

**Draft Restoration Plan and Environmental Assessment for the Dalco  
Passage Oil Spill on October 13, 2004**

Prepared by:

**The Dalco Pass Oil Spill Natural Resource Trustees**

*Muckleshoot Indian Tribe*

*Puyallup Tribe of Indians*

*State of Washington*

*Department of Ecology*

*Department of Fish and Wildlife*

*U.S. Department of Commerce*

*National Oceanic and Atmospheric Administration*

*U.S. Department of the Interior*

*U.S. Fish and Wildlife Service*

December 7, 2009



Washington  
Department of  
**FISH and  
WILDLIFE**



## Table of Contents

1.0	Introduction.....	6
1.1	Incident Summary .....	6
1.2	Overview of Natural Resource Injuries.....	6
1.3	Natural Resource Trustees and Authorities.....	7
1.4	Public Coordination.....	7
1.5	Administrative Record .....	8
1.6	Purpose and Need for Restoration.....	8
1.7	OPA and NRDA Overview .....	8
2.0	Affected Environment.....	10
2.1	Physical Environment .....	10
2.2	Biological Environment .....	11
2.2.1	Birds.....	11
2.2.2	Fish .....	11
2.2.3	Aquatic Vegetation .....	12
2.2.4	Shellfish and Invertebrates .....	12
2.2.5	Marine Mammals.....	13
2.3	Cultural and Recreational Environment.....	13
2.3.1	Cultural Resources.....	13
2.3.2	Recreational Use.....	13
2.4	Threatened and Endangered Species & Essential Fish Habitat.....	14
3.0	Injury Assessment and Determination .....	15
	Shellfish.....	18
	Lost Use.....	19
4.0	The Restoration Planning Process .....	20
4.1	Restoration Strategy – broad .....	20
4.2	Evaluation Criteria .....	21

4.3	Tiers of Screening .....	22
4.3.1	Project List and Initial Screening .....	22
Table 1	Restoration Projects – Short List .....	23
4.3.2	Secondary Screening .....	23
5.0	Evaluation of Reasonable Range of Restoration Alternatives .....	24
Table 2	Summary of Preferred Restoration Alternatives.....	24
5.1	Dockton Park Nearshore Restoration - Preferred.....	25
5.1.1	Restoration Site Location and Characteristics .....	25
5.1.2	Restoration Action Description .....	26
5.1.3	Evaluation of the Alternative.....	27
5.2	Piner Point Acquisition / Nearshore Restoration - Preferred .....	27
5.2.1	Restoration Site Location and Characteristic.....	27
5.2.2	Restoration Action Description .....	28
5.2.3	Evaluation of the Alternative.....	28
5.3	Vashon Riparian Habitat Restoration - Preferred .....	28
5.3.1	Restoration Site Location and Characteristics .....	28
5.3.2	Restoration Action Description .....	29
Table 3	Descriptions for revegetation sites. ....	29
5.3.3	Evaluation of the Alternative.....	30
5.4	No Action Alternative – Not Preferred .....	30
5.4.1	Restoration Action Description .....	30
5.4.2	Evaluation of the Alternative.....	30
5.5	Environmental Consequences of Proposed Action/Preferred Alternatives.....	30
5.5.1	Likely effects of the project on public health and safety [40 CFR 1508.27(b)(2)]..	31
5.5.2	Likely impacts of the proposed project [40 CFR 1508.27(b)(1)] .....	31
5.5.3	Unique characteristics of the geographic area in which the project is to be implemented [40 CFR 1508.27(b)(3)].....	34

5.5.4	Controversial aspects of the project or its likely effects on the human environment [40 CFR 1508.27(b)(4)] .....	34
5.5.5	Degree to which possible effects of implementing the project are highly uncertain or involve unknown risks [40 CFR 1508.27(b)(5)] .....	34
5.5.6	Precedential effect of the project on future actions that may significantly affect the human environment [40 CFR 1508.27(b)(6)] .....	34
5.5.7	Possible significance of cumulative impacts from implementing this and other similar projects; potential impacts on connected actions [40 CFR 1508.27(b)(7)].....	34
5.5.8	Effects of the project on National Historic Places, or likely impacts to significant cultural, scientific or historic resources [40 CFR 1508.27(b)(8)] .....	37
5.5.9	Degree to which the project may adversely affect endangered or threatened species or their critical habitat [40 CFR 1508.27(b)(9)].....	38
5.5.10	Likely violations of environmental protection laws [40 CFR 1508.27(b)(10)].....	39
5.5.11	Introduction of non-indigenous species [NAO 216-6 6.01(b)(11)].....	39
5.5.12	Effects of climate change on restoration projects.....	39
5.6	Scaling the Injury and the Preferred Alternative.....	39
6.0	Compliance with Applicable Laws and Regulations .....	40
7.0	Literature Cited .....	44
8.0	Persons and Agencies Consulted .....	44
9.0	List of Preparers.....	45
	Glen St. Amant, Muckleshoot Indian Tribe Fisheries Division, 39015 172 <sup>nd</sup> Ave SE, Auburn, WA 98092.....	45
10.0	Appendices.....	46
	Appendix A. Background Information.....	46
	Figure 1 Offshore Areas with visible oil concentrations – Aerial observations on October 14, 2004 (Allen, 2006) .....	46
	Figure 2 Summary of Visible Shoreline Oiling- ground crew observations October 15-17, 2004 47	
	Appendix B. Parks in Affected Area .....	49
	Figure 4 Map of Parks in the Region .....	49
	Appendix C. NRDA Sampling Details .....	53

Figure 5	Subtidal Sediment Sample Locations – December 2004.....	53
Figure 6	Sediment,water and oil sample locations – October 2004.....	54
Appendix D.	Full Project List .....	55
Appendix E.	Dockton Park Nearshore Restoration – Additional Documentation ...	61
Figure 7	Dockton – Project Location.....	61
Figure 8	Dockton Site Location – Quartermaster Harbor, Vashon Island.....	62
Figure 9	Docton Major Restoration Components .....	62
Figure 10	Dockton Major Restoration Components Continued .....	62
Figure 11	Dockton Conceptual Design.....	63
Appendix F.	Piner Point Acquisition / Nearshore Restoration – Additional Documentation 64	
Figure 12	The Piner Point project site in relation to Maury Island.....	64
Figure 13	Oblique image of Piner Point project site (2006) with an example cross section of the project site before and after the restoration project.....	64
Appendix G.	Vashon Riparian Habitat Restoration – Additional Documentation ...	65
Figure 14	Map of Maury Island State Aquatic Reserve.....	65
Figure 15	Map showing revegetation sites along the marine shorelines of southern Vashon and Maury Islands. ....	66

## **1.0 Introduction**

### **1.1 Incident Summary**

On October 13, 2004, an oil spill occurred into Puget Sound during a ballasting operation on board the tank vessel Polar Texas, owned by Polar Tankers, Inc. a subsidiary of ConocoPhillips. The vessel was transiting north from Tacoma, WA. The incident is believed to have occurred about 7:00 p.m. and released an estimated 7200 gallons of Alaska North slope crude oil as the vessel transited the area south east of Vashon and Maury Islands. The spill went unreported until the early hours of Oct. 14, when a passing vessel notified the USCG. The exact cause and volume of the spill are still being debated but tests conducted by both state and federal laboratories indicate that the Polar Texas oil tanker was the source of the oil.

The volume is also debated. It was initially reported at 1000 gallons. The State of WA hired an oil spill expert, Al Allen, to estimate spill volume and used 7200 gallons for their \$540,000 in penalties. The heaviest oiling occurred in King County with patches of sheen extending as far south as the Tacoma Narrows and as far north as Eagle Harbor. The sheen may have touched as much as 15 miles of shore along Colvos Passage, the Narrows and Quartermaster Harbor and left a filmy coating along six miles of southern Vashon and Maury islands (Appendix A. Figure 1 Figure 2 ). The heaviest oil beached on the north shore, east shore and southern tip of Maury Island, on the southern tip of Vashon Island, Gig Harbor and in Olalla Bay. Floating oil and/or sheens were seen in Quartermaster Harbor, the mouth of Commencement Bay, through Colvos Passage and north past Blake Island towards Port Orchard.

At its peak, the Polar Texas spill response involved 286 people, 10 oil-skimming vessels, 24,000 feet of oil boom, three helicopters and additional boats and equipment. Crews recovered an estimated 59 tons of oily debris from shoreline cleanup and 6,842 gallons of oily water from skimming operations.

As a result of the spill, King County temporarily closed several parks on Vashon and Maury islands and the Washington State Department of Health closed several beaches to shellfish and seaweed harvesting for 3 weeks.

### **1.2 Overview of Natural Resource Injuries**

In general, the known or suspected injuries from the October 13, 2004 oil spill from the Polar Texas include:

- Adverse impacts to a number of fish species including juvenile ESA listed Chinook and Chum salmon, Pacific herring, surf smelt and Pacific sand lance.
- Adverse impacts to shoreline habitat, including approximately 4 miles of shoreline that received light to heavy oiling and an additional 15 miles of shoreline may have been exposed to sheen.

- The likely tainting of shellfish. Shellfish harvest advisory issued for the area.
- The likely impacts to migratory birds.
- The temporary closure of public beaches due to the oil spill and the related clean-up operations.

### **1.3 Natural Resource Trustees and Authorities**

Both federal and state laws establish liability for natural resource damages to compensate the public for injury destruction and loss of such resources and services resulting from oil spills. Natural resource Trustees are authorized to act on behalf of the public under state and federal statutes to assess damage to natural resources. These Trustees are also authorized to plan and implement restoration actions to restore natural resources injured and lost as a result of oil spills.

This Restoration Plan and Environmental Assessment (RP/EA) was prepared jointly by the National Oceanic and Atmospheric Administration (NOAA); the Puyallup Tribe of Indians, the Muckleshoot Indian Tribe; the U.S. Fish and Wildlife Service (FWS); and Washington State Departments of Ecology (Ecology), Washington State Department of Fish and Wildlife (WDFW), and Washington State Department of Natural Resources (WDNR). Collectively the government agencies and tribal nations are referred to as the “Trustees” or the “Natural Resource Trustees”.

Each of the agencies and tribal nations acts as a Natural Resource Trustee pursuant to the Oil Pollution Act of 1990 (OPA), 33 U.S.C. §2706 *et seq.*) and the National Oil and Hazardous Substances Contingency Plan (NCP), 40 CFR Part 300; WDOE, WDFW and WDNR also act as Trustees under the State of Washington Water Pollution Control Act (RCW 90.48). The Trustees are following guidance concerning restoration planning and implementation contained in OPA and 15 CFR Part 990 (Department of Commerce natural resource damage assessment regulations).

The Trustees previously entered into a Memorandum of Agreement Regarding Natural Resource Damage Assessment in the Commencement Bay, Washington Environment (August 9, 1990) and its First Supplement to Memorandum of Agreement – Coordination in Use of Natural Resource Damage Assessment and Restoration Planning Contributions and Application of Natural Resource Damage Recoveries (May 18, 1994) (jointly referred to as the “Commencement Bay MOA”). The Trustees entered into the Commencement Bay MOA under the authorities of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. §9601, *et seq.* (CERCLA), OPA, the NCP and other applicable Federal, State and Tribal law. The Trustees have determined to use the Commencement Bay MOA and the Trustee Council, decision making and administrative processes developed under that MOA to implement restoration for this spill.

### **1.4 Public Coordination**

Public review of the draft Restoration Plan/Environmental Assessment (RP/EA) is an integral component to the restoration planning process. Through the public review

process the Trustees seek public comment on the projects being proposed to restore injured natural resources from these oil spills.

Public review of the RP/EA is a standard element of Federal and State laws and regulations that apply to the Natural Resource Damage Assessment (NRDA) process including Section 1006 of OPA, the OPA regulations (15 CFR Part 990); National Environmental Policy Act (NEPA) (42 USC 4371 et seq.) and its implementing regulations (40 CFR Parts 1500-1508); and SEPA (RCW 43.21C) if any state or local permits are required.

This draft RP/EA is made available to the public for a 30-day comment period. Written comments received during this public comment period will be considered when preparing the Final RP/EA.

The State and Federal natural resource damage assessment (NRDA) regulations provide the opportunity for the Trustees to invite the Responsible Party to participate in the NRDA process. The Responsible Party for the spill was not initially identified and therefore did not participate in the NRDA process.

### **1.5 Administrative Record**

The Trustees have created a subdivision of the Commencement Bay natural resource damage assessment administrative record to contain information documenting the decision making processes that the Trustees used when identifying, evaluating, selecting, and implementing restoration projects. The administrative record can be viewed at the National Oceanic and Atmospheric Administration Office, 7600 Sand Point Way NE, Seattle, WA 98115. Contact: Gail Siani at 206-526-4566, gail.e.siani@noaa.gov.

### **1.6 Purpose and Need for Restoration**

The purpose of this draft RP/EA, prepared by Federal, State, and Tribal Trustees, is to address restoration of natural resources injured by Alaska North slope crude oil spilled by the vessel Polar Texas in Puget Sound east of Vashon Island. The need for the RP is to design, coordinate, and implement projects that restore, rehabilitate, replace and/or acquire the equivalent of the natural resources that were injured from this spill event.

