the location of recreation participation include the level of public access, and the quality and number of amenities at a site. Even for water-based sports, the water access or launch area plays a role in determining where recreation occurs. This analysis thus provides an overview of the public recreation access points and parks surrounding WHI as the starting point for an assessment of the recreation in the vicinity.

The section first describes the recreation areas on Hayden Island. The section then describes recreational opportunities available elsewhere in Portland, concentrating on the waterfront parks on the Willamette and Columbia Rivers with boat access (ramps or docks), waterfront parks with beach access, nearby regional trail systems, and wildlife areas. Current recreation activities, participation levels, and trends for recreation activities occurring on Hayden Island are then presented. Lastly, the section provides recent annual participation data and trends for recreation activities occurring in the counties near Hayden Island. This illustrates not only an increase in demand for recreation opportunities to satisfy an increasing population in the area, but a change in demand for the type of recreation activity, with a general shift to activities in natural areas, such as wildlife viewing and hiking.

### 2.1 Hayden Island Recreation Areas

Described below are the marinas on Hayden Island and the limited parks and recreation areas.

#### 2.1.1 *Hayden Island Marinas*

There are numerous marinas on Hayden Island, with more than 3,600 slips for both motorized boats and sailboats (see **Table 1**). Slip size ranges from 26 feet to 100 feet, and side tie areas are available that can accommodate vessels up to 200 feet. Services provided at the marinas include restaurants, boat fuel, recreational facilities, and live entertainment. During the summer there are twelve concerts in the Tomahawk Bay marina, and each attracts 150 to 200 people. Additionally, there are several membership yacht clubs and sailing clubs on Hayden Island that provide recreational facilities and access.

Demand for boat slips is high. Approximately 100 percent of the available boat slips on Hayden Island are leased between April to October, while approximately 25 to 30 percent are leased the remainder of the year.<sup>1</sup>

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<sup>1</sup> Villanueva, John, Columbia Crossing Marina. January 28, 2010. Personal Communication with Lee Elder, ENTRIX. Arnold, Susan, McCuddy's Marina. January 27, 2010. Personal Communication with ENTRIX staff.

**Table 1 Boat Slips at Hayden Island Marinas**

Marinas	Number of Slips
Columbia Crossings	1,700
Columbia River Yacht Club	190
McCuddy's Marina	200
Salpare Bay Marina	193
Sundance Marina	590
Portland Yacht Club	173
Tomahawk Island Marina	80
Waterside Marina	78
Other (including floating homes)	475
Total	3,679

Source: City of Portland, Bureau of Planning and Sustainability, September 2007, Summary of Information Hayden Island: Hayden Island Information Sheet.

Columbia Crossings slip number was supplemented with interview responses. Villanueva, John, Columbia Crossing Marina, Personal communication with Lee Elder, ENTRIX Inc., January 28, 2010.

### 2.1.2 Hayden Island Parks and Recreation Areas

Land based recreation on East Hayden Island consists of Lotus Isle Park, a tennis court, and a system of private walkways that are not part of a designated trail system.<sup>2</sup> Lotus Isle Park is a two-acre park located on the south bank of Hayden Island along the Columbia Slough between two houseboat communities. The park includes a play structure, a paved path, boat launch, and picnic tables.<sup>3</sup> Based on Portland Parks and Recreation targets of park acreage per capita, Hayden Island is currently underserved with parks.<sup>4</sup>

According to Portland Parks and Recreation, there may be an additional park developed on the north side of the island in conjunction with the proposed new I-5 bridge across the Columbia River.<sup>5</sup> This park would likely be approximately six to eight acres in size, but there are no definitive plans at this time.

## 2.2 Regional Parks and Recreation Areas

The City of Portland Parks and Recreation manages over 10,000 acres of parks and natural areas. Portland Parks and Recreation also provides multiple activities at community centers, swimming pools, community gardens, and other recreational facilities.<sup>6</sup> Metro Regional government (METRO) also manages developed parks and natural areas in the Portland Metropolitan area. This section focuses on selected waterfront parks that provide amenities that may be similar to those that could be provided on WHI. The discussion includes a description of the location, size, and amenities offered at these waterfront recreational areas. Additionally, the section describes regional trails that may provide connections to recreational areas on WHI, as well as wildlife areas and refuges in the vicinity. **Figure 1**

<sup>2</sup> City of Portland, Bureau of Planning and Sustainability, August 19, 2009, Hayden Island Plan: Hayden Island: Portland's Only Island Community.

<sup>3</sup> City of Portland, Portland Parks and Recreation, Website (<http://www.portlandonline.com/parks/finder/>) accessed January 29, 2010.

<sup>4</sup> Homer, Brett, Portland Parks and Recreation. March 17, 2010. Personal communication with ENTRIX staff.

<sup>5</sup> Ibid.

<sup>6</sup> City of Portland, Portland Parks and Recreation, Website (<http://www.portlandonline.com/parks/index.cfm?c=38281>) accessed February 23, 2010.

presents an overview of many of these recreation locations that have facilities and features that may draw from the same geographic area and population as would recreation areas on WHI.

### ***2.2.1 Waterfront Parks with Boat Ramps and/or Boat Docks***

The City of Portland manages two parks with developed boat ramps on the Willamette River: Cathedral Park and Willamette Park.<sup>7</sup> The 23.1-acre Cathedral Park is located at the base of the St. Johns Bridge on the north side of the Willamette River, and offers a boat ramp, boat dock, restrooms, off-leash dog area, paved paths, parking lot, and picnic tables. Willamette Park is 26.9 acres of land located between the Sellwood and Ross Island Bridges on the west bank of the Willamette River. In addition to the amenities offered at Cathedral Park, Willamette Park also offers a playground, a soccer field, and tennis courts.

The City's Kelley Point Park is a 97-acre park located at the confluence of the Willamette and Columbia River. Common activities that occur at the park include walking, biking, bird watching, and picnicking. Kelly Point Park also has a boat ramp, but it is rough and relatively undeveloped. This ramp provides access to non-motorized boating on the Columbia Slough and the Willamette River.

There are three additional Portland City parks with boat docks on the Willamette River. The two central city waterfront parks, the Eastbank Esplanade and Governor Tom McCall Waterfront Park, both offer boat docks, as does the Sellwood Riverfront Park. The Eastbank Esplanade is only 0.14 acres, but provides 1.5 miles of waterfront pathway (1,200 feet of floating walkway) between the Hawthorne Bridge and the Steel Bridge. Once completed, the Esplanade created a connection to Governor Tom McCall Waterfront Park along the west bank of the Willamette River. The Esplanade was designed to improve habitat areas for fish and wildlife, including shallow water habitat creation and native vegetation plantings to reduce runoff and erosion.<sup>8</sup> Waterfront Park is 36.7 acres, stretching from Riverplace at the south to the Steel Bridge on the north, and is the city's signature waterfront park. The paved esplanade along the river is heavily used by bicyclists, pedestrians, joggers, skateboarders, and others. Sellwood Riverfront Park located just north of the Sellwood Bridge on the east side of the Willamette River is 8.8 acres. In addition to a boat dock, this park offers restrooms, dog off-leash area, paved and unpaved paths, and picnic tables.

There are several other boat ramps located on the Willamette River in Portland. These include several boat launch areas and the City of Portland's Swan Island Boat Ramp, located on the northeast corner of the Swan Island Lagoon. The private boat launch areas include the docks at River Place Marina toward the south end of Waterfront Park, as well as The Portland Boathouse Dock operated by the Alder Creek Kayak and Canoe store on the east end of the Hawthorne Bridge. Alder Creek Kayak and Canoe also allows paddler access to the Columbia River from its retail location on East Hayden Island.

Metro offers two boat ramps on the Columbia River, Chinook Landing Marine Park and M. James Gleason Memorial Boat Ramp.<sup>9</sup> Chinook Landing Marine Park, a 67-acre park on the Columbia River near Blue Lake Regional Park just east of Government Island, is the largest public boating facility in Oregon, and the park offers picnic and scenic/wildlife viewing areas, wetland and wildlife habitat,

<sup>7</sup> City of Portland, Portland Parks and Recreation, Website (<http://www.portlandonline.com/parks/index.cfm?c=38281>) accessed February 23, 2010.

<sup>8</sup> City of Portland, Portland Parks and Recreation, Eastbank Esplanade, Website (<http://www.portlandonline.com/parks/finder/index.cfm?PropertyID=105&action=ViewPark>) accessed May 27, 2010.

<sup>9</sup> Metro Regional Government, Places and Activities, "Boating Facilities", accessed online at: <http://www.oregonmetro.gov/index.cfm/go/by.web/id=24595>

restrooms, and a river patrol office. The M. James Gleason Memorial Boat Ramp also provides boat access to the Columbia River, located at the intersection of Northeast 43<sup>rd</sup> and Marine Drive. In addition to a boat ramp, this park offers boarding docks, restrooms, and a river patrol office.

The City of Vancouver and Clark County consolidated their respective parks in 1997. Together these entities manage a number of boat launch facilities in Clark County.<sup>10</sup> These facilities include Battle Ground Lake, Cedar Creek, Haapa Boat Launch, Lacamas Lake Boat Launch, and Marine Park. Of these boat launches, Marine Park is closest to Hayden Island and is located on the north shore of the Columbia River. In addition to boat ramps, this 26-acre park offers playgrounds, access to the Waterfront Renaissance Trail, picnic facilities, and a baseball field.<sup>11</sup>

Other boat ramps located in close proximity to Hayden Island are in the town of Camas. The Port of Camas-Washougal operates a four-lane boat launch adjacent to the Parkersville Historic Park. The area hosts summer concerts and there is also a floating restaurant on site. Additionally there are over 100 parking spaces and overnight parking is allowed.<sup>12</sup>

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<sup>10</sup> City of Vancouver, Parks and Recreation, Boating in Vancouver/Clark County, Website (<http://www.cityofvancouver.us/parks-recreation/sports/aquatics/boating.htm>) accessed May 26, 2010.

<sup>11</sup> City of Vancouver, Parks and Recreation, Marine Park, Website ([http://www.cityofvancouver.us/parks-recreation/parks\\_trails/parks/central\\_vancouver/marine.htm](http://www.cityofvancouver.us/parks-recreation/parks_trails/parks/central_vancouver/marine.htm)) accessed May 26, 2010.

<sup>12</sup> Lower Columbia River Estuary River Trail, Website ([http://www.columbiawatertrail.org/access/port\\_camas\\_washougal\\_boat\\_ramp\\_and\\_marina](http://www.columbiawatertrail.org/access/port_camas_washougal_boat_ramp_and_marina)) accessed May 26, 2010.



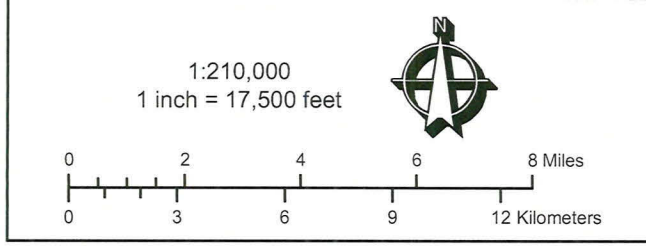


Figure 1  
Parks and Boat Ramps  
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West Hayden Island  
Recreation Foundation Study

	WA	
	ID	
	OR	www.entrix.com
	CA NV	DRAFT May 2010 Map Projection: Mercator WGS84





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## ***2.2.2 Columbia River Waterfront Parks with Beach Access***

Within close proximity of Hayden Island there are multiple beaches along the Columbia River, its tributaries and at various regional lakes. Sauvie Island, located downstream of Hayden Island in the Columbia River, has a number of public beaches including Walton Beach, North Unit Beach, and the clothing-optional Collins Beach on the island's east coast.<sup>13</sup> There is also beach access located along the Columbia River at the Gleason Memorial Boat Ramp as well as at Kelley Point Park.<sup>14</sup>

There are a number of swimming areas located along the Sandy River, which flows into the Columbia River upstream of Hayden Island. Beach access is available at the Lewis and Clark State Recreation Site, located approximately two miles upstream of the Columbia River-Sandy River confluence. Additionally, the City of Troutdale manages the 6-acre Glen Otto Community Park.<sup>15</sup> This park is located along the western shore of the Sandy River in close proximity to the Lewis and Clark State Recreation Site. Oxbow Regional Park is located along the Sandy River approximately 10 miles upstream of the Columbia and Sandy Rivers. Another regional swimming area that attracts Portlanders is Rooster Rock, which is approximately 20 miles east of Portland.

Additionally, the City of Vancouver and Clark County manage a number of recreation sites that offer beach access.<sup>16</sup> These parks include Vancouver Lake Park, Captain William Clark Park, Frenchman's Bar Regional Park, Moulton Falls Park, Wintler Park, and Battleground Lake State Park. Of these parks, Vancouver Lake Park, Frenchman's Bar Regional Park, and Wintler Park are in the closest proximity of Hayden Island.

Vancouver Lake Regional Park is a 234-acre park located along the western shore of Vancouver Lake. Frenchman's Bar Regional Park is a 120-acre park located west of Vancouver Lake Park along the Columbia River shoreline. Wintler Park is also located on the Columbia River and 12.5 acres in size. In addition to beach access, this park offers restrooms, trail access, and picnic tables.<sup>17</sup>

## ***2.2.3 Regional Trail Systems***

There are several regional trail systems that could potentially be connected to recreation areas on Hayden Island. These include the 40-mile loop and also the Columbia River Water Trail. The 40-mile loop is a paved trailway that connects several large natural areas and parks in Portland, including the Eastside Esplanade, Springwater Trail, Powell Butte Park, Tryon Creek State Park, and Kelley Point Park. The 40-mile loop connects Kelley Point Park to the area of Marine Drive just south of Hayden Island, providing access to Smith and Bybee Lakes.

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<sup>13</sup> Travel Oregon, Sauvie Island, Website (<http://www.traveloregon.com/Explore-Oregon/Portland-Metro/Attractions/Outdoors-and-Nature/Sauvie-Island.aspx>) accessed January 27, 2010.

<sup>14</sup> Lower Columbia River Estuary, M. James Gleason Memorial Boat Ramp, Website ([http://www.columbiawatertrail.org/access/m\\_james\\_gleason\\_memorial\\_boat\\_ramp](http://www.columbiawatertrail.org/access/m_james_gleason_memorial_boat_ramp)) accessed May 26, 2010.

<sup>15</sup> City of Troutdale, Glen Otto Community Park, Website (<http://www.ci.troutdale.or.us/parks-facilities/documents/glennottopark.htm>) accessed May 26, 2010.

<sup>16</sup> City of Vancouver, Parks and Recreation, Swimming and Water Safety in Parks, Website (<http://www.cityofvancouver.us/parks-recreation/swimming.htm>) accessed May 26, 2010.

<sup>17</sup> Ibid.

The Columbia River from Bonneville Dam to the Pacific Ocean is designated as the Lower Columbia River Water Trail.<sup>18</sup> This 146-mile trail includes a system of launch and landing sites, overnight facilities, and restoration activities. The lower 216 miles of the Willamette River to the confluence with the Columbia River are also designated as a water trail. A water trail is a stretch of river, shoreline, or other waterway that has been mapped for access and use by paddlers and related recreationists.

## **2.2.4 Wildlife Areas**

There are several wildlife areas located near WHI. Described below are Smith and Bybee Lakes Wetlands Natural Area, Sauvie Island Wildlife Area, and Ridgefield National Wildlife Refuge. Additional wildlife refuges providing recreation access include the 140-acre Oaks Bottom Wildlife Refuge on the east bank of the Willamette River in Portland, and the Beggars-tick Wildlife Refuge, which is a 20-acre park in Southeast Portland. In addition to these wildlife areas, there are large parks such as Forest Park that provide wildlife habitat and wildlife movement corridors.

### **2.2.4.1 Smith and Bybee Lakes Wetlands Natural Area**

The Smith and Bybee Wetlands Natural Area encompass approximately 2,000 acres and each are primarily located inside the Port of Portland's Rivergate property. The Port of Portland owns a significant portion of the area, but the lakes are managed by Metro Regional Parks and Greenspaces. Numerous local schools use Smith and Bybee Wetlands for a variety of outdoor education programs.

A parking lot and trail near at the northeast corner provides access for small boat paddlers. A bike and pedestrian path runs along the northern border of the park. The park is separated from Rivergate by a grassy buffer area, North Marine Drive and fences. The path is separated from distribution facilities to the south by lawns. Some road crossings are unprotected but offer good sightlines for early traffic detection.

### **2.2.4.2 Sauvie Island Wildlife Area (SIWA)**

The SIWA is a 12,000-acre preserved managed by the Oregon Department of Fish and Wildlife. Sauvie Island is the largest island along the Columbia River and lies ten miles west-northwest of downtown Portland, between the Columbia River to the east, the Multnomah Channel to the west, and the Willamette River to the south.<sup>19</sup> Recreation activities that occur in the area include hiking, biking, birdwatching, canoeing, swimming, dog training, trapshooting, fishing, and hunting.<sup>20</sup>

The SIWA is open to the public mid-April through September and closed to hunting permit only over the wintering months. In the fall and winter, the island receives an estimated 150,000 migratory ducks and geese. Summertime birdwatchers are likely to spot wood ducks, cinnamon teals, kestrels and warblers, bald eagles in winter, and Sandhill cranes. Ospreys are seen in both the fall and spring, while tundra

<sup>18</sup> National Park Service, River Trails and Conservation Assistance, "Lower Columbia River Trail", accessed online at: <http://www.nps.gov/ccso/rtea/information.html#ColumbiaRiver>.

<sup>19</sup> Travel Oregon, Sauvie Island, Website (<http://www.traveloregon.com/Explore-Oregon/Portland-Metro/Attractions/Outdoors-and-Nature/Sauvie-Island.aspx>) accessed January 27, 2010.

<sup>20</sup> Sauvie Island Community Association, Website (<http://sauvieisland.org/>) accessed January 27, 2010.



swans are present in the fall. Great blue herons and wood ducks are permanent residents at the preserve. A variety of other mammals are also commonly seen at the preserve.<sup>21</sup>

#### **2.2.4.3 Ridgefield National Wildlife Refuge (NWR)**

The Ridgefield NWR is located approximately 10 miles downstream from the Portland-Vancouver area and has a total of 5,150 acres of marshes, grasslands and woodlands. The Ridgefield NWR was established in 1965 and hunting is permitted on 760 acres of the preserve. The hunting season occurs between mid-October and mid-November.<sup>22</sup> According to a survey completed in 2006, in that year there were an estimated 178,115 visitors to Ridgefield NWR.<sup>23</sup> Nearly all visitors participated in activities related to nature trails, use of observation platforms, and birding.

Migratory birds that are common to Ridgefield NWR include sandhill cranes and shorebirds, and a great variety of songbirds stop at the refuge during spring and fall migrations. Permanent bird species found on the island include mallards, great blue herons, and red-tailed hawks. Black-tailed deer, coyote, raccoon, skunk, beaver, river otter and rabbit are occasionally seen.<sup>24</sup>

### **2.3 Current Recreation Activities, Participation Levels, and Trends**

This section describes the recreation activities occurring on and around Hayden Island, and provides available information on participation levels. Current use is concentrated in boating (including motorized, sailing, and paddling) and fishing activities. In addition, there is some developed park recreation, including picnicking, and use of playgrounds and tennis courts at Lotus Isle Park. Data for these activities is presented, and then additional information is provided on trends on these activities. Trend information is also presented for additional activities that could be offered at recreational settings on WHI, including nature-based activities such as wildlife viewing, hiking, and biking.