The Trustees and the U.S. Department of Justice have entered into a proposed settlement of natural resource damage claims resulting from the spill with Polar Tankers, Inc. (the Responsible Party), which is contained within a consent decree (Consent Decree) that is simultaneously being made available for public review and comment. The RP/EA describes the affected environment and illustrates restoration alternatives and their environmental consequences. This RP/EA was developed in accordance with the OPA, 33 U.S.C. 2706(b); NEPA, 42 USC 4321-4370d, and its implementing regulations, 40 CFR Parts 1500-1508; the Washington State Environmental Policy Act (SEPA), RCW 43.21C; and the Commencement Bay MOA.

### **1.7 OPA and NRDA Overview**

Under OPA, Trustees can recover: (1) the cost of restoring, rehabilitating, replacing or acquiring the equivalent of the injured natural resources ("primary restoration"); (2) the



diminution in value of those injured natural resources pending restoration ("compensatory restoration"); and (3) reasonable assessment costs.

Before initiating a NRDA, the Trustees must determine that an incident has occurred; the incident is not from a public vessel; the incident is not from an onshore facility subject to the Trans-Alaska Pipeline Authority Act; the incident is not permitted under federal, state or local law; and public trust natural resources and/or services may have been injured as a result of the incident.

Natural resources are defined as "land, fish, wildlife, biota, air, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any State or local government or Indian tribe" (15 CFR § 990.30). Injury is defined as "an observable or measurable adverse change in a natural resource or impairment of a natural resource service" (15 CFR § 990.30). As described in the OPA regulations, a NRDA consists of three phases -- preassessment, restoration planning, and restoration implementation.

Based on information collected during the preassessment phase, the Trustees make a preliminary determination as to whether natural resources and/or services have been injured and/or are likely to be injured by the release. Through coordination with response agencies (e.g., the United States Coast Guard (USCG)), the Trustees next determine whether the oil spill response actions will eliminate the injury or the threat of injury to natural resources. If injuries are expected to continue and feasible restoration alternatives exist to address such injuries, the Trustees may proceed with the restoration planning phase. Restoration planning also may be necessary if injuries are not expected to continue or endure but are nevertheless suspected to have resulted in interim losses of natural resources and/or services from the date of the incident until the date of recovery.

The purpose of the restoration planning phase is to evaluate the potential injuries to natural resources and services and to use that information to determine the need for and scale of associated restoration actions. This phase provides the link between injury and restoration and has two basic components -- injury assessment and restoration selection. The goal of injury assessment is to determine the nature and extent of injuries to natural resources and services thus providing a factual basis for evaluating the need for, type of, and scale of restoration actions. As the injury assessment is being completed, the Trustees develop a plan for restoring the injured natural resources and services. The Trustees must identify a reasonable range of restoration alternatives, evaluate and select the preferred alternative(s), develop a draft restoration plan presenting the alternative(s) to the public, solicit public comment on the draft restoration plan, and address comments as needed in a final restoration plan.

During the restoration implementation phase, the draft restoration plan is presented to the Responsible Party to implement or to fund the Trustees' costs for assessing damages and implementing the restoration plan. This provides the opportunity for settlement of damage claims without litigation. Should the Responsible Party decline to settle, OPA authorizes Trustees to bring a civil action against Responsible Parties for damages or to seek reimbursement from the USCG's Oil Spill Liability Trust Fund.

Trustees may settle claims for natural resource damages under OPA at any time during the damage assessment process, provided that the settlement is adequate in the judgment of the Trustees to satisfy the goals of OPA and is fair, reasonable, and in the public interest, with particular consideration of the adequacy of the settlement to restore, replace, rehabilitate or acquire the equivalent of the injured natural resources and services. Sums recovered in settlement of such claims, other than reimbursement of Trustees' costs, may only be expended in accordance with a restoration plan, which may be set forth in whole or part in a consent decree. For this incident the draft restoration plan is being made available for public review and comment simultaneously with the Consent Decree containing the proposed settlement with the Responsible Party.

## **2.0 Affected Environment**

This section describes the areas that were affected by the spill and those within the restoration area. It identifies natural resources of concern that could be affected by the draft RP/EA. It provides a discussion of the current conditions that will be used as a comparison with conditions after restoration activities have been implemented. The primary restoration area refers to the geographic area primarily impacted by the spill. The expanded restoration area refers to a larger area that has a biological connection to the primary area through an injured species or the food web to which it is a part.

The primary restoration areas are the shorelines of Quartermaster Harbor and of the southeast point of Maury Island. The expanded restoration area includes the marine waters of Puget Sound, specifically in the area of Vashon and Maury Islands, their associated coastal salt marsh estuary, and both intertidal and subtidal shellfish habitats. (0)

### **2.1 Physical Environment**

Marine waters near Vashon and Maury Islands are considered to be of extraordinary quality for aquatic life uses and are therefore subject to the most stringent State standards (WAC 173-201A-210; WAC 173201A- 612).

Vashon and Maury Islands are underlain by glacial till, sand, and gravel. Approximately 88 percent of the Vashon Maury Island shoreline contains bluffs or banks. Erosion of these landforms is an integral process in maintaining sandy beaches in the area. There is a continuous north-flowing drift cell along the eastern shore of Maury Island from Piner Point to Point Robinson, where it converges with the drift cell along the northern shoreline. The drift cell along the eastern shore is mostly uninterrupted. Sediment transportation is somewhat disturbed by existing bulkheads and fill associated with upland development (WDNR 2004a). Wake turbulence from commercial vessel traffic in East Passage re-suspends sediments along east side of Maury Island. (Grette Associates, LLC 2006c).

Quartermaster Harbor is a rather shallow embayment (generally 5 to 30 feet). Water quality in the harbor has been adversely impacted by human activities. Past data indicate violations of state water quality standards for dissolved oxygen and dieldrin (a pesticide). Fecal coliform pollution and paralytic shellfish poisoning are also a concern in the

harbor. The major freshwater inputs to Quartermaster Harbor include Judd and Fisher creeks, with a number of lower order streams and tidal seeps (WDNR 2004).

Maury Island has a number of public recreation sites including Dockton Park, Maury Island Marine Park, Point Robinson Park and Lighthouse and Vashon Golf Course. Dockton Park, located on the north side of the island along Quartermaster Harbor, is about one quarter of mile northwest of the mine site. The park provides picnic areas, hiking trails, swimming beach, a boat launch, and moorage. Maury Island Marine Park is located on the southeast side of Maury Island, along the shoreline northeast of Gold Beach.

## 2.2 Biological Environment

### 2.2.1 Birds

Numerous species of waterfowl (ducks and geese), marine birds (gulls, cormorants, grebes, loons and alcids) and shorebirds seasonally use the open waters, shorelines and bays of the affected area. Abundance of these birds tends to be relatively low during summer months, with any significant concentrations of birds tending to be limited to a small number of areas such as northern Quartermaster Harbor, parts of Colvos Passage, the Tacoma Narrows and Commencement Bay. During mid to late fall, both the variety of species and numbers of birds can increase dramatically, with significant concentrations appearing in additional locales, such as the area between Yukon Harbor and Manchester. At the time the Dalco Pass spill occurred, only small numbers of migratory and wintering birds had begun to arrive in Central Puget Sound. No significant concentrations were observed in the affected area until midway through the spill response and cleanup when large numbers of American Wigeon (*Anas americana*) arrived in the vicinity of Yukon Harbor.

Both Bald Eagles (*Haliaeetus leucocephalus*) and Great Blue Herons (*Ardea herodias*) occur year-round throughout the affected area. Both species are vulnerable to oiling due to their use of marine environments for foraging.

### 2.2.2 Fish

Cutthroat trout (*Oncorhynchus clarki clarki*, chinook (*O. tshawytscha*), chum (*O. keta*), coho (*O. kisutch*), and pink salmon (*O. gorbuscha*) feed and rear in nearshore areas in the affected area. Juvenile salmonids feed on epibenthic invertebrates in the intertidal zone. In addition to salmonids, marine fish that likely use nearshore habitats include striped perch (*Embiotoca lateralis*), surf smelt (*Hypomesus pretiosus*), Pacific sand lance (*Ammodytes hexapterus*), staghorn sculpin (*Leptocottus armatus*), English sole (*Parophrys vetulus*), copper rockfish (*Sebastes caurinus*), cabezon (*Scorpaenichthys marmoratus*) and a variety of surfperch (*Embiotocidae*), flatfish (*Pleuronectiformes*), gunnel (*Pholididae*), stickleback (*Stichaeidae*), and rockfish (*Sebastes spp.*). The intertidal and shallow subtidal zones provide feeding and rearing habitat for young marine fish and offer feeding and spawning habitat for mature adult fish. As with salmonids, the benthic invertebrate resources in nearshore areas provide abundant prey for marine fish.

Offshore waters along Maury Island and other shorelines within the affected area provide a mix of pelagic, benthic and reef habitat. Pelagic species such as adult salmonids, Pacific cod (*Gadus macrocephalus*), walleye pollock (*Theragra chalcogramma*), and Pacific hake (*Merluccius productus*) likely utilize the water column in offshore areas. Benthic areas provide habitat for flatfish, spiny dogfish (*Squalus acanthias*) and a variety of sculpin species (*Cottidae*) (Palsson and Tsou 2005). Reef habitats, and pilings throughout the area, provide habitat for lingcod (*Ophicon elongates*), greenling (*Hexagrammidae*), and several species of rockfish (King County DDES 2000).

WDFW has documented herring (*Clupea harengus pallasii*) spawning grounds along the shoreline of Quartermaster Harbor and southern Maury Island along East Passage (Bargman 1998). The Quartermaster Harbor herring stock spawns from late January through early April. These spawning grounds represent one of 18 distinct Pacific herring spawning areas in Puget Sound (WDNR 2004b). Herring deposit transparent, adhesive eggs on intertidal and shallow subtidal eelgrass and marine algae. Eggs may be deposited anywhere between the upper limits of high tide to a depth of minus 40 feet, but most spawning takes place between 0 and minus 10 feet in tidal elevation (Bargman 1998; WDFW 2006a). The documented herring spawning grounds extend from approximately mid shore on the east side of Maury Island south to Piner Point and around the entire shoreline of Quartermaster Harbor (Washington DNR 2004b).

Surf smelt and sand lance spawn in the high intertidal zone on mixed sand and gravel beaches. Documented spawning areas for sand lance occur throughout all of Quartermaster Harbor, as well as near the entrance to Gig Harbor and along portions of East Passage. Documented surf smelt spawning occurs primarily at scattered sites along the shorelines of eastern Maury Island, the eastern shore of East Passage, Point Defiance, Gig Harbor and southern Colvos passage. In southern Puget Sound, surf smelt tend to spawn from October through February; sand lance typically spawn from November through February (WDFW 2006a).

See Section 12.4.7 Threatened and Endangered Species for more detailed discussion on Chinook salmon, steelhead, and bull trout species listed or proposed for listing as threatened under the Endangered Species Act.

### 2.2.3 Aquatic Vegetation

Eelgrass (*Zostera marina*) is widely distributed throughout the affected area in nearshore intertidal and subtidal areas, between 0 feet mean lower low water elevation (MLLW) and about -22 feet MLLW. The nearshore intertidal and shallow subtidal areas also support macroalgae which occurs between 0 to -20 feet MLLW.

### 2.2.4 Shellfish and Invertebrates

Intertidal and shallow subtidal areas along the shorelines of Vashon and Maury Island, Blake Island, Des Moines and outer Rich Passage provide habitat for a variety of shellfish including butter clams (*Saxidomus gigantea*), littleneck clams (*Protothaca staminea*), macoma clams (*Macoma spp.*), and common cockle (*Clinocardium nuttalli*).

Geoduck clam (*Panopea abrupta*) beds are found along shorelines throughout much of the affected area, including those portions of Maury Island, Vashon Island, Colvos Passage and East Passage where oil and/or sheen were observed.

Dungeness crabs are also found within the spill-affected area, being found predominantly in Tramp Harbor on the north shore of Maury Island, in Commencement Bay and in Yukon Harbor.

All of these species are harvested either commercially, recreationally or by Native Americans for subsistence purposes.

#### 2.2.5 *Marine Mammals*

Puget Sound provides habitat for California sea lions (*Zalophus californianus*), Steller sea lions (*Eumetopias jubatus*), harbor seals (*Phoca vitulina richardsi*), Dall's and harbor porpoise (*Phocoenoides dalli* and *Phocoena phocoena*, respectively), killer whale (*Orcinus orca*), and gray and minke whales (*Eschrichtius robustus* and *Balaenoptera acutorostrata*, respectively) (Osmek et al. 1998). Harbor seals and Dall's porpoises are the most commonly observed marine mammals in the area affected by the Dalco Pass oil spill. See Section 2.4 for more detailed discussion of killer whales and Stellar sea lions listed under ESA.

### **2.3 Cultural and Recreational Environment**

#### 2.3.1 *Cultural Resources*

There are several sites listed on the National Register of Historic Places that are located within the affected area including the Dockton Hotel, the Shawnee House, Nelson Clarke's House, the Brown's Point Lighthouse and the Point Robinson Lighthouse. There are also several known archaeological sites located within the affected area. These sites are known to the Washington State Historic Preservation Officer, but will not be listed here due to concerns over confidentiality.