### **2.4 Recreation Activities and Participation Levels**

This section provides information on the use patterns and magnitude of use regarding boating, paddling, and fishing recreational activities occurring in the waters around WHI.

#### **2.4.1 Boating**

Interviews with marina representatives indicate that recreational visits to Hayden Island due to boating during the summer months are high.<sup>25</sup> Approximately 100 percent of the available 3,600 boat slips on Hayden Island are leased between April and October, while approximately 25 to 30 percent are leased the

<sup>21</sup> Sauvie Island Community Association, Website (<http://sauvieisland.org/>) accessed January 27, 2010 and Oregon Department of Fish and Wildlife, Sauvie Island Wildlife Area, Website ([http://www.dfw.state.or.us/resources/visitors/sauvie\\_island\\_wildlife\\_area.asp](http://www.dfw.state.or.us/resources/visitors/sauvie_island_wildlife_area.asp)) accessed January 27, 2010.

<sup>22</sup> US Fish and Wildlife Service, Ridgefield National Wildlife Refuge, Website (<http://www.fws.gov/ridgefieldrefuges/ridgefield/index.html>) accessed January 29, 2010.

<sup>23</sup> Carver, Erin and James Caudill, September 2007, Banking on Nature: The Economics Benefits of Local Communities of National Wildlife Refuge Visitation.

<sup>24</sup> US Fish and Wildlife Service, Ridgefield National Wildlife Refuge, Website (<http://www.fws.gov/ridgefieldrefuges/ridgefield/index.html>) accessed January 29, 2010.

<sup>25</sup> McCallum, James, Hayden Bay Marina. January 27, 2010. Personal communication with Lee Elder, ENTRIX and Arnold, Susan, McCuddy's Marina. January 27, 2010. Personal communication with Lee Elder, ENTRIX.

remainder of the year.<sup>26</sup> Recreators that are boating along Hayden Island are traveling to a number of places including, but not limited to, Beacon Rock, Astoria, Multnomah Falls, and Willamette and Hood Rivers.<sup>27</sup> Hayden Island serves as a key location for recreational boaters traveling to different sections of the Columbia or Willamette Rivers.<sup>28</sup> There has been an increase in demand for public access points for recreational boating. Personal communication with area recreation managers indicates that additional boat ramps are needed in proximity of Hayden Island.<sup>29</sup>

According to the Oregon Marine Board, there were 22,873 registered boats in Multnomah County in 2007, down from 25,012 in 2004.<sup>30</sup> Note that registered boats only include motorized boats, no data is readily available for paddlesport boating. Multnomah County has the highest motorized boat usage of any county in Oregon, with 433,978 use days in 2007 (which is a 15 percent decrease from boat use days in 2004). A use day is defined as any part of a 24-hour period during which a boat was used. Fishing, sailing, water skiing, and cruising are all popular boating activities. The Columbia is the most-boated waterbody in the state, with 524,091 boat use days, followed by the Willamette River with 281,176 boat use days.

## 2.4.2 Kayaking/Paddling

The Pacific Northwest has the second highest rate of participation in kayaking out of seven identified regions in the U.S.<sup>31</sup> Washington, Oregon, and California account for 16.5 percent of the nation's total kayakers, with 2.9 percent of the population participating in the sport. As provided in **Table 2** below, Regions 2 and 3 experienced a minor drop in non-motorized boater user days over the 1987 – 2007 period.<sup>32</sup> However, it is anticipated that by 2040 there will be approximately 1.6 times more canoers in the nation than there were in 1995.<sup>33</sup>

Kayaking and canoeing (paddling) regularly occurs in the waters surrounding Hayden Island. Most of the paddlers are using the Hayden Island area due to its accessibility. Typically paddlers in the Hayden Island area are new to the sport and are either beginners or intermediate-level.<sup>34</sup> Alder Creek offers kayaking classes to the public and it is estimated that between 2,000 and 3,000 people launch from the facility's river access point annually.<sup>35</sup> Of this amount, approximately 500 to 700 people exit the marina area (where classes are held) to travel in the slough on the south side of Hayden Island. Trips from this location include paddling westward in the channel on the south side of Hayden Island to the confluence with the Willamette River. Paddlers can also move to the north side of Hayden Island to learn how to deal with water conditions in the open water of the Columbia River.

<sup>26</sup> Villanueva, John, Columbia Crossing Marina. January 28, 2010. Personal communication with Lee Elder, ENTRIX and Arnold, Susan, McCuddy's Marina. January 27, 2010. Personal Communication with Lee Elder, ENTRIX.

<sup>27</sup> McCallum, James, Hayden Bay Marina. January 27, 2010. Personal communication with Lee Elder, ENTRIX.

<sup>28</sup> Hargrave, Rick, Oregon Department of Fish and Wildlife. February 22, 2010. Personal communication with Lee Elder, ENTRIX.

<sup>29</sup> Paskill, Scott, METRO Regional Parks Manager. February 23, 2010. Personal communication with Lee Elder, ENTRIX.

<sup>30</sup> Oregon State Marine Board, 2008, "Boating in Oregon: Triennial Survey Results", accessed online at: <http://www.boatorregon.com/OSMB/library/docs/TriSuv2008.pdf>.

<sup>31</sup> Outdoor Industry Association and the Outdoor Foundation, 2009, A Special Report on Paddlesports, Website (<http://www.outdoorindustry.org/>)

<sup>32</sup> Oregon Parks and Recreation Department, January 2003, 2003-2007 Oregon Statewide Comprehensive Outdoor Recreation Plan.

<sup>33</sup> Hall, Troy E., Heaton, H., and Linda E. Kruger, April 2009, Outdoor Recreation in the Pacific Northwest and Alaska: Trends in Activity Participation. U.S. Forest Service.

<sup>34</sup> Self, Jason, Alder Creek Kayak and Canoe. January 22, 2010. Personal communication with Lee Elder, ENTRIX.

<sup>35</sup> Ibid. and White, Dave, Alder Creek Kayak and Canoe. January 25, 2010. Personal communication with Lee Elder, ENTRIX.



**Table 2 Oregon Regions 2 and 3 Changes in Recreation Participation**

Recreation Activity	1987 User Occasions	2002 User Occasions	Change 1987 – 2002	Percent Change
Nature/Wildlife observation	2,422,761	8,573,512	6,150,751	254%
Using playground equipment	2,979,226	6,371,936	3,392,710	114%
Fishing from a boat	858,772	1,695,078	836,306	97%
Day hiking	1,676,404	2,023,615	347,211	21%
Power boating (ocean, lake, & river)	878,319	1,025,632	147,313	17%
Water skiing or other towing sports	708,276	726,272	17,996	3%
Picnicking	2,177,574	2,174,711	-2,863	0%
Non-motorized boating (ocean, lake, & river)	736,905	735,104	-1,801	0%
Hunting: waterfowl, upland birds and small game	494,200	475,541	-18,659	-4%
Outdoor tennis	1,508,075	898,796	-609,279	-40%
Sailing	350,611	158,995	-191,616	-55%
Beach activities including swimming (fresh & salt)	2,712,152	959,261	-1,752,891	-65%

Source: Oregon Department of Parks and Recreation, 2003, '2003-2007 Oregon Statewide Comprehensive Outdoor Recreation Plan,' accessed online at [http://www.oregon.gov/OPRD/PLANS/docs/scorp/scorp\\_05\\_trends.pdf](http://www.oregon.gov/OPRD/PLANS/docs/scorp/scorp_05_trends.pdf).

Alternative paddling locations include the St. Johns area along the Willamette River, the Ross Island area, and Elk Rock area. People that are paddling in the St. Johns area are typically fishing, while paddlers in the Ross Island area are usually out to paddle. The Elk Rock Island area is well suited to both fishing and paddling. The waters surrounding Hayden Island are most commonly used by people learning the sport as the area is not conducive to everyday paddling due to the currents of the Columbia River.<sup>36</sup> Most paddlers come to the area between June and August.

### 2.4.3 Fishing

Both the Columbia and Willamette Rivers support salmon, steelhead, small mouth bass, and sturgeon fisheries in the proximity of Hayden Island.<sup>37</sup> As noted in Section 2.2.1, numerous boat launches are available for anglers to access this area. The fishing seasons vary by target species, but is year-round for many species. Hayden Island is located in a sturgeon management area; the current season for this area is three days per week (Thursday to Saturday) for all months except August and September.<sup>38</sup> Small mouth bass anglers can fish year round in this section of the Columbia.<sup>39</sup> The spring chinook fishery for the Columbia River has different regulations for the areas upstream and downstream of the I-5 bridge.<sup>40</sup> These regulations govern the number of days each week that anglers are allowed to fish, as well as the harvest guideline. Chinook fishing is typically more restricted upstream of the I-5 bridge to the I-205 bridge.

<sup>36</sup> Self, Jason, Alder Creek Kayak and Canoe. January 22, 2010. Personal communication with Lee Elder, ENTRIX.

<sup>37</sup> Hargrave, Rick, Oregon Department of Fish and Wildlife. February 22, 2010. Personal communication with Lee Elder, ENTRIX.

<sup>38</sup> Oregon Department of Fish and Wildlife, February 18, 2010, State Sets Spring Chinook, Sturgeon Season, Website (<http://www.dfw.state.or.us/news/2010/february/021810b.asp>) accessed February 22, 2010.

<sup>39</sup> Oregon Department of Fish and Wildlife, 2010 Oregon Sport Fishing Regulations, Website ([www.dfw.state.or.us](http://www.dfw.state.or.us)) accessed February 22, 2010.

<sup>40</sup> Oregon Department of Fish and Wildlife, February 18, 2010, State Sets Spring Chinook, Sturgeon Season, Website (<http://www.dfw.state.or.us/news/2010/february/021810b.asp>) accessed February 22, 2010.