#### 2.3.2 *Recreational Use*

Recreational use within the area affected by the Dalco Passage Spill is significant and diverse. Uses in the region include boating, camping, beach walking, wildlife viewing, shellfish harvesting, scuba diving and fishing. The number of parks and recreational areas in the affected region directly reflect the region's high recreational use value. The Dalco Passage spill occurred in an area with three State Parks, four King County parks, and at least eleven local parks on Vashon and Maury Island with saltwater shorelines. There are also local parks and boat launches located along the shoreline between Tacoma and Seattle, including Point Defiance and Browns Point on Commencement Bay, Redondo, Des Moines, Seahurst County Park and the Fauntleroy Ferry - which provides service from West Seattle to Vashon (Appendix B. ).

Vashon Island is about 12-miles long while Maury Island is about 6- miles long and is attached to Vashon by a narrow isthmus. Together, they have a land mass of about 25,000-acres, ~ 51 miles of saltwater shorelines (over half of that of King County), and have a population of about 11,000.

## 2.4 Threatened and Endangered Species & Essential Fish Habitat

In accordance with Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended, federally funded, constructed, permitted or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. Several species protected under ESA are potentially found in the affected area.

The endangered marbled murrelet (*Brachyramphus marmoratus*) is a small coastal seabird found in Puget Sound. These birds feed on small fish and invertebrates in nearshore marine waters and nest in mature and old growth coastal forest. Small numbers of marbled murrelets have been observed feeding in Quartermaster Harbor and may occasionally occur along other shorelines in the spill-affected area. There is no suitable marbled murrelet nesting habitat present within the affected area.

The threatened bull trout (*Salvelinus confluendus*) are native char to the Pacific Northwest and western Canada. The bull trout's range includes Puget Sound and associated tributaries. Although bull trout are primarily associated with colder streams, migratory forms are known to occur in large river systems and in Puget Sound. Anadromous bull trout migrate to salt or brackish water typically at 2 to 3 years of age where they rear and mature in estuarine and nearshore marine habitats. Immature individuals typically return to lower mainstem river reaches to overwinter. There are no known streams with suitable habitat for bull trout on Vashon or Maury Island. Bull trout could, however, potentially occur in the affected nearshore areas. Nearshore critical habitat for bull trout is currently designated along the southern shoreline between Neill Point and northeast Summerhurst.

Puget Sound is a migratory corridor for threatened adult chinook salmon (*Oncorhynchus tshawytscha*) and provides habitat for out migrating juvenile chinook from rivers into the Sound before their eventual oceanic phase as adults. A portion of Puget Sound chinook salmon remain resident in Puget Sound their entire lives. Juvenile Chinook salmon habitat includes nearshore areas and open water of Puget Sound. Juveniles are present in marine waters of the affected area year round. Summer/fall-run adult chinook begin freshwater migration in August. The greatest abundance of adults would occur between early summer and early fall as they return from the ocean to natal streams and rivers. Natal streams in the affected area include the Puyallup River, Judd Creek (Vashon Island), Olalla Creek (Colvos Passage), Crescent Valley Creek (Gig Harbor) and Curley Creek (Yukon Harbor). The eelgrass beds and substrate in the affected area provide refuge for juvenile chinook, while the nearshore areas are primarily used as a migratory corridor for both juveniles and adults chinook salmon.

The threatened Southern resident killer whales (*Orcinus orca*) are generally found in the water off the San Juan Islands during the spring, summer and early fall, where they are believed to feed almost exclusively on chinook salmon returning to the area's rivers to spawn. This area is considered to be the core habitat of the southern resident pods. During late fall and winter, southern resident pods typically leave this core area. The K and L pods generally are thought to travel to outside waters, while the J pod is believed to move to the inland waters of British Columbia and Puget Sound in late fall and remain there throughout the winter. However, J pod use is unpredictable within this relatively large area. All pods have been reported off the mouth of the Columbia River during fall

and spring chinook runs. K and L pods use of Puget Sound, including the Vashon-Maury Island area has increased in recent years and may continue to increase. Southern resident pods appear to travel more widely and erratically during years when salmon numbers are relatively low. Peak use of Puget Sound by southern resident pods generally occurs in the months of November, December, and January. Transient killer whales also travel sporadically throughout the Puget Sound. Southern residents use the waters off Vashon-Maury Islands as part of the broader fall/winter area of Washington and British Columbia inland marine waters. Southern residents may occur within or near the project site at any time during the months of October through January; however, the frequency and duration of such occurrences are expected to be low. Critical habitat for the southern resident killer whale has been designated as the southern residents' entire range in Washington's inland marine waters, including Haro Strait, the Strait of Juan de Fuca, and all of Puget Sound, a total of just over 2,500 square miles. Excluded from this critical habitat area designation are 18 military sites and areas with water depths less than 20 feet deep (based on extreme high water elevation).

The threatened Steller sea lions (*Eumetopias jubatus*) occur year-round in Washington waters, but do not routinely breed here. Rare incidents of breeding in Washington may occur, as evidenced by infrequent observations of apparent newborn pups on isolated islands off the coast of Washington. There are no rookeries or large haul outs located in Puget Sound. Although haul outs occur in a variety of areas, individual locations used are specific and change little from year to year. No haul outs have been identified in or near the area affected by this oil spill, and any occurrence of Steller sea lions in this part of Puget Sound would be relatively rare.

The term “Puget Sound steelhead” generally refers to the anadromous form of the trout species *Oncorhynchus mykiss*, which includes freshwater rainbow or red band trout. Puget Sound steelhead were listed as a threatened species in 2007. In Puget Sound, the listing applies only to native, naturally spawning anadromous runs with the exception of two hatchery stocks in the Green and Hamma Hamma Rivers. Steelhead, unlike Pacific salmon, may spawn in multiple years. Typically juvenile steelheads out-migrate to salt water from April to mid-May. Based on WDFW data there are two populations of steelhead trout in the central sound. The East Kitsap population is composed of a number of small runs including streams on the west side of Vashon Island and in Quartermaster and Gig Harbors. The Puyallup River population consists of three native steelhead runs. There are no steelhead bearing streams on the East Passage between the Puyallup and Duwamish Waterway. It is unlikely that juvenile rearing occurs in shallow waters of the project area. Sub-adult and adult steelhead may use the deeper, offshore waters of the project area for migration and foraging, but are not expected to be present in significant numbers at any time.

### **3.0 Injury Assessment and Determination**

Initial field assessment efforts were focused on the collection of ephemeral data related to the overall distribution of oil and on establishing the location of those shorelines where significant oiling had occurred. (Helicopter overflights and ground-based shoreline surveys were conducted). In addition, water, sediment, and shellfish tissue samples were

collected for chemical analysis in areas where sensitive resources were likely to be present. These efforts were used to document the temporal and spatial extent of oiling, the type and number of oiled wildlife observed, and the concentrations of petroleum-hydrocarbon constituents in water, sediment, and shellfish tissue. The information was used to determine whether the spill would likely result in trust resources being exposed to oil to such an extent that injury could reasonably be inferred. Data from these sampling and assessment efforts are available from the Trustees upon request (Jason Lehto: 206-526-4670).

The Trustees involved in this effort deemed that the level of sampling conducted during the initial field assessment was adequate for the purpose of providing an assessment of the types and magnitude of resource injuries that could reasonably be expected from a spill of this magnitude. They also concluded that the additional level of sampling necessary to provide a more detailed and quantified injury assessment would not have been cost-effective in this case.

OPA requires that the assessment team determine that injury has happened before moving into the Restoration Planning phase of the process where the scale of injury is investigated. Evidence of observed or inferred injury was as follows:

#### *Intertidal Shorelines*

Shoreline cleanup assessment teams (SCAT) surveyed and documented shoreline oiling throughout the spill area in the days following the spill. Approximately 1 mile of heavy oiling was documented on Manzanita Beach near the south end of Maury Island. Ecology estimates that approximately 3,000 gallons of oil was deposited along this stretch of shoreline.

At least another 3 miles of additional shoreline was documented as having light to moderate oiling by SCAT teams surveying in the areas of Neill Point, Piner Point, Gig Harbor, Olalla Bay and eastern Maury Island. In addition, based on aerial pictures, the Washington Dept. of Ecology has estimated that an additional 15 miles of shoreline was exposed to a light sheen.

Beyond the direct injury that oiling caused to the impacted shoreline habitats and their associated natural resources, oiling of the intertidal zone can pose a risk of secondary injury to those resources utilizing nearshore waters and shallow subtidal habitats in areas adjacent to the oiled beaches. These include, but are not limited to, juvenile salmon, baitfish, forage fish for piscivorous fish, birds, and mammals, other marine fish, shellfish and marine birds.

#### *Open Water*

The major concentrations of oil from this spill were found along the southern shores of Vashon and Maury Islands (including Quartermaster Harbor) as well as near Ollala on the west side of Colvos Passage. In addition, patches of sheen were documented throughout the area as far south as the Tacoma Narrows and as far north as Eagle Harbor. (Figure 1 )



Using aerial photographs, taken on October 14<sup>th</sup>, Ecology has estimated that approximately 6.5 mi<sup>2</sup> of open water in the vicinity of Quartermaster Harbor and an additional 0.5 mi<sup>2</sup> area vicinity of Olalla Bay were covered by oil within the first day after the spill (Allen, 2006). Ecology also estimates that volume of oil in these areas was approximately 2,300 gallons. The NOAA ADIOS (mass balance) model program indicates that an evaporation loss of 25% would be expected given the local conditions at the time of the spill. When this information is combined with the estimate of oil stranded at Manzanita Beach, the Trustees consider it is reasonable to estimate that the Polar Texas released at least 7200 gallons of Alaska North Slope Crude into the open waters of Dalco Pass on October 13<sup>th</sup>, 2004.

The water samples collected near Manzanita Beach and Neill Point confirmed that elevated levels of polycyclic aromatic hydrocarbons (PAHs) were present in the water column in these areas and it is reasonable to assume that other areas within the spill area experienced elevated levels of these contaminants as well. While no acute impacts were noted in this area, the potential does exist for longer term chronic impacts to the organisms which utilize this habitat.

#### *Fish*

##### *Forage Fish (surf smelt, sand lance and herring)*

Trustee sampling efforts have documented that surf smelt were spawning within Quartermaster Harbor at the time of the spill - as indicated by the presence of eggs along the southeastern shore of Vashon Island between Burton and Neill Point. Neither sand lance nor herring were spawning at the time of the incident. Sediment samples revealed elevated PAH levels at known Surf Smelt and Sand lance spawning beaches within the area. Elevated PAH levels were also detected within sub-tidal sediment samples collected from known herring spawning areas within Quartermaster Harbor, particularly in the Manzanita Beach area. In both cases, the measured PAH levels were above levels associated with adverse effects on developing fish embryos. Eggs present at the time of the spill, or deposited in the months subsequent to the spill, were therefore at risk of exposure to PAHs at levels associated with injury.

##### *Chum and Chinook salmon*

No documentation exists to determine what the local fish populations were at the time of the spill. The Trustees did, however, analyze a subset of data from the 2001-02 King County beach seine study (King County 2004) to develop a population estimate for juvenile chinook and chum salmon within 100m of the shoreline in the area most heavily impacted by the spill. This analysis estimated that as many as 38,000 juvenile salmon had been present in the vicinity of southwest Vashon Island, Maury Island, and Tramp Harbor during that previous study, at the same time of year as the spill occurred. This suggests that relatively high numbers of juvenile chum and chinook salmon were likely present in the impacted area at the time of the spill.

The near-surface water samples collected at Neill Point and near Manzanita Beach indicate PAHs concentrations at levels associated with negative impacts to juvenile

salmon.

This information led the Trustees to conclude that some level of injury to salmon was likely.

### *Shellfish*

Oiling of shellfish beds or of beaches immediately adjacent to shellfish beds was documented at sites on Maury Island, southwest Vashon Island and at Olalla. Analysis of tissue samples from shellfish collected at oiled beaches revealed oil contamination levels below those known to cause lethal or sub lethal effects, but still sufficiently high to cause concerns over possible tainting that would make the shellfish unsuitable for human consumption. This prompted the Washington Department of Health to issue a recreational harvest advisory, lasting 148 days, against harvesting clams or oysters.

The Trustees determined that injury to shellfish had occurred based on documented contaminant levels and the temporary lost use of this resource.

### *Marine Mammals*

A total of 4 juvenile harbor seals (3 dead non-oiled plus 1 live oiled) were recovered during the spill response. Necropsies of the three dead seals suggested that they died of natural causes. The live, oiled seal was given preliminary treatment at the primary care center at the command post, and then transferred to the Progressive Animal Welfare Society (PAWS) for further care. It subsequently died and was immediately necropsied. Neither the necropsy, nor the associated tissue analyses established any definitive link between the partial external oiling and the death of the animal. The tests at NOAA's Manchester toxicology Lab revealed that the oil found in the fur sample from this animal did not match the Dalco Pass oil, but was in fact weathered coal tar creosote.

It is the Trustees' determination that no marine mammals are known to have been directly impacted by this spill.

### *Birds*

Two live oiled birds, a western grebe and a mallard, were recovered as a result of search efforts. The oil on both birds was matched to that of the Dalco Pass spill by the Manchester Lab. The Western grebe was successfully cleaned, and treated and released. The Mallard was euthanized after it was determined that it had pre-existing injuries and that it had a poor prognosis for recovery and release.

In addition to the recovered birds, the Trustees feel that it is reasonable to assume that additional birds were impacted by this spill, given the direct observations of birds in or near oil sheens and the broad geographic area where oil sheens were observed. Birds oiled by sheen are not readily detected by visual observation and can suffer chronic health effects from exposure to sheens. These birds can remain highly mobile, with the result that any subsequent mortality that might occur can take place some distance away from where the birds were originally oiled.