As indicated in **Table 2**, there has been a 97 percent increase in boat fishing in Regions 2 and 3 between 1987 and 2002. The spring chinook fishery in the Hayden Island area is extremely popular and fishing participation rates have increased over recent years.<sup>41</sup> During the spring chinook season, there are between 135,000 and 145,000 angler days documented on this section of the Columbia River between March 1<sup>st</sup> and June 1<sup>st</sup>.<sup>42</sup>

The majority of chinook anglers fish between the I-205 and I-5 bridges. The high concentration of fishermen near Hayden Island is due primarily to its proximity to the Portland-Vancouver area.<sup>43</sup> Another draw to the area for anglers is the scenic views of the location. For anglers fishing near WHI, the views looking north or northwest are quite scenic.<sup>44</sup> In addition, Hayden Island is a landmark for this section of the river and serves as a key location for people to travel to other destinations along the Columbia.

## 2.5 Recreation Trends

Portland's population is growing, and the increasing number of people results in increased demand for parks and recreation opportunities. The nature of demand is also changing, resulting in increased pressure on the most popular recreation settings as well as creating demand for less traditional recreation settings.<sup>45</sup> Data from Oregon State Parks indicates that significant growth is occurring in nature-based recreational activities such as nature/wildlife observation, day hiking, and fishing.

**Table 2** outlines current participation data for recreational activities that may be relevant to Hayden Island. Information for Oregon Regions 2 and 3 is provided. Regions 2 and 3 include the counties of Columbia, Washington, Multnomah, Hood River, Clackamas, Marion, Polk, Linn, Benton, and Lane. Recreation activities with the greatest increases in user occasions include nature/wildlife observation, using playground equipment, and fishing from a boat. Nature/wildlife observation user occasions have increased by a remarkable 254 percent over the 1987 to 2002 period, while the use of playground equipment has climbed by 114 percent over this same timeframe. Fishing from a boat has also experienced a dramatic increase of 97 percent over this period. Day hiking, power boating, and water skiing also rose in popularity during this timeframe. Conversely, sailing and beach activities have declined by 55 and 65 percent, respectively.<sup>46</sup>

In the future, the top five outdoor recreation activities in Oregon in terms of participation are expected to be walking, bicycling (road/path), jogging, bird watching, and day hiking.<sup>47</sup> Most, if not all, are associated with natural areas. In Portland, hiking and nature watching are a few of the most popular outdoor recreation activities.<sup>48</sup> As provided in **Table 2**, participation in day hiking has increased by 21 percent over the 1987 to 2002 period for Region 2 and 3 in Oregon.

<sup>41</sup> Hargrave, Rick, Oregon Department of Fish and Wildlife, February 22, 2010. Personal communication with Lee Elder, ENTRIX.

<sup>42</sup> Ibid.

<sup>43</sup> Ibid.

<sup>44</sup> Ibid.

<sup>45</sup> Portland Parks and Recreation, 2009, Park System Plan: People, Places, and Experiences, accessed online at: <http://www.portlandonline.com/parks/index.cfm?a=245732&c=38306>.

<sup>46</sup> Oregon Department of Parks and Recreation, 2003, '2003-2007 Oregon Statewide Comprehensive Outdoor Recreation Plan,' accessed online at [http://www.oregon.gov/OPRD/PLANS/docs/scorp/scorp\\_05\\_trends.pdf](http://www.oregon.gov/OPRD/PLANS/docs/scorp/scorp_05_trends.pdf).

<sup>47</sup> Oregon State Parks, 2008, "Outdoor Recreation in Oregon: The Changing Face of the Future, The 2008-2012 Oregon Statewide Comprehensive Outdoor Recreation Plan" accessed online at: [http://egov.oregon.gov/OPRD/PLANS/docs/scorp/2008\\_Scorp\\_Final\\_Web.pdf](http://egov.oregon.gov/OPRD/PLANS/docs/scorp/2008_Scorp_Final_Web.pdf).

<sup>48</sup> Portland Parks and Recreation, 2006, "Natural Area Acquisition Strategy".



### 3.0 POTENTIAL FUTURE RECREATION DEVELOPMENT & MIXED USE COMPATIBILITY ON WHI

Potential future recreation development on WHI will depend on recreation needs and recreation planning objectives at both the Hayden Island and City levels. The East Hayden Island plan notes that island residents are underserved by parks, and that residents desire public access to the river and beaches for viewing, swimming, and boating.<sup>49</sup> Residents also would like facilities at parks for launching both motorized and non-motorized boats. The community envisions the following recreational settings: additional parks, enhanced trail system with views of the Columbia River and the Cascade Mountains, and protected and conserved open space and habitat including shallow water habitat.

At the City level, Portland Parks and Recreation has identified five objectives for parks management and planning in its Parks 2020 Vision<sup>50</sup>:

- Ensure Portland's park land recreation legacy for future generations.
- Provide a wide variety of high quality park and recreation services and opportunities for all residents.
- Preserve, protect, and restore Portland's natural resources to provide "nature in the city."
- Create an interconnected regional and local system of trails, paths, and walks that make Portland "the walking city of the West."
- Develop parks, recreation facilities and programs that promote community in the city.

In 2009, a review of the progress towards achieving each of these objectives indicated that there is additional work to be done. Particularly pertinent to WHI are the goals related to acquiring additional natural lands to protect locally significant resources and constructing additional paved and unpaved trails. Regarding trails, as noted in the 2020 vision, Portland's rivers are among its distinguishing features, and the Willamette and Columbia Rivers provide "unique, largely untapped opportunities for river, trail, and habitat recreation."<sup>51</sup>

In its 2009 Park System Plan, Portland Parks and Recreation noted that each recreation setting has "unique qualities that make it appropriate (or inappropriate) for different types and intensities of recreation uses."<sup>52</sup> The combination of people, activities, and settings results in recreational experiences. A setting that is more natural is more appropriate to ecological protection and nature-based activities such as hiking, while more developed areas are more appropriate for people-centered activities. The natural areas on WHI provide unique opportunities for nature-based recreation, but can also be combined with more developed facilities to offer a range of recreational settings and activities. Many of Portland's parks exhibit this mixture of developed areas with preserved natural areas, including Forest Park, Gabriel Park, and Smith and Bybee Wetlands Natural Area.

<sup>49</sup> City of Portland, Bureau of Planning and Sustainability, August 19, 2009, Hayden Island Plan: Hayden Island: Portland's Only Island Community.

<sup>50</sup> Portland Parks and Recreation, 2001, "Parks 2020 Vision", accessed online at: <http://www.portlandonline.com/parks/index.cfm?c=40182>

<sup>51</sup> Ibid, page 10.

<sup>52</sup> Portland Parks and Recreation, 2009, "Draft Park System Plan: People, Places, and Experiences", page 1. accessed online at: <http://www.portlandonline.com/parks/index.cfm?a=245732&c=38306>.

Recreation development on WHI could help meet several City objectives as well as help the Hayden Island community achieve its vision for recreation on the island. The setting on WHI provides unique opportunities to conserve natural areas for open space and provide “nature in the city”, as well as to provide waterfront trails and to supplement public boat access to the Columbia River. As the supply of natural lands within the city declines due to increased development, there are fewer opportunities for natural land acquisition at increasingly high prices.

In the 1999 planning effort for WHI, no recreation design was developed. However, it was expected that 225 acres would be set aside as permanent open space with active recreational use not encouraged (although it was expected that walking along the beach area would be possible). It was also expected that passive recreational use would be allowed on the approximately 70 acres located to the east of the new vehicular bridge (that would include bicycle and pedestrian access), with possible improvements to include a small parking area and unpaved access trail to the beach.

### 3.1 Potential Recreation Uses of WHI

Based on the Hayden Island community vision, the City of Portland’s Park and Recreation objectives, and the attributes of WHI, the following recreation uses capitalize on the natural assets of WHI and may be appropriate for parks:

- Paved waterfront trails. There is a high demand for waterfront trails in Portland.<sup>53</sup> Paved trails could be accessible to pedestrians only, could be open to other users such as bicyclists or skateboarders, or sections could be reserved for separate user groups. With development of a bridge to WHI from Marine Drive, paved trails on WHI could be connected to the 40-mile loop trail system. This connection would enhance the loop and add an additional destination for recreationists.
- Beach access. Hayden Island residents have specifically noted their desire for increased access to the river and the beach for a variety of activities. Due to bank hardening on the Willamette River (with nearly 72 percent of existing banks within Portland’s City limits),<sup>54</sup> there are few opportunities on the Willamette River in Portland for beach access, and WHI has the setting to provide this opportunity.
- Unpaved trails in natural areas. Trails are Portland’s most popular recreation resource,<sup>55</sup> and enhancing the Portland trail system is an objective both for the City and the Hayden Island community. There is increased demand for nature-based recreation, and WHI could help meet this demand with walking trails, mountain biking trails, and/or nature trails with interpretive signs.<sup>56</sup>
- Motorized boat launch. As discussed above in Section 2, there are limited public boat launch options on Hayden Island and on the Columbia River in the Portland area. A motorized boat launch would help to meet the recreational needs of Hayden Island residents as well as City residents.

<sup>53</sup> Donaldson, Sue, Portland Bureau of Development Services. March 8, 2010. Personal communication with ENTRIX staff.

<sup>54</sup> Portland’s Willamette River Atlas, 2001, River Renaissance, accessed online at: <http://www.portlandonline.com/river/index.cfm?a=78886&c=38342>.

<sup>55</sup> Portland Parks and Recreation, 2001, “Parks 2020 Vision”, accessed online at: <http://www.portlandonline.com/parks/index.cfm?c=40182>

<sup>56</sup> Donaldson, Sue, Portland Bureau of Development Services. March 8, 2010. Personal communication with ENTRIX staff.



- Picnicking, playgrounds, or other developed use. Playground usage and picnicking are two of the most popular uses of parks, and are common in several other waterfront parks in Portland.
- Non-motorized boat launch. As discussed above in Section 2, there are limited public boat launch options on Hayden Island and on the Columbia River in the Portland area. A non-motorized boat launch would help to meet the recreational needs of Hayden Island residents as well as City residents.
- Protected natural areas. According to the 2004 Godbe Survey of Residents and Users, 50 percent of Portland residents believe that there is a need for more natural areas, which was the highest of all 13 types of recreation areas listed.<sup>57</sup> These areas could potentially be visible from viewpoints or wildlife viewing platforms, but would be protected from direct human access.

All of these uses would likely require a parking lot and restrooms for visitors as well as additional access infrastructure to WHI. The total acreage requirements for any of these facilities can vary substantially based on size and location. A guideline to the potential total size of developed areas is the size of existing waterfront parks in Portland. **Table 3** summarizes the size and amenities of existing waterfront parks in Portland. An aerial photo of each of the parks in **Table 3** is provided in Figure 1.

**Table 3 Size and Amenities of Selected Waterfront Parks in Portland**

Park	Amenities Offered	Size (Acres)
Cathedral Park	Boat ramp, boat dock, restrooms, off-leash dog area, paved paths, parking lot, and picnic tables	23.1
Willamette Park	Boat ramp, boat dock, restrooms, off-leash dog area, paved paths, parking lot, playground, soccer field, tennis courts, and picnic tables	26.9
Sellwood Riverfront Park	Boat dock, restrooms, dog off-leash area, paved and unpaved paths, and picnic tables	8.8
Waterfront Park	Boat dock, restrooms, and paved paths	36.7
Eastbank Esplanade	Boat dock and paved path	0.14
Kelley Point Park	Undeveloped boat ramp, restroom, historical site, paved paths, unpaved paths, reservable picnic site, picnic tables, and hiking trails	97
Chinook Landing Marine Park	Boat ramp, picnic and viewing areas, wetland and wildlife habitat, restrooms, and a river patrol office	67

## 4.0 GENERAL COMPATIBILITY AMONGST USES

This section provides a general overview of the compatibility of different recreation uses, recreation and wildlife habitat, and recreation and marine terminal development.

### 4.1 Compatibility amongst Recreation Uses

Recreation conflicts between different types of uses can result from over-use, activity style, activity and space incompatibility, safety concerns, and varying user perceptions and preferences. Interviews with recreation managers in Portland as well as the recreation literature indicate that the following uses in particular may need to be managed to avoid conflict:

<sup>57</sup> Godbe Research Institute, 2004, Survey of Residents and Park Users, Conducted for the City of Portland Parks and Recreation, Accessed online at: <http://www.sustainableportland.org/parks/index.cfm?a=167869&c=45404>.

- Multiuse-Trails There is potential for conflict between different trail user groups, particularly pedestrians and faster-moving users such as bikers. Management can include separating uses, educating users on trail etiquette, and providing adequate trail opportunities for users.<sup>58</sup>
- Dogs There is potential for conflict, particularly regarding off-leash dogs that can disturb other recreationists and/or dogs. There is also potential for dogs to disturb wildlife, which in turn can affect the quality of other people's recreation experience. Management can include specified off-leash areas and clear regulations regarding dog presence and etiquette.
- Motorized and Non-Motorized Boating There is potential conflict due to noise, pollution, and wake of motorized boats affecting non-motorized boaters.<sup>59</sup> These types of boating may need different facilities that are physically separated.<sup>60</sup>

## 4.2 Compatibility of Recreation and Marine Terminals

There are a variety of examples of recreation facilities surrounding working ports throughout the western United States. Examples of recreation activities that occur either on or near select west coast ports are outlined below. This is not intended to be an exhaustive analysis of all recreation areas or activities that occur in areas surrounding various port properties. Rather this discussion is intended to provide context of some recreational activities that occur and their compatibility with marine terminal operations.

Three major west coast ports and associated recreational areas were selected for analysis. For each example, an overview of recreation activities is presented. Additionally, the general location and spatial proximity of recreation areas to port terminals is discussed to provide information on potential requirements for buffers or other physical separations between recreation and marine terminal operations. Finally, potential conflict between recreationist and port operations at these ports are also discussed based on interviews with port representatives.

The potential for conflict or safety hazards between marine terminal operations and recreationists may limit the location that recreation can occur. Marine terminal operations may affect the quality of surrounding recreation areas due to changes in the scenic nature of the area. Recreation managers and participants interviewed had differing perspectives on this topic. Some interviewed noted that the existing industrialization of the area would limit the impact of a new industrial facility,<sup>61</sup> some noted that industrial facilities can enhance the recreational experience because people are interested in viewing such facilities (and conversely nearby recreation activities could enhance the industrial facility by providing recreational opportunity for employees),<sup>62</sup> while others noted that quality may deteriorate due to aesthetics if natural areas are converted to industrial areas.<sup>63</sup> For example, according to a manager at the Oregon Department of Fish and Wildlife, more serious anglers in the Columbia River would probably not change

<sup>58</sup> Moore, R. L. 1994. Conflict on multiple-use trails: synthesis of the literature and state of practice. Report No. FHWA-PD-94-031. Federal Highway Administration.

<sup>59</sup> Oregon State Marine Board, 2008, "Boating in Oregon: Triennial Survey Results", accessed online at: <http://www.boatoregon.com/OSMB/library/docs/TriSuv2008.pdf>.

<sup>60</sup> Donaldson, Sue, Portland Bureau of Development Services. March 8, 2010. Personal communication with ENTRIX staff.

<sup>61</sup> Self, Jason, Alder Creek Kayak and Canoe. January 22, 2010. Personal communication with ENTRIX staff.

<sup>62</sup> Donaldson, Sue, Portland Bureau of Development Services. March 8, 2010. Personal communication with ENTRIX staff.

<sup>63</sup> Hargrave, Rick, Oregon Department of Fish and Wildlife. February 22, 2010. Personal communication with ENTRIX staff.

fishing patterns, but the more casual fisherman may fish further east or west of WHI to avoid seeing or hearing industry on Hayden Island.<sup>64</sup>

Recreation facilities proximate to other ports are described below, as are the potential for conflicts and compatibility.

#### ***4.2.1 Port of San Diego***

The Port of San Diego has 17 port-owned parks located on San Diego Bay. Some of these parks include recreational areas and activities such as beaches, walking and biking trails, fishing piers, gazebos, recreation piers, playground areas, soccer fields, and picnic tables.<sup>65</sup> There is a lot of bicycle activity at the Port and both walking and running are high use activities at the Port of San Diego's recreational areas. Kayaking and fishing are also popular at the parks. The Port currently assumes that when it develops a new port facility it will develop a public park for the neighborhood in which the park facility is developed with input from that community.

One example of a recreational area adjacent to the Port of San Diego terminal facilities is the Cesar Chavez Park, which is located along the Port of San Diego's Terminal 10. The park includes a recreational pier, picnic area, playground, and a soccer field. This park is completely surrounded by marine terminal activities and the entrance road to Terminal 10 winds around the park. The Commercial Berthing Pier is located directly on the shoreline of the park, and is the site of several barge-related operations.<sup>66</sup> Approximately 500 feet from the park is the IMC Chemical Terminal, with additional businesses located approximately 2,000 feet from the edge of the park.

The Port of San Diego parks are next to terminals, but are fenced off and, according to a representative of the Port of San Diego, there are no known conflicts between recreators and port operations.<sup>67</sup> However, there are in-water areas within the Port of San Diego that are considered "no-go zones" to prevent conflicts between port operations and recreators. The Coast Guard and the Navy mandates that these areas remain clear of recreators such as kayakers.<sup>68</sup> In order to prevent conflicts between recreators at the Port's facilities, the Port has a policy of requiring permits for any event that has more than 25 people in attendance.<sup>69</sup>

#### ***4.2.2 Port of Oakland***

The Port of Oakland owns a variety of recreational areas and parks located near its terminals.<sup>70</sup> In order to prevent trespass, the paths and parks at the Port of Oakland are separated from the terminal facilities by tall chain-link fence topped with barbed wire.<sup>71</sup> In addition, sensors on the fence sound an alarm at the security office and automatically turn cameras to the area disturbed. On the park side, the fences are buffered by shrubs to prevent inadvertent activation.

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<sup>64</sup> Ibid.

<sup>65</sup> Port of Portland, October 2009, Recreation and Marine Use Examples.

<sup>66</sup> Port of San Diego, Tenth Avenue Cargo Terminal, Website (<http://www.portofsandiego.org/maritime/tenth-avenue-terminal.html>) accessed March 22, 2010.

<sup>67</sup> Bayardo, Sophia, Port of San Diego. February 25, 2010. Personal communication with ENTRIX staff.

<sup>68</sup> Ibid.

<sup>69</sup> Bayardo, Sophia, Port of San Diego. February 25, 2010. Personal communication with ENTRIX staff.

<sup>70</sup> Port of Portland, October 2009, Recreation and Marine Use Examples.

<sup>71</sup> Ibid.

For example, Port View Park is located directly east of the Ben E. Nutter Container Terminal and encompasses 4.5 acres. The park offers public access to the San Francisco Bay and provides opportunities for fishing, walking, picnicking, and special events. Park traffic shares the same roadways as terminal container traffic and the entrance for the park is located before the line-up area for Hanjin Terminal. Another Port of Oakland Park located in close proximity to the Port View Park is Middle Harbor Shoreline Park. Middle Harbor Shoreline Park is located across Middle Harbor from Port View Park and is bordered by the Hanjin Terminal to the east. The park is 38 acres and connected to Port View Park by a bike and pedestrian trail. The park has an amphitheater, stage, picnic areas, beach, trails, habitat viewing areas, and restrooms.<sup>72</sup>

Some conflicts with existing recreation in the port area include conflict between container ships and both sailboats and kayaks. Due to the maneuverability and speed of these water craft the potential for safety hazards due to potential collision of recreational boats with cargo vessels exist.<sup>73</sup> Container ships, kayakers, and sailboats can be slow to respond to circumstances that require a sudden or rapid change in direction.