### *Lost Use*

In addition to their intrinsic value, natural resources also provide services in the form of public recreation opportunity. When the public's recreational use of resources is lost or diminished due to oil spill impacts, those losses are recoverable under OPA and addressed in the NRDA process.

The Dalco Pass spill resulted in 18 days of beach closures at King County parks on both Vashon and Maury Islands, a Washington Department of Health recreational harvest advisory that prevented and/or reduced harvesting clams, oysters and other intertidal species for 148 days, a temporary closure of geoduck harvest on subtidal beds owned by Department of Natural Resources. Thus, the Trustees determined that injury to recreational use had occurred in the form of lost recreational opportunity.

### *Historic Places and Cultural Resources*

Although there are known historic properties and archeological sites within the affected area, there are no known/ reported impacts to these places.

## **4.0 The Restoration Planning Process**

### **4.1 Restoration Strategy – broad**

Because resource damages for the Dalco Passage oil spill were assessed under the authority of OPA 1990, the Trustees were required to develop this restoration plan under the OPA regulations and process. The goal of the restoration process is to restore injured natural resources and compensate for interim lost use of those resources. OPA requires that this goal be achieved by returning injured resources to pre-incident (baseline) conditions and by compensating for any interim losses of natural resources during the period of recovery to these baseline conditions.

The Trustees have developed this RP/EA to comply with the directives and intent of the proposed Consent Decree and the Commencement Bay MOA and with regulatory requirements under OPA, NEPA, and SEPA.

Restoration actions under the OPA regulations are either primary or compensatory. Primary restoration is action(s) taken to return the injured natural resources and services to baseline condition on an accelerated time frame by directly improving the resources or services damaged. As one form of primary restoration, the OPA regulations require that Trustees consider natural recovery of the resource. Trustees may select natural recovery under three conditions: 1) if feasible; 2) if cost-effective primary restoration is not available; or 3) if injured resources will recover quickly to baseline without human intervention. Primary restoration alternatives can range from natural recovery, to actions that prevent interference with natural recovery, to more intensive actions expected to return injured natural resources and services to baseline faster or with greater certainty than natural recovery alone.

Compensatory restoration includes actions taken to compensate for the interim losses of natural resources and/or services, pending recovery. The type and scale of compensatory restoration depends on the nature of the primary restoration action and the level and rate of recovery of the injured natural resources and/or services, given the primary restoration action. When identifying compensatory restoration alternatives, Trustees must first consider actions that provide services of the same type and quality and that are of comparable value as those lost. If a reasonable range of compensatory actions of the same type and quality and comparable value cannot be found, Trustees then consider other compensatory restoration actions that will provide services of at least comparable type and quality as those lost. Compensatory restoration alternatives must be scaled to ensure that the size or quantity of the project reflects the magnitude of the injuries from the spill.

To reduce transaction costs and avoid delays in restoration, the OPA regulations encourage the Trustees to conduct the NEPA and/or SEPA process concurrently with the development of the draft restoration plan.

To comply with the requirements of NEPA and SEPA, the Trustees analyzed the effects of each of the preferred alternatives on the quality of the human environment. Regulations for implementing NEPA direct federal agencies to evaluate the potential significance of proposed actions by considering both context and intensity. For the

actions considered in this RP/EA, the appropriate context for considering potential significance of the action is regional, as opposed to national or worldwide.

#### **4.2 Evaluation Criteria**

The restoration alternatives presented in this draft RP/EA are for compensatory restoration. The size or scale of the compensatory restoration project(s) depend on the nature, extent, severity, and duration of the resource injury.

OPA regulations recommend that the Trustees state their preferred project alternatives and explain the basis for their selection or rejection of other alternatives. The Trustees evaluated and selected restoration projects using guidance provided in OPA 90. Each of the projects in the selected alternative was evaluated for compliance with applicable state and federal laws and policies.

OPA regulations recommend that the Trustees develop a reasonable range of primary and compensatory restoration alternatives and then identify the preferred alternatives based on criteria provided at 15 CFR Part 990.54(a):

1. Cost to carry out the project.
2. Extent to which each project is expected to meet the Trustees' goals and objectives in returning the injured natural resources and services to baseline condition and/or compensating for interim losses.
3. Likelihood of success of each project.
4. Extent to which each project will prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative.
5. Extent to which each project benefits more than one natural resource and/or service.
6. Effect of each project on public health and safety.

In addition, the Trustees considered other factors including:

1. Size of project
2. Proximity to the area impacted by the spill.
3. Ownership / Management – current ownership will promote restoration sooner
4. Land-use compatibility – restoration will not conflict with surrounding uses
5. Water quality and flow (freshwater sites) – sites that resist seasonal flooding
6. Public access
7. Preference for restoration, rather than feasibility or research studies.
8. Cost of individual or combined projects not to exceed \$400,000.

Finally the Trustees evaluated the intensity of the preferred alternatives using the following 11 factors:

1. Likely impacts of the proposed project;

2. Likely effects of the project on public health and safety;
3. Unique characteristics of the geographic area in which the project is to be implemented;
4. Controversial aspects of the project or its likely effects on the human environment;
5. Degree to which possible effects of implementing the project are highly uncertain or involve unknown risks;
6. Precedential effect of the project on future actions that may significantly affect the human environment;
7. Possible significance of cumulative impacts from implementing this and other similar projects;
8. Effects of the project on National Historic Places, or likely impacts to significant cultural, scientific or historic resources;
9. Degree to which the project may adversely affect endangered or threatened species or their critical habitat; and
10. Likely violations of environmental protection laws;
11. No non-indigenous species will be introduced as part of the implementation of the restoration project [NOAA NAO 216-6 6.01(b)(11)].

### **4.3 Tiers of Screening**

#### *4.3.1 Project List and Initial Screening*

The Trustees developed the list of possible restoration projects, with each agency recommending possible projects relevant to the impacted area and the selection criteria. The Trustees assembled a list of 68 projects, a large number of which were selected from existing lists of priority projects for the impacted area. The lists of priority projects that the Trustees reviewed included:

- The Salmon Habitat Plan for the Green/Duwamish and WRIA 9
- The 3-year work plan for WRIA 9

Puget Sound Nearshore Project Priorities: assessing consistency between local and regional strategies of the Puget Sound salmon recovery plan.

Selecting projects from these lists ensured that the Trustees were considering work that was needed in the region and that had already gone through some level of public review. Funding for these projects was under development and none of these projects were mandated as a form of mitigation for any other impacts. The full list of projects can be found in Appendix D.

Following assembly of the full list, the Trustees applied the selection criteria to the list to develop an initial ranking of projects. Each criterion was scored from 1 to 5 for each project, where 5 was the most favorable score. This process resulted in a short list of 10 potential projects (Table 1 )

*Table 1 Restoration Projects – Short List. The following table contains a shorter list of the projects that the Trustees considered.*

<b>Project Name</b>	<b>Description</b>
Dockton Park Nearshore Restoration on Maury Island	Replace deteriorating cross tiles and catch basins. Repair or remove the bulkhead on west shore of Quartermaster Harbor.
Ellis Creek Saltmarsh Protection and Restoration on Vashon Island:	Acquire salmonid-accessible saltmarsh and riparian land at the mouth of Ellis Creek in Tramp Harbor on the east side of Vashon Island.
Functioning Nearshore Habitat Protection on Vashon/Maury Island:	Protect sites with high habitat resource values - Maury Island Marine Park
Functioning Nearshore Habitat Protection on Vashon/Maury Island:	Protect sites with high habitat resource values - Lost Lake
Functioning Nearshore Habitat Protection on Vashon/Maury Island:	Protect sites with high habitat resource values - Raab's Lagoon Pocket Estuary
Gorsuch Creek Channel Degradation Erosion	Stabilize portion of Gorsuch and prevent further degradation.
Maury Island Restoration-CPS Opp. Grant	Intertidal restoration: Remove creosote pilings from a failed bulkhead coupled with bulkhead removal in intertidal zone.
Piner Point Acquisition	Acquire 5 properties totaling 6 acres encompassing Piner Point on Maury Island to benefit baitfish spawning and salmonids.
Vashon Island Olympia Oyster Restoration	Expand existing program that enhances native oyster habitat in Raab's Lagoon
Vashon Riparian Habitat Restoration	Improve riparian habitat through a variety of planting activities. Partner with existing invasive removal activities.

#### 4.3.2 Secondary Screening

The Trustees used the project short list to develop the list of preferred alternatives. The Trustees began by researching the 10 projects in depth to get more detail on the proposed work and the current status of project planning. This research included meetings with the potential partners on several of the proposed projects (e.g. King County Department of Natural Resources and Parks). The Trustees ultimately selected three preferred alternatives based on the connection of the projects to the resource injuries sustained during the oil spill. These projects are:

- Dockton Park Nearshore Restoration
- Piner Point Acquisition / Nearshore Restoration
- Vashon Riparian Habitat Restoration

The above-listed preferred restoration alternatives are based on their preliminary designs and may require refinements or adjustments to suit site conditions or other factors. Specific restoration project designs also may change to reflect additional public comments and further Trustee analysis.

## 5.0 Evaluation of Reasonable Range of Restoration Alternatives

The restoration alternatives considered by the Trustees include three preferred alternatives and the no-action alternative. The Trustees believe that a combination of the preferred alternatives will best compensate the public for injuries to natural resources from the Dalco Pass oil spill. Table 2 provides a summary of the preferred restoration options.

*Table 2 Summary of Preferred Restoration Alternatives. The following table is a summary of three preferred project alternatives. It contains the project name, project description and the restoration objectives.*

<b>Preferred Restoration Action</b>	<b>Project Description</b>	<b>Restoration Objectives</b>
Dockton Park Nearshore Restoration	Remove existing manmade structures (bulkhead, building, pilings) and create a small saltmarsh by redirecting existing freshwater sources and regrading the site.	Improvements to nearshore aquatic and riparian habitat would benefit numerous species, including chinook and other salmonids. Recreational use at Dockton Park would also improve.
Piner Point Acquisition / Nearshore Restoration	Remove 225 ft bulkhead and restore riparian vegetation along the area of disturbed shoreline, allowing natural drift processes to re-establish.	Project would directly benefit Pacific herring, Pacific sand lance and surf smelt spawning areas. It will also restore natural longshore drift processes which will benefit Puget Sound salmonids.
Vashon Riparian Habitat Restoration	Leverage existing work to remove invasive plant species and provide follow-up planting of native species.	Enhancing riparian habitat will benefit juvenile salmonids and spawning baitfish using the adjacent Maury Island Aquatic Reserve.

The primary goal of the restoration is to meet the statutory objective to compensate the public for injuries to natural resources from the Dalco Passage oil spill. The primary injury categories for this spill were native salmonids, forage fish and recreational use. Therefore, the goals provided in this RP/EA are to restore, rehabilitate, or replace those injured resources. The habitat restoration alternatives selected provide maximum benefit to a range of natural resources that may have been injured by the spill, including birds, fish, shellfish, as well as other species that use those environments, and the human recreational activities associated with them. The following sections describe the preferred alternatives. Work plans, with details regarding scope of work, schedules, budgets and



other applicable information are not presented here but will be prepared for review and adoption by the Trustees before implementation of any project.

## **5.1 Dockton Park Nearshore Restoration - Preferred**

### *5.1.1 Restoration Site Location and Characteristics*

In 2008, King County Department of Natural Resources and Parks (KCDNRP) acquired six parcels in the Dockton Heights area (Appendix E. Figure 6 ), two of which are shoreline parcels directly west of the King County Dockton Marine Park. The new shoreline portion of the Natural Area is separated from the upland portion by the active recreation Dockton Park. The two shoreline parcels total approximately 500 ft of shoreline and are separated from each other by a single private parcel that is approximately 40ft wide. The shoreline properties were purchased with money from the Conservation Futures Tax in order to protect and restore salmon habitat.

### **Site Description**

As noted above, the two shoreline parcels selected for restoration are separated by a small privately owned parcel. The western KCDNRP parcel has 75 feet of shoreline and is 0.25 acres in size. The privately owned parcel immediately east has 40 feet of shoreline and is 0.12 acres in size, though most of the acreage is intertidal. The next and easternmost of the two KCDNRP parcels has approximately 420 feet of shoreline and is 0.75 acres in size (Appendix E. Figure 7 ).

Topographic sheets (T-sheets) developed by the US Geodetic Survey in 1870 show that the area around Dockton Park was a wooded marsh. By the next available data source, a 1936 aerial photograph, the site was extremely disturbed by docks and other infrastructure. The next photographs available for the site are 1976 aerial and oblique photographs from Ecology. These photographs show that most of the in-water infrastructure has decayed to the point that only pilings are left visible in the nearshore. It also shows that the public boat launch and moorage dock have been constructed within Dockton Park. The images show two small boat house structures on the westernmost edge of the property extending at least 20 feet out into the intertidal, protected by some form of bulkhead or seawall. In 2003, one of the two structures was moved inland and most of the bulkhead surrounding the two structures was removed. This change is visible in the 2007 photographs.

The subject shoreline contains a low relief, 350 ft bulkhead that extends from the eastern boundary of the site (abutting the Dockton active park area) westward. Two culverts/outfalls feed freshwater to the site. The bulkhead restricts flow of surface drainage to the open shoreline. Due to this condition, a freshwater wetland, approximately 0.3 acres in size has formed behind the bulkhead on the eastern end of the site. Existing wetland vegetation includes native willow, Pacific Crabapple, skunk cabbage, yellow flag iris, along with a variety of unidentified emergent sedges.