Park accessibility is a point of concern at the Port of Oakland, both for ease of user access and for potential safety hazards. For example, it is not ideal for visitors to walk to the 30-acre Middle Harbor Shoreline Park since it is surrounded by a thriving port with associated multi-modal transportation infrastructure.<sup>74</sup> For people to arrive at Port of Oakland parks they must cross high traffic railroad tracks and highways. In order to enhance access and minimize safety hazards, the Port of Oakland has until recently subsidized bus transit to the park so that visitors have easier and safer access. However, due to low bus passenger volume this service has recently been suspended.

### **4.2.3 Port of Seattle**

The Port of Seattle owns ten parks and nine public access points to the shore.<sup>75</sup> These areas include a marina, bike trails, walking trails, picnic areas, habitat restoration areas, and fishing piers. For example, Elliot Bay Park at Terminal 86 is an 11-acre park with a 400 foot fishing pier, a bike path, exercise station, picnic tables, benches, and restrooms.<sup>76</sup> The park is located at Terminal 86 and shares the area with the Louis Dreyfus Grain Terminal. The grain terminal abuts the northern boundary of the park. Additionally there is a conveyor system for loading and unloading grain from ships, which traverses the park. Terminal 91 lies to the northwest of Elliot Bay Park and serves both as a breakbulk terminal and provides services for several cruise lines.<sup>77</sup> Parks are separated from marine terminal options by a chain link fence with barbed wire along the top.

Elliot Bay Park includes a bike path located near Port operations at Terminal 91. This bike is located very close to the grain terminal and runs on the narrow corridor between piers 90 and 91. According to the Port park manager, despite the physical proximity of the bike path there are no safety concerns with the

<sup>72</sup> East Bay Regional Parks, Middle Harbor Shoreline Park, Website ([http://www.cbiparks.org/parks/middle\\_harbor](http://www.cbiparks.org/parks/middle_harbor)) accessed March 22, 2010.

<sup>73</sup> Whittington, Anne, Port of Oakland, Environmental Division. February 24, 2010. Personal communication with ENTRIX staff.

<sup>74</sup> Ibid.

<sup>75</sup> Port of Portland, October 2009, Recreation and Marine Use Examples.

<sup>76</sup> Port of Seattle, Port of Seattle Parks, Website (<http://www.portseattle.org/community/resources/parks/index.shtml>) accessed March 22, 2010.

<sup>77</sup> World Port Source, Port of Seattle, Website ([http://www.worldportsource.com/ports/USA\\_WA\\_Port\\_of\\_Seattle\\_162.php](http://www.worldportsource.com/ports/USA_WA_Port_of_Seattle_162.php)) accessed March 22, 2010.



path at this time.<sup>78</sup> While Port of Seattle parks are located near the terminals, the Port park manager believes that the fencing is a sufficient barrier to prevent safety hazards for recreators at the sites.<sup>79</sup>

#### ***4.2.4 Summary of Marine Terminal and Recreation Compatibility***

At the Ports of Oakland, San Diego, and Seattle, recreation facilities are maintained close to a variety of marine terminals and train and truck transportation routes. Recreational activities include boating, beach activities, cycling, walking, and use of developed facilities such as playgrounds, picnic areas, and boat ramps. At each of these Ports, there is potential for conflict between recreation and terminal activities, primarily due to safety and operational hazards. Based on interviews with these ports, it appears that the following management actions are important to limit these hazards and ensure compatibility between uses:

- Adequate physical barriers such as fences between recreation areas and port operations.
- “No go” zones for recreational boating to avoid collisions between cargo vessels and recreators.
- Safe access to recreation areas, with crossing of heavily-used transportation routes minimized.

### **4.3 Compatibility of Recreation and Habitat Conservation**

Recreationists often seek areas that provide wildlife viewing opportunities. As noted above in Section 2, wildlife viewing is the fastest growing recreational activity in Northwest Oregon. So from the recreation perspective, wildlife habitat can greatly enhance the recreation experience. However, from a wildlife conservation perspective, recreation can adversely impact the quality of habitat. This section summarizes the types of impacts of recreation on habitat and the potential management actions to minimize these impacts.

There are numerous examples of natural areas with joint purposes of recreation and wildlife habitat conservation, including numerous areas in Portland such as Forest Park. Portland Parks and Recreation recognizes the potential for conflict between recreation and wildlife habitat, and has sought funding to study the relationship in Portland but has not yet obtained funds for such studies.<sup>80</sup> Nationwide, the National Wildlife Refuge System has the dual mission to conserve habitat and provide wildlife-dependent public recreation. To assist in understanding human-wildlife disturbance better, in 2007 the US Fish and Wildlife Service contracted a study to conduct a comprehensive literature review of impacts and management solutions to human-wildlife disturbance.<sup>81</sup> Unless otherwise noted, information in this section is derived from this study.

Wildlife responses to recreation are unpredictable and can even vary within a species. However, it is known that recreation can impact wildlife both directly and indirectly. Direct effects include those related to behavioral or biophysical responses such as death, avoidance of suitable habitat, increased energetic cost (such as due to increased heart rate, metabolism, or movement), altered behavior, and nest abandonment. Indirect effects can include alterations to wildlife habitat that change availability of food,

<sup>78</sup> Lee, Gary, Port of Seattle, Parks Manager. February 24, 2010. Personal communication with ENTRIX staff.

<sup>79</sup> Ibid.

<sup>80</sup> Horner, Brett, Portland Parks and Recreation. March 17, 2010. Personal communication with ENTRIX staff.

<sup>81</sup> United States Geological Survey, 2007, “A Human-Dimensions Review of Human-Wildlife Disturbance: A Literature Review of Impacts, Frameworks, and Management Solutions.”

shelter, and living space. These indirect effects can result from trampling of vegetation, soil erosion or compaction, disturbance from noise and motion, pollution, and introduction of invasive species.

Research indicates that recreational activities that most impact wildlife typically do so through one of three critical effects: habitat modification, pollution, and disturbance. Research on trail use, wildlife viewing, and boating are reviewed below. In general, the literature indicates that management of recreation, both in terms of recreational facility placement (avoiding the most sensitive resources and avoiding fragmentation) and recreationist behavior (noise, approach of wildlife, speed of movement, feeding of wildlife, etc.) often dictates the level of compatibility of recreation use and habitat.

#### ***4.3.1 Trail Use and Wildlife Viewing***

In natural areas with trails, disturbance from human use may include altered species composition through habitat avoidance, increased bird nest predation and abandonment, and behavioral modifications that increase energetic cost.<sup>82</sup> The presence of dogs tends to increase disturbance, as do faster movements such as jogging or biking.<sup>83</sup> In the experience of the Ridgefield NWR manager, birds acclimate to cars more so than the human form, while larger birds such as cranes, heron, and waterfowl are more affected by visitors than smaller birds.<sup>84</sup> Smaller birds use the understory and brush to hide from visitors whereas larger birds are flushed away. In terms of relative impact that visitors have on birds, bikers or runners have a greater impact than do walkers. Since birds are affected by the human form, Ridgefield NWR does not allow visitors to hike in the park during the wintertime. As for hunting on the refuge, birds quickly learn to avoid humans and typically move to other areas of the refuge where hunting is not allowed during the hunting season. Once the hunting season ends, the birds quickly to return in greater numbers to areas where hunting was allowed.

For birds, barriers and buffer zones created by fences and vegetation that restrict public access and provide wildlife with a refuge from human activities can limit disturbance in those areas. One study in California of 10 species of birds found that protective barriers that provide areas of refuge within highly visited habitats allow birds to behave similarly in a recreation area as in an undisturbed environment.<sup>85</sup> The US Fish and Wildlife Service waterfowl management handbook notes that minimization of human disturbance on waterfowl includes developing screened buffers to minimize harm from wildlife viewing (including reducing visibility of humans), as well as minimizing access points, and are important to minimize human disturbance, creating 'involute sanctuaries,' and reducing loud noise and rapid movements of vehicles and people.<sup>86</sup>

#### ***4.3.2 Boating***

Boating can affect the shoreline and aquatic ecosystem by affecting water clarity (stirring up sediment), water quality (release of pollution from engines), bank erosion (disturbance from wakes or effects to

<sup>82</sup> Miller, Scott and Richard Knight, 1995, "Influence of Recreational Trails on Breeding Bird Communities", accessed online at: [http://www.bouldercolorado.gov/files/openspace/pdf\\_gis/IndependentResearchReports/4428\\_Miller\\_Scott\\_Influence.pdf](http://www.bouldercolorado.gov/files/openspace/pdf_gis/IndependentResearchReports/4428_Miller_Scott_Influence.pdf) and US Fish and Wildlife, 1992, "Human Disturbances of Waterfowl: Causes, Effects, and Management" in Waterfowl Management Handbook, accessed online at: [http://www.nwrc.usgs.gov/wdb/pub/wmh/13\\_2\\_15.pdf](http://www.nwrc.usgs.gov/wdb/pub/wmh/13_2_15.pdf).

<sup>83</sup> Ibid.

<sup>84</sup> Anderson, Eric, Ridgefield National Wildlife Refuge. February 24, 2010. Personal communication with ENTRIX staff.

<sup>85</sup> Ikuta, Laurie and Daniel Blumstein, 2003, "Do fences protect birds from human disturbance", Biological Conservation, 112(3): 447-452.