The lower shoreline and intertidal area in front of the bulkhead and wetland contains 80+ derelict pilings. Examination of pilings during a recent site visit showed active creosote

leaching from at least 40 of the pilings. Further investigation is needed to determine if all piles are creosote coated and/or leaching

The western half of this parcel appears to have been filled to accommodate the existing buildings and likely other structures that are no longer present. A single hand boring indicated that portions of the site have at least 4 feet of fill present. There appear to be another 40 or so derelict pilings located offshore of this point as well. They are extremely eroded such that many appear to be buried and the ones that aren't are sticking out of the ground only a few inches at most. It is unclear if these pilings are coated with creosote.

The two smaller parcels (one being private) to the west of the large parcel are not bulkheaded and do not appear to have major modifications to the shoreline. The riparian vegetation is dominated by blackberry. There is a culvert/outfall that enters the shoreline on the private parcel. It appears that water flows through this culvert for much of the year.

### *5.1.2 Restoration Action Description*

From a restoration standpoint, one of the most important features of the Dockton area is that peat soils are present throughout the upper intertidal of the all the shoreline parcels. The presence of peat soils makes wetland restoration projects more likely to succeed because they have high organic content and retain moisture. Peat soils are exposed through the beach sand and gravel in many places. Given that these soils are present in front of the backshore areas that have been filled, it is likely that these soils are present under the fill. The presence of peat soils makes any wetland restoration project more likely to succeed.

In addition, the site contains a cultural/historic resource. While it is known that the resource is somewhere within the project area, it is not known to what degree this will affect project design and implementation. The project design is very flexible, however, and should be able to accommodate this factor.

While the adjacent Dockton Park is mostly developed and does not provide many direct restoration opportunities, it does have a small stream that runs through the upper portion of the park and is piped underneath the boat trailer parking area and out into the intertidal area near the boat ramp.

The overall concept for restoration of the site is to recreate a salt marsh wetland on site. While there are many alternatives to undertake actual restoration on the site, there are several main components to any restoration that will take place (Appendix E. Figure 7 Figure 8 Figure 9 ).

1. Remove the 350 feet of bulkhead
2. Remove boat houses and fill
3. Remove intertidal pilings and debris.
4. Consolidate freshwater sources into the project area.
5. Regrade site to create salt marsh within the project area

While the project is currently envisioned to include all these components it is very possible that one of several site constraints will limit how much of each of those overriding components are able to take place.

### *5.1.3 Evaluation of the Alternative*

The Dockton Park Nearshore Restoration project is a preferred alternative because it met many of the evaluation criteria considered by the Trustees. Specifically the project:

- Is located directly in the area most affected by the spill.
- Creates new habitat (salt marsh) that would directly benefit the resources most affected by the incident (native salmonids, forage fish, birds, shellfish, recreational use).
- Access to the site from Dockton Park and the water is excellent.
- Reduced continued contamination by removing a large number of creosote treated pilings.
- Is cost effective for the Public because it would be implemented through a partnership with King County.

Creosote piling removal comes with certain risks, such as creosote being released to the water. This is mitigated by BMPs that require booming the work area. Removal of fill will require that use of heavy equipment on the existing shoreline. These impacts are mitigated by BMPs that require the use of swamp mats. These impacts are construction related and considered minor and short term (1½ months). Minor impacts may include an increase in noise and turbidity. However the increase in noise will not be above local ordinance and the increase in turbidity will not exceed Ecology's standards.

## **5.2 Piner Point Acquisition / Nearshore Restoration - Preferred**

### *5.2.1 Restoration Site Location and Characteristic*

Located on the southeastern tip of Maury Island in Central Puget Sound (Appendix F, Figure 11 ), the Piner Point Natural Area contains a total of 7.76 acres of nearshore habitat with feeder bluff and mature riparian vegetation, adjacent the Maury Island Aquatic Reserve.

The Piner Point preservation is part of the WRIA 9 Salmon Habitat Plan, listed under Project NS-17. The Piner Pt. Natural Area is located directly adjacent to Pacific herring, Pacific sand lance and surf smelt spawning areas. In fact it is one of the only locations within King County where all three forage fish species spawn in the same stretch of shoreline. Restoration of nearshore habitat and longshore drift processes would protect important habitat features and functions necessary for maintaining aquatic ecosystems and aiding in the recovery of Puget Sound salmonids their migration corridor.

### 5.2.2 *Restoration Action Description*

This preservation effort was funded by a Salmon Recovery Funding Board grant to protect the 6 combined shoreline properties that make up the Piner Pt Natural Area, successfully protecting over 1,500 lineal feet of ecologically valuable shoreline. The feeder bluff that backs the Piner Point shoreline provides sediment supply for beach nourishment processes that extend over seven miles downshore. Longshore drift moves eroding bluff material along the shoreline to Pt Robinson at the eastern most tip of Maury Island. All parcels in the Piner Point Natural Area remain undisturbed, and in a natural state with the exception of the northern most parcel. This 1.05 acre parcel contains a shoreline cabin to be deconstructed and removed by June, 2009, leaving only the low, 225 ft. wooden creosote bulkhead that fronts the back beach and low bluff. As a final phase in the Piner Point Natural Area preservation effort, this project's goal is to remove the 225 ft bulkhead and restore riparian vegetation along the area of disturbed shoreline allowing natural drift processes to re-establish (Appendix F. ).

### 5.2.3 *Evaluation of the Alternative*

The Piner Point project is a preferred alternative because it achieved many of the evaluation criteria considered by the Trustees. Specifically the project:

- Is located directly in the area most affected by the spill.
- Would restore critical geological (sediment supply and transport in the nearshore and biological (riparian vegetation provides shade and food) function to the project site.
- Would directly benefit resources affected by the incident (native salmonids and forage fish)
- Is cost effective for the Public because it would be implemented through a partnership with King County.

The negative consequences of implementing this project are low and can be minimized using Best Management Practices during implementation.

## **5.3 Vashon Riparian Habitat Restoration - Preferred**

### 5.3.1 *Restoration Site Location and Characteristics*

Most of the work locations proposed by this restoration project are immediately adjacent to the Maury Island Aquatic Reserve (Appendix G. Figure 13 ). The Washington Department of Natural Resources describes the reserve as follows:

*“The reserve is located in central Puget Sound and southwestern King County. The reserve includes approximately 5,530 acres of state owned aquatic bedlands and tidelands in Quartermaster Harbor and along the east and south shore of Maury Island, extending from Neill Point to the shores between Point Robinson and Luana Beach. The reserve consists mostly of subtidal areas, which are bedlands owned by the state. The state also owns approximately 12 percent of the intertidal areas (tidelands) of Quartermaster Harbor and the east side of Maury*

Island, which are also included within the reserve. The remainder of the tidelands adjacent to the reserve are not owned by the state and therefore are not included within the boundaries of the reserve. The reserve boundary extends waterward to a depth of 70 feet (21.4 meters) below mean lower low water, or one-half mile from the line of extreme low tide whichever is farther waterward.” (WA DNR, 2004).

### 5.3.2 Restoration Action Description

The intent of this project is to rehabilitate marine riparian vegetation at various shoreline locations within and adjacent to the Maury Island Aquatic Reserve for the benefit of both juvenile salmonids and spawning baitfish using the nearshore environments of the aquatic reserve. Ten sites have been identified where there is invasive vegetation and there is a landowner willing to have the invasive vegetation removed and replaced with native vegetation (Table 3 and Appendix G. Figure 14 ). Work would include removal of invasive species (e.g., Scot’s broom, cat’s ear, pampas grass, blackberry, tansy, etc.) followed by replanting native tree and plant species where needed. Eight of the 10 sites are located within the Maury Island Aquatic Reserve. King County has performed landowner outreach on these sites and property owners are supportive of this King County shoreline vegetation restoration effort.

*Table 3 Descriptions for revegetation sites. The following table contains descriptions of all of the sites that could have native plants restored to the site.*

Site Number	Site Name/Description	Owner Name/Contact	Invasive species	Noxious Weeds required for control
1	Raab's Lagoon	Private and KC Parks	common tansy	Spartina, perennial sowthistle
2	Neill Point	KC Parks	English Ivy, Holly, and blackberry	
3	Maury Island Marine Park	KC Parks	Scot's Broom, cat's ear, pampas grass, yellow toadflax, invasive blackberry, perennial peas, common tansy	perennial pepperweed, Perennial sowthistle, spotted knapweed
4	Point Robinson Park & Lighthouse	Vashon Park District & US Govt	invasive blackberry, bull thistle, Canada thistle, Scot's broom, perennial peas	perennial pepperweed, perennial sowthistle
5	Jenson Point Boat Launch (8900 SW Harbor Dr)	Vashon Park District	common fennel, common tansy	perennial sowthistle
6	Burton saltwater marsh	Private	Scot's broom, blackberry	perennial pepperweed, perennial sowthistle, gorse
7	Beachfront at the 24000 block of Vashon Hwy SW	Private	common tansy	perennial pepperweed
8	Beachfront at the 14000 block of SW Pohl Rd	Private	Scot's broom, morning glory	perennial pepperweed
9	Beach front off Quartermaster Rd between 8410 and 8328	KC DOT	common tansy	perennial sowthistle, perennial pepperweed
10	Seasonal saltwater wetland at end of SW Cross Landing Rd	Private	common tansy, Scot's broom, blackberry	purple loosestrife, perennial sowthistle

The scope of this project can be expanded or contracted depending on available funding. The plantings at several of the sites could easily be expanded to include more of the slope than initially included in the cost estimate. For example, Maury Island Marine Park has a huge infestation of Scot’s broom (*Cytisus scoparius*) that goes from the shoreline edge to over a thousand feet up the slope to the top of bluff. While it is not the intent of this project to remove Scot’s broom from the entire site, any extra dollars not spent on the immediate shoreline area could be expanded at this site and others.

### 5.3.3 *Evaluation of the Alternative*

The Vashon Riparian Vegetation Restoration project is a preferred alternative because it achieved many of the evaluation criteria considered by the Trustees. Specifically the project:

- Benefits up to 10 sites located in the area affected by the spill
- Improves riparian habitat by removing low value invasive species and replacing them with high value native plants
- Is scalable and would allow the Trustees to maximize the benefit their settlement funding can provide to the affected area.
- Access to many of the sites from land or water is good to excellent.
- Is cost effective for the Public because it would be implemented through a partnership with King County.

The negative consequences of implementing this project are low and can be minimized using Best Management Practices during implementation.

## 5.4 **No Action Alternative – Not Preferred**

### 5.4.1 *Restoration Action Description*

NEPA requires the Trustees to consider a “no action” alternative, and the OPA regulations require consideration of the equivalent, the natural recovery option. Under this alternative, the Trustees would take no direct action to restore injured natural resources or compensate for lost services pending environmental recovery. Instead, the Trustees would rely on natural processes for recovery of the injured natural resources.

### 5.4.2 *Evaluation of the Alternative*

In the case of Dalco Passage spill, cleanup operations may be considered primary restoration for some of the injured resources. Other injured resources have relied entirely on natural processes for recovery. While the combination of these two processes may return the injured resources to baseline conditions, they cannot compensate the public for the interim losses suffered during this recovery period. OPA clearly establishes Trustees responsibility to seek compensation for interim losses. This responsibility cannot be met through the no-action alternative. Technically feasible and cost effective alternatives exist to compensate for these interim losses and the Trustees have determined that these alternatives should be implemented to fairly compensate the public.

## 5.5 **Environmental Consequences of Proposed Action/Preferred Alternatives**

The Trustees compared the proposed project activities/preferred alternatives and purpose with the criteria identified in the Restoration Plan and then evaluated that information

against the environmental settings described in Section 2.0 and the specific NEPA factors identified below to determine the significance of the impacts. Because NEPA requires consideration of context and intensity (40 CFR 1508.27), the proposed action must be analyzed in several contexts, e.g., the society as a whole, the affected region and interests, and the locality. The intensity (severity) of impacts is considered by assessing the direct, indirect, and cumulative impacts that could potentially arise from implementation of the proposed project. The significance of impacts under 40 CFR 1508.27(b) is to be considered in evaluating the intensity of both the beneficial and adverse impacts under short- and long-term conditions. Therefore, this section analyzes the affected environment (described in Section 2.0 ) against those specific factors [40 CFR 1508.27(b)] in order to determine whether or not the proposed project would have a significant effect on the quality of the human environment. In addition, the potential impacts of the project were examined in light of NOAA Administrative Order (NAO) Series 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act (NAO 216-6).

The Trustees and project partners have concluded overall that any potential adverse environmental impacts at the restoration site would be short-term and construction-related, while beneficial environmental impacts would result in long-term habitat values to the area's natural resources and to the aesthetic pleasure for humans.

*5.5.1 Likely effects of the project on public health and safety [40 CFR 1508.27(b)(2)]*

As noted above, the adverse environmental impacts are all short-term and construction-related impacts and the preferred alternatives thereafter can be considered beneficial to area humans and natural resources.

*5.5.2 Likely impacts of the proposed project [40 CFR 1508.27(b)(1)]*

As noted above, the adverse environmental impacts are all short-term and construction-related impacts. The magnitude of environmental impacts would generally be a function of the extent and duration of construction. Mitigation measures have been included to minimize these short-term impacts. The long-term impacts are beneficial to the area's natural resources by, for example, providing fish and wildlife habitat, protecting and improving water quality, bolstering native plant communities, and increasing aesthetics in the area. The project would be developed to comply with all applicable local, state, tribal, and federal permits and approvals.

**Aesthetics, Light, and Glare.** Natural habitat conditions at the site would be restored through re-grading and revegetation. Although the project would result in short-term aesthetic impacts during earth-moving activities, restoration would help restore native vegetation communities and habitat thereby improving aesthetic conditions over the long term. Views of the property and its surrounding area would not be adversely impacted, and would likely be improved instead.

There would be no light and glare produced by the completed restoration project since lighting would not be available on-site. The Trustees do not anticipate that lighting as it

exists now from the surrounding parcels would adversely affect the natural resources that are the intended beneficiaries of the project.

**Air Quality.** During the construction phase, which is expected to require six months, there would be minimal short-term increases in dust and vehicle exhaust from earth moving activities (e.g., clearing, grubbing, soil and sediment transport, planting) and operation of construction equipment. No significant impacts to air quality are expected due to the relatively small amounts of excavation and the temporary nature of construction activities. Exhaust controls would be used on all construction equipment to minimize exhaust emissions. Dust would be controlled by watering down exposed earth. If there is off-site transport of any materials, haul trucks would be covered or have loads that are below sideboards to control blowing dust along the haul route. No long-term impacts to air quality are expected to result from the project. Best management practices would be used.

**Economic Impacts.** No significant impacts on neighborhoods or community cohesion would occur. The restoration project would improve vacant, disturbed land by restoring biological diversity and ecological functions and would help increase community awareness about natural resources. The proposed project precludes future commercial or industrial development on-site, but such economic impacts would likely be offset by improving the environmental quality of the area. The property is uninhabited. No additional land acquisition or displacement would be required and housing would not be affected. No job losses would occur or be modified.

**Energy and Natural Resources.** There are no sources of energy or exploitable natural resources on-site to be affected by this proposed project; therefore, no impacts would result.

**Environmental Health and Noise.** Marginal risk of fire, explosions, or spill would be present during construction due to the use of fuel for the construction equipment (excavator or backhoe, etc.). No long-term risks to environmental health are expected to result from the project since no hazardous materials would be stored or created on-site. A health and safety plan would be in place to address any potential hazards during construction.

The project would result in short-term (Approximately 1½ months) noise impacts from the use of heavy equipment during the construction phase of this project. Noise would be generated by clearing, grubbing, earth moving, dredging, sediment and soil storage and transport, digging, grading, burning, and planting. Trucks, graders, bulldozers and similar equipment can generate noise in the range of 67 to 98 dBA at 50 feet. Work would be performed during normal daylight work windows 7 am to 6 pm Monday through Friday.

There is a slight risk of a release of creosote during the piling removal. All work would be done using BMPs that address and minimize this risk (booming of the work area, sorbent material staged onsite).

**Floodplain and Flood Control.** The project is not expected to create any flow restrictions or blockages that might negatively impact flood control.



**Geological and Soil Resources.** Over the short-term, construction may result in a temporary increase in erosion potential but implementation of erosion control practices would minimize the extent of these impacts. Areas of the property would be temporarily stripped of vegetation during the extensive removal of non-native and invasive plant species. However, over the long-term the restoration of a natural soil profile and vegetation community is expected to improve sediment and soil quality and return erosion potential to current conditions or better.

A temporary erosion and sediment control plan would be in place prior to construction along with BMPs. These practices may include, but are not limited to, covering or stabilizing areas of exposed soil, constructing the project in phases to minimize tracking of mud on adjacent roadways, and use of silt curtains or other measures to control sedimentation and turbidity.

**Recreation and Education.** The site offers passive recreational or educational opportunities by posting interpretive signs describing the restoration project and the benefits it would have on habitat in the area.

**Land and Shoreline Use.** The proposed project would not result in negative impacts on land or shoreline use, since no existing uses would be decreased, created, or eliminated.

**Transportation, Utilities, and Public Services.** No transportation impacts are anticipated beyond short-term (1½ months) construction traffic to local roadways for short periods. Staging areas would be located on-site to minimize disruption of traffic on adjacent roadways.

There are no anticipated impacts to public services or utilities during and after construction. The contractors may require temporary electricity and water connections during construction. Initial site maintenance may also require some minimal utilities and water for a period of two to three years.

The projects are not expected to increase demand for public services and utilities over the long-term.

**Water Resources.** During removal of bulk heads, there may be minor short-term (2 weeks) impacts to water quality resulting from increased turbidity. The minor impacts are likely to include an increase in turbidity within the area of bulkhead removal. However the increase in turbidity will not exceed water quality standards set by Ecology. Overall, impacts are expected to be temporary and localized. Several BMPs and other protective measures may be implemented during construction to minimize impacts, including:

- Use of silt fences or sediment curtains to contain suspended sediments,
- Avoidance of work during salmonid migration periods, and
- Avoidance of releases of gas, oil, and diesel from construction equipment into adjacent waters.

BMPs would be used to minimize the amount of sediment suspension in the water. Construction would occur only within the in-water work window for the mid Puget Sound as established in the HPA by the responsible agencies.

Over the long term, the project would benefit water quality by re-establishing native mud flat and marsh communities. These communities would serve to trap sediments and filter water, which would benefit water quality.

*5.5.3 Unique characteristics of the geographic area in which the project is to be implemented [40 CFR 1508.27(b)(3)]*

See the affected environment section for additional descriptions of the unique geographic area in which this proposed project would be sited.

**Wetlands.** It is likely that a brackish water wetland associated with the Dockton restoration project will become a more saline as a result of the project. This may result in a shift in the flora and fauna that currently exist in the wetland. However, the wetland itself will likely increase in size and complexity.

*5.5.4 Controversial aspects of the project or its likely effects on the human environment [40 CFR 1508.27(b)(4)]*

The Trustees are unaware of any environmentally controversial aspects to implementation of this proposed project. The Trustees and their project partners consulted with regulatory agencies including USACE, Ecology, and King County to ensure that the proposed alternatives pose no risk to properties adjacent to the site.

*5.5.5 Degree to which possible effects of implementing the project are highly uncertain or involve unknown risks [40 CFR 1508.27(b)(5)]*

The Trustees and their project partners consulted with regulatory agencies including USACE and King County to ensure that the proposed alternatives do not pose any risks to properties adjacent to the site.

*5.5.6 Precedential effect of the project on future actions that may significantly affect the human environment [40 CFR 1508.27(b)(6)]*

The Trustees and their project partners believe that restoration projects such as this one and the other habitat enhancements being planned by the Trustees exert strong positive influences on Mid Puget Sound and Commencement Bay and its residents and users. Enhancing and creating fish and wildlife habitat benefits the area's natural resources, helps to protect and improve water quality, bolsters native plant communities, enhances the visual quality of the area, and provides educational opportunities for the public.

*5.5.7 Possible significance of cumulative impacts from implementing this and other similar projects; potential impacts on connected actions [40 CFR 1508.27(b)(7)]*

The proposed restoration projects are part of an overall Restoration Plan for Commencement Bay that is covered under a separate Programmatic EIS (Trustees, 1997). A number of other NRDA restoration projects have been implemented or are being

planned and designed and would cumulatively contribute to improving the Commencement Bay region's overall environmental health, particularly in combination with other remediation and habitat enhancement projects in Commencement Bay.

With respect to the action alternatives, the impacts are similar in nature and therefore discussed simultaneously. Again, the analysis is limited to other projects that have a reasonable likelihood of interacting with the proposed projects in terms of environmental effects. Other projects considered in the cumulative impact assessment include other habitat restoration/enhancement/mitigation projects in the area, and various commercial and residential development projects in the area.

In general, the proposed restoration projects would have beneficial cumulative affects with other habitat enhancement projects, and would tend to counteract the adverse impacts on habitat and related natural resources from commercial and residential development projects. The potential for cumulative short-term construction impacts which are localized is limited by the potential for the projects under consideration to overlap in time and space. The beneficial affects of habitat restoration are less localized and temporary and so have more potential for cumulative impacts. One of the principal goals of the RP/EA restoration projects are to implement projects that interact with one another in a landscape ecology framework to maximize overall ecological benefits.

Restoration projects are designed to restore or enhance lost or degraded habitat functions and to reduce the fragmentation of habitat areas. The projects are expected to restore ecological functions among the habitats throughout the areas, so that overall impacts should be beneficial to species which use these habitats. Projects proposed under the action alternatives would be coordinated in order to avoid cumulative adverse impacts to ecological processes and interactions among populations in habitats occurring in the area.

For the most part, cumulative impacts associated with the action alternative and other restoration/enhancement/mitigation projects would be beneficial to the fish and invertebrate populations occurring in the area.

Salmonid habitat would be improved, which is expected to have a positive cumulative impact not only to Puget Sound salmon stocks, but also to other Puget Sound anadromous fish stocks and resident fish. The project would provide functional connectivity with other restoration projects in mid Puget Sound and Commencement Bay by maintaining, creating, or restoring a diversity of aquatic and associated wetland and riparian habitat used by juvenile salmonids for feeding, rearing, and out-migration.

Forage fish spawning habitat would be improved by ensuring sediment for the drift cells winds up on the spawning beaches. Riparian cover would help shade eggs.

Secondary beneficial cumulative impacts may result for bird species, wildlife, and other natural resources, particularly for species which feed on fish. Restoration of this sites would not adversely impact any of the adjacent properties and would incrementally increase the beneficial and aesthetic impacts to the area.

There are no anticipated additional indirect impacts to *wildlife* other than those described in the previous sections. There is potential for both beneficial and adverse cumulative

impacts to wildlife resulting from restoration and enhancement activities conducted under any action alternative plan and other projects occurring in the vicinity.

It is anticipated that restoration under the action alternatives generally would benefit threatened and endangered species by increasing foraging habitat, providing habitat for injured natural resources and services, and creating additional habitat. It is anticipated that cumulative impacts to *endangered, threatened and/or sensitive species* would not occur.

A possible indirect impact to *water quality* as a result of restoration measures taken to improve conditions for a group of species, may be that water quality conditions acceptable for one group of species to flourish is not suitable for another group of species. Temperatures, flow rates, pH, dissolved oxygen concentrations, nutrients, and turbidity conditions may differ, particularly during spawning periods or at sensitive life stages.

Anticipated indirect *air quality* impacts of restoration projects implemented under any action alternative are anticipated to result from vehicle emissions from employees driving to and from the project sites during construction activities and for post-construction maintenance and monitoring. Therefore, indirect emissions are anticipated to be a very small fraction of the total air shed contaminant burden during construction.

Vehicular noise from employees driving to and from the project sites should be the only indirect *noise impacts* of restoration projects anticipated under any action alternative. Due to the limited size and short duration of construction projects envisioned, the vehicular commuting noise generated is anticipated to be negligible compared to the total volume of traffic currently carried by the road network in the area.

Cumulative impacts could be anticipated where receptors may receive noise from two or more project sites, depending upon the distance of the receptors from the project sites. Mitigation of cumulative noise impacts would be best accomplished through sequencing or phasing the projects, ensuring that project construction is not occurring simultaneously on projects within close proximity to one another. Post-construction, long-term cumulative noise impacts might include an increase in noise from migrating or resident birds and constructed and/or enhanced waterways. These noises are not typically considered to be adverse impacts, and noise volumes are anticipated to be low.

Indirect impacts include those that may be attributed to the proposed action but are further removed in time or distance from the direct effects. Such impacts to land use and aesthetics are not anticipated to result from any of the action alternatives, particularly since no significant direct effects to this resource are anticipated.

*Public access* improvements could result in adverse habitat effects if such access is not controlled. Overuse of a restored -site could result in habitat degradation from the human presence e.g., disturbance, noise, trampling of vegetation and soils, and discharge of waste. Public access to sites would have to be controlled, monitored and possibly modified to minimize such effects. The appropriate level of public access would vary by site type.

Careful coordinated design and monitoring should make cumulative environmental impacts insignificant, including those resulting from the incremental impact of the project. Other habitat restoration or environmental remediation projects, land development or redevelopment activities, and the local governmental plans or policies, would also be regulated by the same federal and state land planning and management regulations, it is unlikely that there would be adverse cumulative effects. Indeed, local ordinances, policies, and plans stress the importance of integrated efforts for the preservation and restoration of the area's vital natural resources. Therefore, there are no known actions, or current or future proposals, from which significant cumulative impact to land use or aesthetics could result in the area.

Due to the fact that the potential for direct impacts upon *utilities and public services* from any of the discussed alternatives is small, any chance of additional substantive, direct, indirect, or cumulative impacts should also be remote.

Since none of the action alternatives are proposed to be conducted in areas designated for housing, direct, indirect, and cumulative impacts on *population and housing* should be negligible.

Since none of the action alternatives are proposed to be conducted in areas designated for transportation projects, no direct, indirect or cumulative impacts on *transportation* are expected.

Adverse cumulative impacts to cultural resources resulting from restoration activities should not occur. It is not the intention of the Trustees to disrupt cultural resources in the course of restoration. No adverse impacts are expected to result from implementing any of the action alternatives for the following reasons. The cost of mitigating for project impacts on cultural resources can be great. Due to the unique nature of prehistoric and historic sites and Native American traditional cultural values, it is essential to consider cultural resources during the site selection phase. If significant cultural or historical resources are affected by the proposed project, it will be necessary to coordinate and possibly mitigate actions prior to initiation of ground-disturbing activities. In some cases it may not be possible to mitigate for project impacts due to the unique nature or significance of a particular historical or cultural site. In those instances, the Trustees will abandon the site. Therefore implementing any of the action alternatives is not expected to contribute cumulatively to any adverse effects to cultural resources which may occur elsewhere within the area.