<sup>86</sup> US Fish and Wildlife, 1992, "Human Disturbances of Waterfowl: Causes, Effects, and Management" in Waterfowl Management Handbook, accessed online at: [http://www.nwrc.usgs.gov/wdb/pub/wmh/13\\_2\\_15.pdf](http://www.nwrc.usgs.gov/wdb/pub/wmh/13_2_15.pdf).

shoreline vegetation), noise, and general movement.<sup>87</sup> Additionally, greater parking space is necessary for motorized boating given the space requirement of boat trailers. Each of these effects is larger for motorized boats than for non-motorized boats. While the effects of boats on aquatic systems are complex and depend on a number of factors, a review of the research indicates that the physical effects of propeller, waves, and turbulence may have more impact than engine fuel discharge. The literature also indicates that most of the impacts of boats are concentrated in shallow waters (less than 10 feet deep). Management actions can include no wake zones and restricted areas. For example, to adequately protect waterbird breeding areas, a “buffer zone” of at least 100 m (300 feet) has been suggested, in which all human activity would be banned.<sup>88</sup>

### ***4.3.3 Summary of Wildlife and Recreation Compatibility***

In summary, there can be conflict between recreation and wildlife due to disturbance from human presence or from habitat modification. Impacts of the same activity can vary by species, and even within species. The level of recreation use as well as the type of recreation activity can have differing effects. In general, the higher the use level and the more intense the level of noise and motion associated with an activity, the greater the impact on wildlife. Examples of appropriate management actions to minimize the effects of recreation on wildlife areas include concentrating recreation activity in certain areas, providing physical separation and vegetative screening between recreationists and habitat areas, and providing habitat sanctuaries completely separated from human use.

## **4.4 Summary of Compatibility amongst Uses**

**Table 4** summarizes the general findings regarding compatibility of uses. As presented in the table, compatibility between recreation uses is generally high, with the potential exception of motorized and non-motorized boating and potential trail use conflicts between different types of trail users. Recreation activities and marine terminal activities are also found to be generally compatible, provided that there are appropriate physical barriers and buffers in place to separate the activities and prevent safety hazards. The highest level of potential conflict is between recreation and wildlife habitat. As described above, there are many examples in Portland and from around the nation of quality wildlife areas also providing numerous recreation opportunities. However, it is recognized that appropriate management of recreation activities is required to minimize impact to wildlife, which often entails physical barriers and areas that are set aside for wildlife only.

<sup>87</sup> Asplund, Timothy, Wisconsin Department of Natural Resources, Bureau of Integrated Sciences, 2000, “The Effects of Motorized Watercraft on Aquatic Systems”, accessed online at: <http://dnr.wi.gov/org/water/fhp/papers/lakes.pdf>.

<sup>88</sup> Asplund, Timothy, Wisconsin Department of Natural Resources, Bureau of Integrated Sciences, 2000, “The Effects of Motorized Watercraft on Aquatic Systems”, accessed online at: <http://dnr.wi.gov/org/water/fhp/papers/lakes.pdf>.

**Table 4 Summary of General Use Compatibility**

	Natural Area, Soft Surface Hiking Trails	Paved Bike Trails	Natural Area, Soft Surface Bike Trails	Paved Walking Trails	Boat Launch	Beach Access	Picnic Area	Sports Facilities	Non- motorized Boating	Motorized Boating	Marine Terminal	Truck Route	Railroad	Aquatic Habitat	Terrestrial Habitat
<b>Recreation &amp; Recreation</b>															
Natural Area, Soft Surface Hiking Trails															
Paved Bike Trails	B														
Natural Area, Soft Surface Bike Trails	A/B	A													
Paved Walking Trails	A	A/B	B												
Boat Launch	A/B	A	A	A											
Beach Access	A	A	A	A	A										
Picnic Area	A	A	A	A	A	A									
Sports Facilities	B	A	A	A	A	A	A								
Non-motorized Boating	A	A	A	A	A	A	A	A							
Motorized Boating	N/A	A	N/A	A	A	A	A	A	A/C						
<b>Recreation &amp; Terminal</b>															
Marine Terminal	B	B	B	B	B	B	B	B	B/C	B/C					
Truck Route	B/C	B	B	B	B	B	B	B	N/A	N/A	A				
Rail Route	B/C	B	B	B	B	B	B	B	N/A	N/A	A	A			
<b>Recreation &amp; Habitat</b>															
Aquatic Habitat	N/A	N/A	N/A	N/A	A/C	A/C	N/A	N/A	A	A/C	A/C	N/A	N/A		
Terrestrial Wildlife Habitat	A/B	B/C	B/C	B/C	A/B	A/B	B/C	B/C	A/B	B/C	B/C	B/C	B/C	A	

Key:

A Adjacent, Compatible Uses (Either co-extensive, or boundaries defined but no physical barrier required)

B Barrier Desirable (Physical barrier required with fence and/or vegetation to minimize negative effects on use)

C Conflict Likely (Negative effects on one of the uses very likely unless there is adequate physical separation)



## 5.0 CURRENT AND POTENTIAL ECONOMIC VALUE OF RECREATION

There are numerous types of economic value provided by recreation areas. These include:

1. Opportunity for physical exercise and associated physical and mental health benefits;
2. Opportunity for socializing and associated community cohesion benefits;
3. Access to nature and associated education, stress reduction, and mental health benefits;
4. Economic stimulus for recreation-related businesses; and
5. Aesthetic value of green spaces and associated residential property value benefits.

Of these types of values, all are applicable to potential recreation on WHI with the probable exception of increased residential property values. As recreation areas on WHI are likely to be located farther than one mile from residential areas, property value impacts will be minimal based on the economic literature.<sup>89</sup> The remaining benefits can roughly be categorized into three types of benefits: social benefits to communities, economic benefits to recreational users, and economic benefits to the regional economy.

While recognizing that the social value of recreation is important and can have significant economic ramifications, this analysis focused on the economic benefits to recreational users<sup>90</sup> and to the regional economy of recreation areas. Both of these types of economic benefits from recreation have been studied extensively in the economics field, and values are available from existing studies to provide insight into the potential economic value of current and potential future activities on WHI and around WHI. Estimates of these two types of benefits are described below.

The discussion of recreation value in this section indicates the general magnitude of economic value of recreation uses near WHI. It does not discuss how recreation value may change with different land uses on WHI. Effects of marine-related uses or recreation development on recreation value would depend on the type and scope of development, and could either increase or decrease recreation value depending on effects on access, recreation amenities, and aesthetics.

### 5.1 Recreational User Benefits

Many recreation facilities and activities are provided by the public at little or no charge to the recreational user. Recreational value is thus typically a non-market good that is more challenging to value than traditional economic goods that are exchanged in the marketplace for a given 'price'. Numerous methods have been developed to estimate the value of recreation, and are either based on observing recreator behavior or by survey methods that elicit the value people are willing to pay for certain experiences or amenities. By either method, the net value or benefit of the recreation experience to the recreator is estimated as the difference between the benefit derived from the experience, less the cost associated with it (such as the cost to travel to the recreation site or cost to enter a park).<sup>91</sup> For example, if a kayaker

<sup>89</sup> Crompton, John, 2005, "The impacts of parks on property values: empirical evidence from the past two decades in the United States", *Managing Leisure*, (10): 203-218.

<sup>90</sup> Some community-level benefits of recreation will likely be captured in the estimates of economic value to individuals since individual measures of value from social recreation activities such as walking or picnicking will include the social benefit component of the activity.

<sup>91</sup> This value is referred to in economics as "consumer surplus".

values a day paddling on the water at \$100, but it costs him \$20 to travel to the location to launch his kayak, then the net value of the recreation day is \$80.

Numerous studies have been conducted to estimate the value of different recreational activities in different settings. Values differ both by activity and by recreational area. For a given activity, the net economic value at different recreational areas can differ dramatically, primarily due to the quality of each recreation area compared to other areas. Quality of recreational areas depends largely on the following factors: ease of access (including time and expense to travel to the location and parking availability), amenities offered at the site, aesthetic appeal of the site, use levels and crowding at the site, and size of the site.

Average values of the net economic benefit of a range of recreation activities are provided in **Table 5** below. These values are average values in the western United States derived from a large collection of existing studies. Actual values for recreation on WHI would likely differ from those estimated in **Table 5** and could be higher or lower depending on the relative quality of the recreation experience offered. The total value to recreational users of recreation offered at WHI would be based on an estimated net value per person per day multiplied by the number of user days.

**Table 5 Net Value of Recreation Activities (2009 dollars)**

Recreation Activity	Net Value Per Person per Day
Fishing	\$47.70
Float boating/rafting/canoeing	\$31.60
Going to beach	\$44.80
Hiking	\$27.20
Hunting	\$40.10
Motorized boating (marina slip owner)	\$14.20
Motorized boating (boat ramp user)	\$14.20
Picnicking	\$39.50
Wildlife viewing	\$39.80
Mountain biking	\$56.40
Running/Jogging*	\$4.50

Source: Loomis, John, October 2005, Updated Outdoor Recreation Use Values on National Forest and Other Public Lands, Prepared for the United States Department of Agriculture, Forest Service, General Technical Report PNW-GTW-658.

\*Bergstrom, John C. and H. Ken Cordell, An Analysis of the Demand for and Value of Outdoor Recreation in the United States. Journal of Leisure Research, 1991, Vol. 23, No. 1, pp.67-86.

Regarding recreation use values, the only direct use of terrestrial habitats is beach use. As presented in **Table 5**, the per-person per day value of beach use is estimated at \$45 per day. It is not known how many boaters access WHI beaches annually. However, if we assume that it is in the range of approximately 250 to 1,000 people annually (assuming 10 to 40 people visit WHI beaches weekly from May through October), then the annual value of beach recreation on WHI may reasonably be expected to be in the range of \$11,000 to \$45,000. In addition to the value of recreation on beaches, there may be indirect recreation value of WHI terrestrial habitats. This indirect value is associated with any recreation benefits derived from wildlife viewing or hunting of species at other natural areas that utilize WHI habitats. For example, a migratory bird that relies on WHI habitat for part of the year may be viewed or hunted

elsewhere in Washington or Oregon. Since the wildlife viewer/hunter indirectly benefits from WHI habitat utilized by the migratory bird, some portion of their use value is attributable to WHI. While the proportion of per day recreation value at other natural areas that is attributable to WHI habitat is unknown, it is likely to be small and is not estimated in this study.