5.5.8 *Effects of the project on National Historic Places, or likely impacts to significant cultural, scientific or historic resources [40 CFR 1508.27(b)(8)]*

Although it is not expected, if any significant historical or cultural materials are exposed or discovered during excavation or subsurface disturbance, operations would cease, the immediate area would be cordoned off to minimize any additional disturbance, and an archaeologist would be contacted for further recommendations. The Washington State Department of Archaeology and Historic Preservation (DAHP) and the Puyallup Tribe of Indians would be contacted. The Puyallup Tribe of Indians is a cooperating agency and

therefore part of the project consultation process. Significant cultural resources may include but are not limited to: aboriginal human remains, chipped stone, groundstone, shell and bone artifacts; concentrations of fire-cracked rock, ash and charcoal, shell, or bone; and historic features such as building foundations. Most of these are considered highly unlikely because the property consisted of mudflats prior to the twentieth century and was thus unsuitable for habitation, and has since been extensively modified (HRA, 2006).

King County would perform a Cultural Resource Assessment and get concurrence for site activities from DAHP before any construction activities occur.

*5.5.9 Degree to which the project may adversely affect endangered or threatened species or their critical habitat [40 CFR 1508.27(b)(9)]*

Because the sites provide salmonid habitat, including habitat for chinook salmon (federally-listed threatened species) and coho salmon (a federal species of concern), it is classified as a fish and wildlife habitat conservation area. Federal laws pertaining to fish and wildlife and Essential Fish Habitat (EFH) as well as the applicable consultation and regulatory terms and conditions would be followed to ensure that no long-term adverse impacts would result from the proposed project.

**Endangered Species/Threatened Species.** The proposed restoration projects would provide valuable nearshore habitat for chinook and coho. During construction, short-term impacts to salmon habitat could occur from the placement and removal of the cofferdam. Through selective scheduling of the construction period to minimize impacts to salmonids and implementation of methods to control erosion and in-water turbidity, short-term impacts to listed species would be relatively minor. Puget Sound chinook critical habitat is associated with the Dockton restoration project. While there may be temporary impacts to the area because of construction related activities, the restoration will increase the amount of critical habitat for chinook. The construction work would be timed to minimize impacts to chinook. The construction work would not negatively impact Stellar sea lions or Southern resident killer whales because the effects are near the shore where these marine mammals do not forage. However, the projects would provide beneficial effects to these marine mammals by improving the habitat of their prey items.

**Fish and Wildlife Impacts.** Over the long-term, no fish or wildlife habitat would be adversely impacted by the proposed project. Construction would only occur during designated periods to avoid salmonid migration periods. Minor disturbances to waterfowl and mammals may occur during the construction phase and may cause them to temporarily relocate, but these impacts would be short-term (1½ months) in nature and displaced animals are expected to return to the site after restoration is completed. After construction, the proposed restoration project would improve fish and wildlife habitat structure and function. Juvenile anadromous salmonids would benefit from increased habitat quantity and quality. The project would enhance resting areas for salmonid rearing and feeding, increase species on which salmon feed, and reduce environmental stresses from elevated water temperatures and suspended sediment loads.

**Essential Fish Habitat.** During construction, short-term (1½ months) impacts to salmon habitat, including designated EFH, could occur from the placement and removal of the cofferdam, resulting in increased turbidity and total suspended solids. However, by avoiding construction during chinook migration periods and implementing measures to control erosion and in-water turbidity, short-term impacts to federally listed or other special-status species are expected to be relatively minor. Minor impacts may include an increase in turbidity. Long-term impacts to habitat, including EFH, would be beneficial. Beneficial impacts include an increase in nearshore habitat which will be suitable to foraging and may increase the amount of forage fish available to chinook salmon. Federal laws pertaining to fish and wildlife and EFH would be followed to ensure that no long-term adverse impacts would result from any selected alternative.

*5.5.10 Likely violations of environmental protection laws [40 CFR 1508.27(b)(10)]*

The Trustees anticipate that there would be no violations of environmental protection laws associated with the project.

*5.5.11 Introduction of non-indigenous species [NAO 216-6 6.01(b)(11)]*

No non-indigenous species would be introduced as part of the implementation of the restoration project. Existing invasive and non-native plant species would be replaced with native species.

*5.5.12 Effects of climate change on restoration projects*

Throughout the Pacific Northwest, efforts are under way to restore watersheds, but restoration planning rarely accounts for future climate change. Using a series of linked models of climate, land cover, hydrology, and salmon population dynamics, researchers have investigated the impacts of climate change on the effectiveness of proposed habitat restoration efforts designed to recover depleted chinook salmon populations in Pacific Northwest river basins. Model results indicate a large negative impact of climate change on freshwater salmon habitat. However habitat restoration and protection can help to mitigate these effects and may allow populations to increase in the face of climate change. The habitat deterioration associated with climate change would, however, make salmon recovery targets much more difficult to attain. Because the negative impacts of climate change are projected to be most pronounced in relatively pristine, high-elevation streams where little restoration is possible, climate change and habitat restoration together are likely to cause a spatial shift in salmon abundance. River basins that span the current snow line appear especially vulnerable to climate change, and salmon recovery plans that enhance lower-elevation habitats are likely to be more successful over the next 50 years than those that target the higher-elevation basins likely to experience the greatest snow–rain transition. (Battin, J. et al., 2007) However, because of the size of the proposed projects, it is unlikely that they would have a measurable effect on salmon abundance.

## **5.6 Scaling the Injury and the Preferred Alternative**

Early in the restoration planning process the Trustees considered developing a detailed assessment to further determine injury and assist with scaling. These efforts would have

been extremely costly and would not likely have met the OPA standard for reasonable assessment costs.

Given the scale of the injury apparently caused by the Dalco Passage spill, the Trustees agreed that moving straight to restoration would be more appropriate than spending time and effort on further assessment and scaling activities.

The OPA regulations provide in 15 CFR §990.25, that Trustees may “settle claims for natural resource damages under this part at any time, provided that the settlement is adequate in the judgment of the Trustees to satisfy the goal of OPA and is fair, reasonable, and in the public interest, with particular consideration of the adequacy of the settlement to restore, replace, rehabilitate, or acquire the equivalent of the injured natural resources and services.”

The Trustees developed a detailed list of restoration projects and, through a rigorous screening process, selected a suite of projects to provide compensatory restoration for the incident. The Trustees judged that this project list would provide a significant margin of error that would ensure that any uncertainty resulting from the informal assessment and scaling would be resolved in favor of the public. The Trustees judge that this conservative approach should completely compensate the public for spill-related injuries.

## **6.0 Compliance with Applicable Laws and Regulations**

**Oil Pollution Act of 1990 (OPA), 33 U.S.C. 2701, et seq.; 15 CFR Part 990:** OPA establishes a liability regime for oil spills that injure or are likely to injure natural resources and/or the services that those resources provide to the ecosystem or humans. Federal and state agencies and Indian tribes act as Trustees on behalf of the public to assess the injuries, scale restoration to compensate for those injuries and implement restoration. Section 1006(e)(1) of OPA (33 U.S.C. 2706 (e)(1)) requires the President, acting through the Under Secretary of Commerce for Oceans and Atmosphere (NOAA), to promulgate regulations for the assessment of natural resource damages resulting from a discharge or substantial threat of a discharge of oil. Assessments are intended to provide the basis for restoring, replacing, rehabilitating, and acquiring the equivalent of injured natural resources and services.

**Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 42 USC §§ 9601 et seq., and National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR 300:** CERCLA, also known as Superfund, provides the basic legal framework for cleanup and restoration of the nation's hazardous substances sites. CERCLA establishes a hazard ranking system for assessing the nation's contaminated sites with the most contaminated sites being placed on the National Priorities List (NPL). The project properties are not associated with any NPL site.

**National Environmental Policy Act (NEPA), as amended, 42 U.S.C. §§ 4321 et seq.; 40 CFR Parts 1500-1508:** NEPA was enacted in 1969 to establish a national policy for the protection of the environment. The Council on Environmental Quality (CEQ) was established to advise the President and to carry out certain other responsibilities relating



to implementation of NEPA by federal agencies. Pursuant to Presidential Executive Order, federal agencies are obligated to comply with NEPA regulations adopted by the CEQ (40 CFR Parts 1500-1508). These regulations outline the responsibilities of federal agencies under NEPA and provide specific procedures for preparing environmental documentation to comply with NEPA. NEPA requires that an EA be prepared in order to determine whether the proposed action would have a significant effect on the quality of the human environment. The EA for this project (this document) would undergo a public review and comment period and then the lead federal agency would make a final recommendation. Depending on whether an impact is considered significant, an environmental impact statement (EIS) or a Finding of No Significant Impact (FONSI) would be made prior to implementation of the project. The EA, the appropriate regulatory documents, and the public comments would become a part of the administrative record for this project.

**Clean Water Act (CWA) (Federal Water Pollution Control Act), 33 USC §§ 1251 *et seq.*** The CWA is the principal law governing pollution control and water quality of the nation's waterways. It requires the establishment of guidelines and standards to control the direct or indirect discharge of pollutants to waters of the United States. Discharges of material into navigable waters are regulated under Sections 401 and 404 of the CWA. The USACE has the primary responsibility for administering the Section 404 permit program. Under Section 401 of the CWA, projects that involve discharge or fill to wetlands or navigable waters must obtain certification of compliance with state water quality standards. Permits from the USACE and/or Ecology would be received before any projects are implemented and the permit will be provided in the final RP/EA.

**Rivers and Harbors Act, 33 USC §§ 401 *et seq.*** This Act regulates development and use of the nation's navigable waterways. Section 10 of the Act prohibits unauthorized obstruction or alteration of navigable waters and vests USACE with authority to regulate discharges of fill and other materials into such waters. Actions that require Section 404 CWA permits are also likely to require permits under Section 10 of this Act. A single permit usually serves for both purposes so this project can potentially ensure compliance through this mechanism. Permits from the USACE would be received before any projects are implemented and the permit will be provided in the final RP/EA..

**National Historic Preservation Act, 16 USC §§ 470 *et seq.*; Archaeological Resources Protection Act, 16 USC §§ 470, *et seq.*; Historic Preservation Act, Ch. 27.34 RCW, Ch. 27.44 RCW, and Ch. 27.53 RCW:** Environmental laws and review processes at the federal, state, and local level require consideration be given to protecting significant historic, archaeological, and traditional cultural sites from damage or loss during development. The Washington State Department of Archaeology and Historic Preservation (DAHP) works with agencies, tribes, private citizens, and developers to identify and develop protection strategies to assure that Washington's cultural heritage is not lost. Environmental laws such as the National Historic Preservation Act and the State Environmental Policy Act (SEPA) require that impacts to cultural resources be considered during the public environmental review process. The National Historic Preservation Act requires that all federal agencies consider cultural resources as part of all licensing, permitting, and funding decisions. As part of that process, each agency must

consult with DAHP to assure that cultural resources are identified, and to obtain the formal opinion of the Office on each site's significance and the impact of its action upon the site. DAHP would be consulted before any project is implemented and the outcome of the consultation will be provided in the final RP/EA.

**Endangered Species Act of 1973 (ESA), 16 USC 1531 §§ *et seq.*, 50 CFR Parts 17, 222, 224.** The ESA directs all federal agencies to conserve endangered and threatened species and their habitats and encourages such agencies to utilize their authorities to further these purposes. Under the Act, NMFS and USFWS publish lists of endangered and threatened species. Section 7 of the Act requires that federal agencies consult with these agencies to minimize the effects of federal actions on endangered and threatened species. Section 7 ESA consultations would be completed before any project is implemented and the outcome of the consultation will be provided in the final RP/EA.

**Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), 16 USC §§ 1801 *et seq.*, 50 CFR Part 600.** In 1996, the Act was reauthorized and changed by amendments to require that fisheries be managed at maximum sustainable levels and that new approaches be taken in habitat conservation. EFH is defined broadly to include "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity" (62 Fed. Reg. 66551, § 600.10 Definitions). The Act requires consultation for all federal agency actions that may adversely affect EFH. Under Section 305(b)(4) of the Act, NMFS is required to provide advisory EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. Where federal agency actions are subject to ESA Section 7 consultations, such consultations may be combined to accommodate the substantive requirements of both ESA and MSFCMA. EFH consultations would be completed before any project is implemented and the outcome of the consultation will be provided in the final RP/EA.

**Fish and Wildlife Coordination Act (FWCA), 16 USC §§ 661 *et seq.*, Migratory Bird Treaty Act of 1918, 16 USC §§ 703 *et seq.*** The FWCA requires that federal agencies consult with the USFWS, NMFS, and state wildlife agencies for activities that affect, control or modify waters of any stream or bodies of water, in order to minimize the adverse impacts of such actions on fish and wildlife resources and habitat. Similarly, the Migratory Bird Treaty Act requires the protection of ecosystems of special importance to migratory birds against detrimental alteration, pollution, and other environmental degradation. These consultations are incorporated into Section 404 of the CWA, NEPA, or other federal permit, license or review requirements. The restoration projects will comply with FWCA and the Migratory Bird Treaty Act when they comply with Section 404 of the CWA. The CWA compliance will be provided in the final RP/EA.