Based on the values from the literature provided in **Table 5**, it is estimated that in-water recreation may be valued at approximately \$14 - \$48 per user day. To estimate the total value of current water-based recreation around Hayden Island, it is necessary to multiple the per day values in **Table 5** with estimates of recreation user days. The participation level of water-based recreation in the areas surrounding WHI is not known with certainty. However, as described in Section 2, there may be approximately 2,500 paddler days in these waters, and there are an estimated 525,000 motorized boat use days along the length of the Columbia River in Oregon. Based on this data, an illustration of the potential value of the water-based recreation near WHI can be estimated.

Based on the estimated 150,000, boat use days for spring Chinook fishing in this area from March to June, it is roughly assumed that approximately half of the Columbia River motorized boat use days, or 250,000 use days, are in the waters near WHI. Furthermore, it is assumed that a total of 200,000 motorized boat use days are for fishing and 50,000 for other motorized boating. Based on these use assumptions, and the estimate of per day value in **Table 5**, this example estimate of potential value to recreationists of boating activities in the waters near WHI and beach use is approximately \$10.3 million.<sup>92</sup> This example is used for illustrative purposes only to indicate the type of value that recreational opportunities provide, and to indicate that there are significant economic benefits associated with water-based recreation in and around WHI. It is important to note that this is not expected to be the actual value of water-based recreation near WHI given the uncertainty regarding the number of use days by activity in the Columbia River near WHI.

## 5.2 Regional Economy Benefits

Recreational opportunities stimulate economic activity in surrounding communities through visitor spending. Recreation visitors often purchase fuel, restaurant food, groceries, and repair services at businesses located close to recreation sites. Overnight visitors also spend money at hotels and other accommodations. There are numerous recreation related retail and service businesses as well as lodging options on Hayden Island that may provide services to recreators, as well as numerous other businesses located through out the Portland metro area. Reflecting the current recreation focus on boating at Hayden Island, local businesses are largely focused on recreational boating. Boating-related businesses include marinas, yacht clubs, restaurants, marinas, boat repair shops, mechanic shops, canvas shops, boat yards, and boat and yacht sales.<sup>93</sup>

These expenditures represent an economic stimulus to the extent that this spending represents increased spending in the local economy, rather than a transfer of spending from one location in Portland to another. Whether recreational spending is “increased spending” or not is often measured based on the proportion of spending that is from non-resident visitors who are attracted to the area due to recreational opportunities. Additionally, if the recreation opportunity retains resident spending in the local area (i.e. causes people to stay local rather than travel outside of Portland to recreate and spending their money elsewhere), resident recreational spending also represents stimulus to the economy.

<sup>92</sup> This is based on the following calculation: \$47.40 / fishing day X 200,000 fishing days + \$14.20 / motorized boating day X 50,000 motorized boating days + \$31.60 / paddling day X 2,500 paddlers = \$10.3 million.

<sup>93</sup> Hamblin, Elisa, City of Portland. January 28, 2010. Personal communication with ENTRIX staff.

Economic stimulus benefits of recreation are not limited to service and retail businesses selling products and services to recreators. Recreator expenditures ‘ripple’ through the local economy as increased economic activity in the retail and service sectors spurs additional economic activity in other sectors that provide inputs to the retail and service sectors (such as businesses providing cleaning and maintenance services for the marinas, yacht clubs, and restaurants). Additionally, as local income rises due to the increased economic activity, additional sectors are affected by increased resident household spending. These additional, ripple effects are measured through a multiplier, which indicates the total economic activity that is generated from each dollar of increased economic activity. Total economic effects are thus based on the size of the ripple effect, also known as the multiplier effect, of each dollar of spending, and the total amount of visitor spending.

The potential for visitor expenditures to generate substantial economic impact is illustrated in a 2007 study conducted on the total economic effects (including ripple effects) of recreation at National Wildlife Refuges such as Ridgefield NWR. Visitor recreation expenditures associated with bird viewing, sightseeing, hunting, and fishing at Ridgefield NWR is estimated at \$2.41 million in direct expenditures.<sup>94</sup> This expenditure indirectly stimulates an additional \$660,000 in output at other regional businesses and supports a total of 36 jobs. In other words, on average every \$100,000 in visitor spending at Ridgefield NWR supports a total of \$127,000 in increased economic activity in the local community and 1.5 jobs. Another study conducted for the Outdoor Industry Foundation found that in the Pacific region of the United States every \$100,000 in expenditures by trail users, paddlers, and cyclists supported, on average, \$144,000 in economic activity.<sup>95</sup>

Total economic activity that is generated from each dollar of visitor spending varies depending on the structure of the local economy, the size of the study area, and which sectors receive the bulk of the visitor spending. Spending also varies dramatically by recreation activity, with activities such as boating, fishing, hunting, and wildlife viewing, typically characterized by higher visitor spending than other activities and thus typically results in larger economic impact. A literature review was conducted of the typical recreation expenditures by activity in the vicinity of Hayden Island; the values in **Table 6** are from studies across the west coast but where possible are specific to Oregon or Portland.

<sup>94</sup> Carver, Erin and James Caudill, September 2007, Banking on Nature: The Economics Benefits of Local Communities of National Wildlife Refuge Visitation.

<sup>95</sup> Southwick Associates, Inc, 2006, “The Total Economic Contribution of Active Outdoor Recreation – Technical Report on Method and Findings, prepared for the Outdoor Industry Foundation.



**Table 6 Expenditures for Recreation Activities Occurring in Close Proximity to WHI**

Activity	Expenditures (2009 dollars)	Trip Expenditure Measurement	Data Source
Fishing	\$33.00	Avg. trip expenditure per day	US Fish and Wildlife Service
Float boating/rafting/canoeing	\$13.90	Avg. trip expenditure per day	California Department of Boating and Waterways
Going to beach	\$27.50	Avg. trip per person expenditure	Kite-Powell et al
Hiking	\$23.30	Avg. per party per trip	Stynes and White
Motorized boating (marina slip owner)	\$208.10	Avg. per party per trip	Chang and Jackson
Motorized boating (boat ramp user)	\$76.30	Avg. per party per trip	Chang and Jackson
State Park Day Use	\$12.20	Avg. trip per person expenditure	Washington State Parks and Recreation Commission
Wildlife viewing	\$34.10	Avg. trip expenditure per day	US Fish and Wildlife Service
Mountain biking	\$23.30	Avg. per party per trip	Stynes and White
Running/Jogging	\$3.10	Avg. per person day	Venegas

Sources: U.S. Fish and Wildlife Service, 2006 National Survey of Fishing, Hunting, and Wildlife Associated Recreation.

California Department of Boating and Waterways, Section 5 Recreational User Values of Non-Motorized Boating. Website ([http://www.dbw.ca.gov/PDF/N-M\\_Boating/Sec\\_5-Rec\\_User\\_Values.pdf](http://www.dbw.ca.gov/PDF/N-M_Boating/Sec_5-Rec_User_Values.pdf)) accessed February 24, 2009.

Kite-Powell, H.L., C.S. Colgan, M.J. Kaiser, M. Luger, T. Pelsoci, L. Pendleton, A.G. Pulsipher, K.F. Wellman, and K. Wieand. 2005. Estimating the Economic Benefits of Regional Ocean Observing Systems. A report prepared for the National Oceanographic Partnership Program. Marine Policy Center, Woods Hole Oceanographic Institution.

Stynes, Daniel J. and Eric White, February 1, 2006, Spending Profiles for National Forest Recreation Visitors by Activity.

U.S. Fish and Wildlife Service, 2006 National Survey of Fishing, Hunting, and Wildlife Associated Recreation.

Chang, Wen-Huei and R. Scott Jackson, August 2003, Economic Impacts of Recreation Activities at Oregon Coast and River Ports, Army Corp of Engineers, ERD/EL TR-03-12.

Washington State Parks and Recreation Commission, June 2002, Economic Impact of visitors to Washington State Parks, Prepared by Dean Runyan Associates.

Venegas, Ernesto C., November 2009, Economic Impact of Recreational Trail Use: In Different Regions of Minnesota.

To estimate total economic impact of future recreation, the values in **Table 6** would need to be combined with estimates of total non-resident recreation participation (user days or trips), as well as estimates of the multiplier effects of recreation spending by category. As described above, the multiplier effects typically range from 1.2 to 1.5, which indicate that for every \$1 spent, total economic activity increases by \$1.20 to \$1.50.

## 6.0 CONCLUSIONS

The waters surrounding WHI attract numerous recreational boaters (both motorized and non-motorized), but there is tremendous potential to provide additional recreational opportunities on WHI itself. Potential recreational activities that would help the goals of the City of Portland Parks and Recreation, and are compatible with trends in outdoor recreation and the vision for recreation established by Hayden Island residents include: boat access, trails, picnic areas and other developed facilities, and natural areas. The location and size of potential recreation facilities will need to consider the compatibility of different recreational activities with each other and with potential industrial activities, and wildlife habitat conservation. Appropriate management, including physical separation of potentially conflicting uses, can minimize adverse impacts of these multiple uses.

Existing water-based recreation near WHI benefits recreationists, who derive enjoyment from the opportunity to sail, fish, paddle, and cruise in the waters of the Columbia River. Additionally,



recreational opportunities stimulate the local economy as these opportunities attract visitors to the area who purchase goods and services from local businesses. As these businesses prosper, the rest of the community prospers through 'ripple effects' in other sectors. Recreation development on WHI would enhance both of these types of economic values.