**Coastal Zone Management Act of 1982, as amended, 16 USC 1451 *et seq.*** Federal consistency is the CZMA requirement where federal agency activities that have reasonably foreseeable effects on any land or water use or natural resource of the coastal zone must be consistent to the maximum extent practicable with the enforceable policies of a coastal state's federally approved coastal management program. For Washington State the projects must receive a shoreline permit or exemption, a hydraulic project approval and a water quality certification to be consistent with the State's coastal

management program. All projects would receive these before being implemented and the outcome of the CZMA process will be provided in the final RP/EA.

**Executive Order 11988: Floodplain Management.** On May 24, 1977, President Carter issued Executive Order 11988, Floodplain Management. This Executive Order requires each federal agency to provide opportunity for early public review of any plans or proposals for actions in floodplains, in accordance with Section 2(b) of Executive Order 11514, as amended, including the development of procedures to accomplish this objective.

**Executive Order 11990: Protection of Wetlands.** On May 24, 1977, President Carter issued Executive Order 11990, Protection of Wetlands. This Executive Order requires each agency to provide opportunity for early public review of any plans or proposals for new construction in wetlands, in accordance with Section 2(b) of Executive Order 11514, as amended, including the development of procedures to accomplish this objective.

**Executive Order 12898: Environmental Justice, as amended.** On February 11, 1994, President Clinton issued Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. This Executive Order requires each federal agency to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority and low-income populations. EPA and CEQ have emphasized the importance of incorporating environmental justice review in the analyses conducted by federal agencies under NEPA and of developing mitigation measures that avoid disproportionate environmental effects on minority and low-income populations.

The Muckleshoot Indian Tribe and the Puyallup Tribe of Indians constitute distinct, separate communities of Native Americans who rely on Treaty-reserved fish and shellfish resources for subsistence, economic and spiritual purposes. Other members of low-income communities may rely on fishery resources for subsistence purposes. The Trustees have not identified any disproportionate, adverse impacts on human health or environmental effects on implementation of the preferred alternative on Native Americans or other minority or low-income populations, and believe that this project would be beneficial to these communities. The Tribes are participants in the project planning and their representation would be inherent in the Trustees' decision-making process.

**Information Quality Guidelines issued Pursuant to Public Law 106-554.** Information disseminated by Federal agencies to the public after October 1, 2002, is subject to information quality guidelines developed by each agency pursuant to Section 515 of Public Law 106-554 that are intended to ensure and maximize the quality of such information (i.e., the objectivity, utility and integrity of such information). This EA is an information product covered by the information quality guidelines established by NOAA and the DOI for this purpose. The information collected herein complies with applicable guidelines.

## **7.0 Literature Cited**

- Allen, A., 2006. Dalco Passage Oil Spill Volume Estimates, Spiltec, 7pp, Woodinville, WA
- Bargman, G. 1998. Forage Fish Management Plan. Washington Department of Fish and Wildlife, Olympia, Washington.
- Battin, J. et. Al. 2007. *Projected impacts of climate change on salmon habitat restoration*. Proceedings of the National Academy of Sciences of the USA. April.
- Grette Associates, LLC 2006. Northwest Aggregates: Maury Island Gravel Dock 2006 Annual Eelgrass Survey Report. Prepared for Northwest Aggregates, October 4, 2006.
- King County DDES. 2000. Final Environmental Impact Statement, Maury Island Glacier Northwest Gravel Mine. Renton, Washington.
- King County Department of Development and Environmental Services. 2004. Addendum to Final Environmental Impact Statement, Maury Island Glacier Northwest Gravel Mine. Renton, Washington.
- Palsson, W. A. and T. Tsou. 2005. Characterization of Benthic Marine Fish Communities in Puget Sound. Proceedings of the 2005 Puget Sound Georgia Basin Research Conference, Puget Sound Action Team, Olympia, Washington.
- Washington Department of Natural Resources. 2004a. Final Supplemental Environmental Impact Statement; Maury Island Aquatic Reserve. Olympia, Washington
- Washington Department of Natural Resources. 2004b. Maury Island Environmental Aquatic Reserve Final Management Plan. Olympia, Washington.
- Washington DNR – Aquatic Resources Program, 2004. Maury Island Environmental Aquatic Reserve Final Management Plan, 142pp

## **8.0 Persons and Agencies Consulted**

- U.S. Department of Commerce, National Oceanic and Atmospheric Administration
  - NOAA- Office of Response and Restoration: Ian Zelo
  - NOAA – Habitat Division: Jason Lehto
  - NOAA – General Counsel: Robert Taylor
- U.S. Department of the Interior
  - U.S. Fish and Wildlife Service: Cindy Shexnider
- Muckleshoot Indian Tribe: Glen St. Amant
- Puyallup Tribe of Indians: Bill Sullivan
- Washington State Department of Ecology: Craig Thompson and Rebecca Post

- Washington State Department of Fish and Wildlife: Dan Doty, Brian MacDonald, and Barry Troutman

## **9.0 List of Preparers**

The following Trustee representatives on the Foss Pt. Wells Restoration Committee were involved with the preparation of this document and with the selection of the preferred alternatives.

Cindy Schexnider, US Fish and Wildlife Service Western Washington Office 510 Desmond DR. SE, Suite 102 Lacey, WA 98503-1273

Dan Doty, Brian MacDonald, and Barry Troutman, Washington Dept. of Fish and Wildlife, 600 Capitol Way N. Olympia, WA 98501

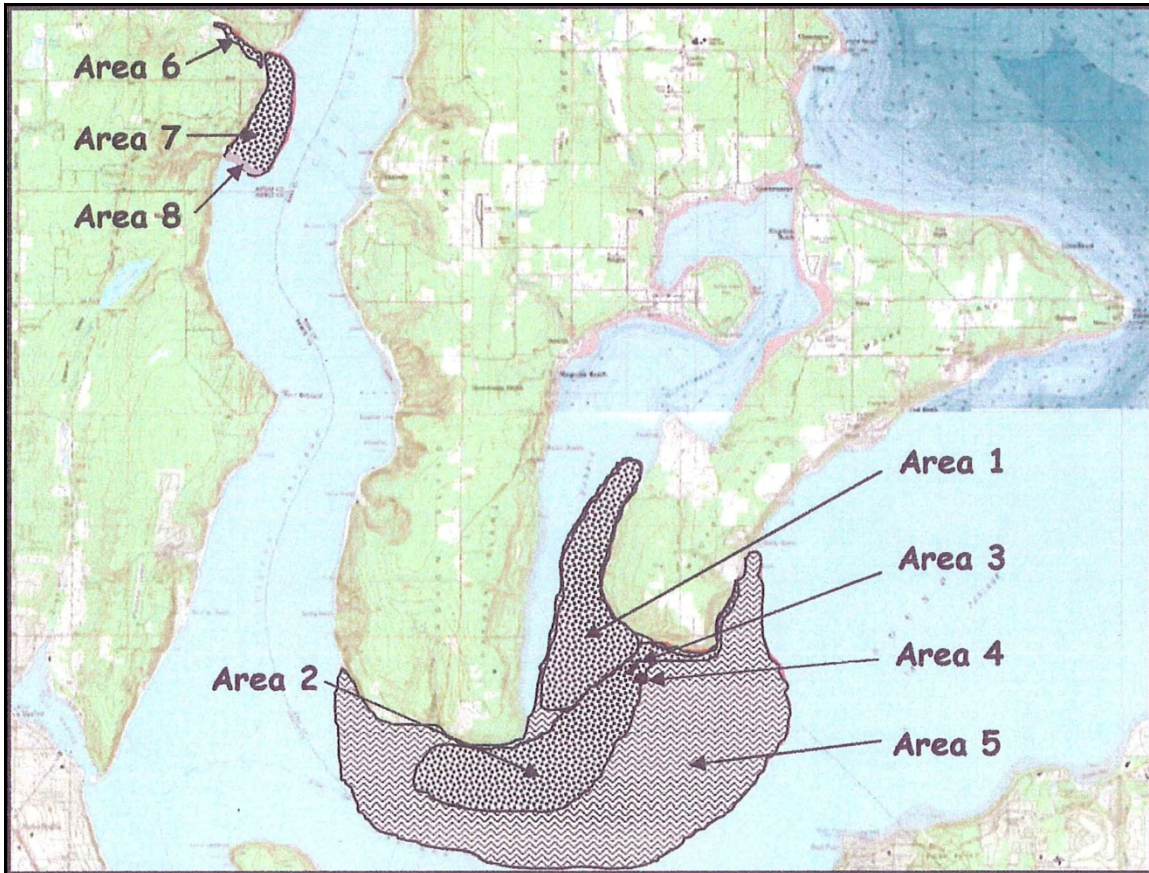
Ian Zelo, Jason Lehto, NOAA - Assessment and Restoration Division, 7600 Sand Point Way NE, Seattle, WA 98115

Rebecca Post, Dale Davis, Washington Department of Ecology 300 Desmond Dr., PO 47600 Olympia, WA 98504-7600

Glen St. Amant, Muckleshoot Indian Tribe Fisheries Division, 39015 172nd Ave SE, Auburn, WA 98092

## 10.0 Appendices

### Appendix A. Background Information



*Figure 1 Offshore Areas with visible oil concentrations – Aerial observations on October 14, 2004 (Allen, 2006)*



### Dalco Passage Mystery Spill, Puget Sound, WA

SCAT Map  
created by NOAA

Date/Time: 15-17 OCT 2004  
Platform: Foot, Boat

USE ONLY AS A GENERAL REFERENCE Graphic does not represent precise amounts or locations of oil

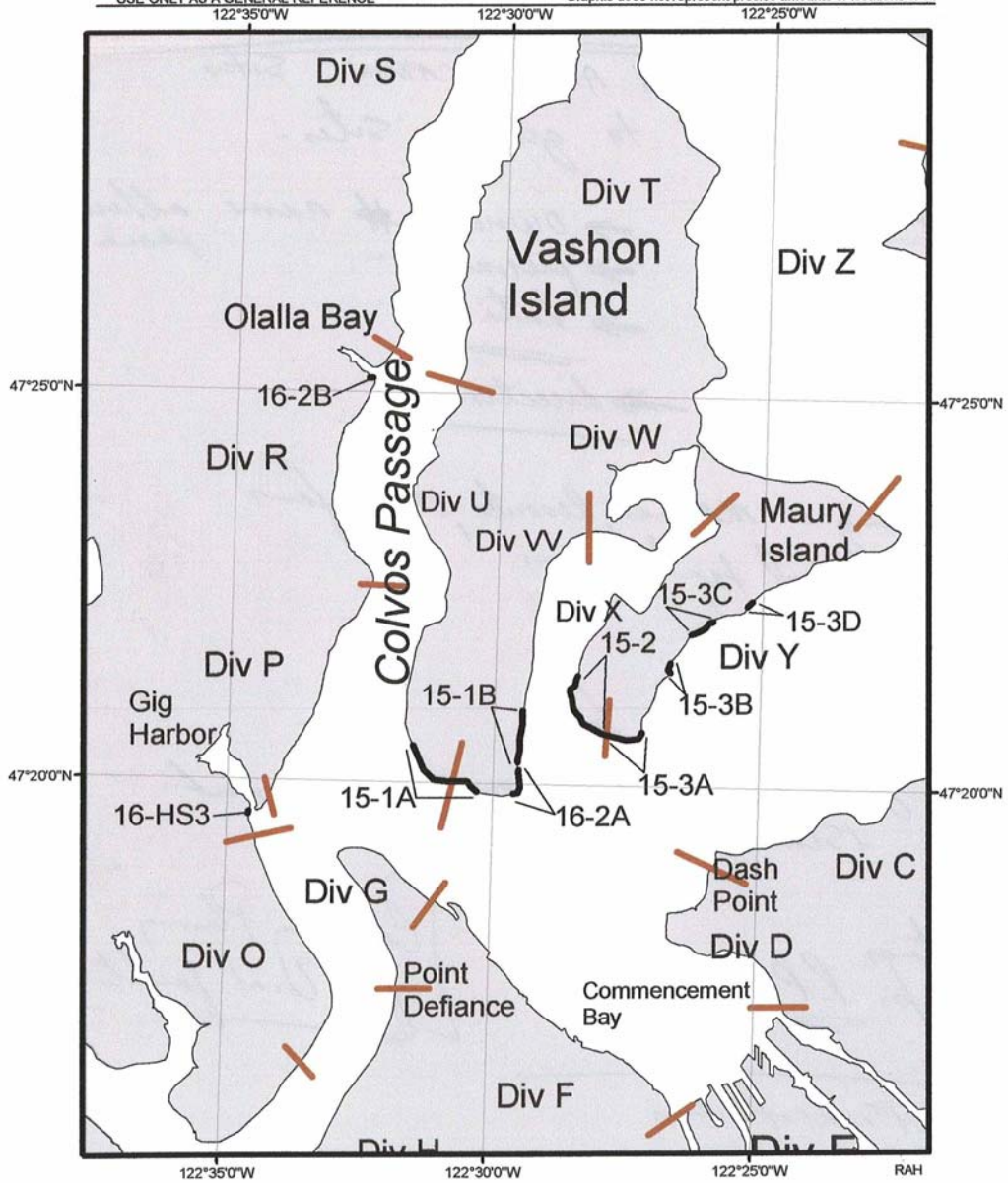
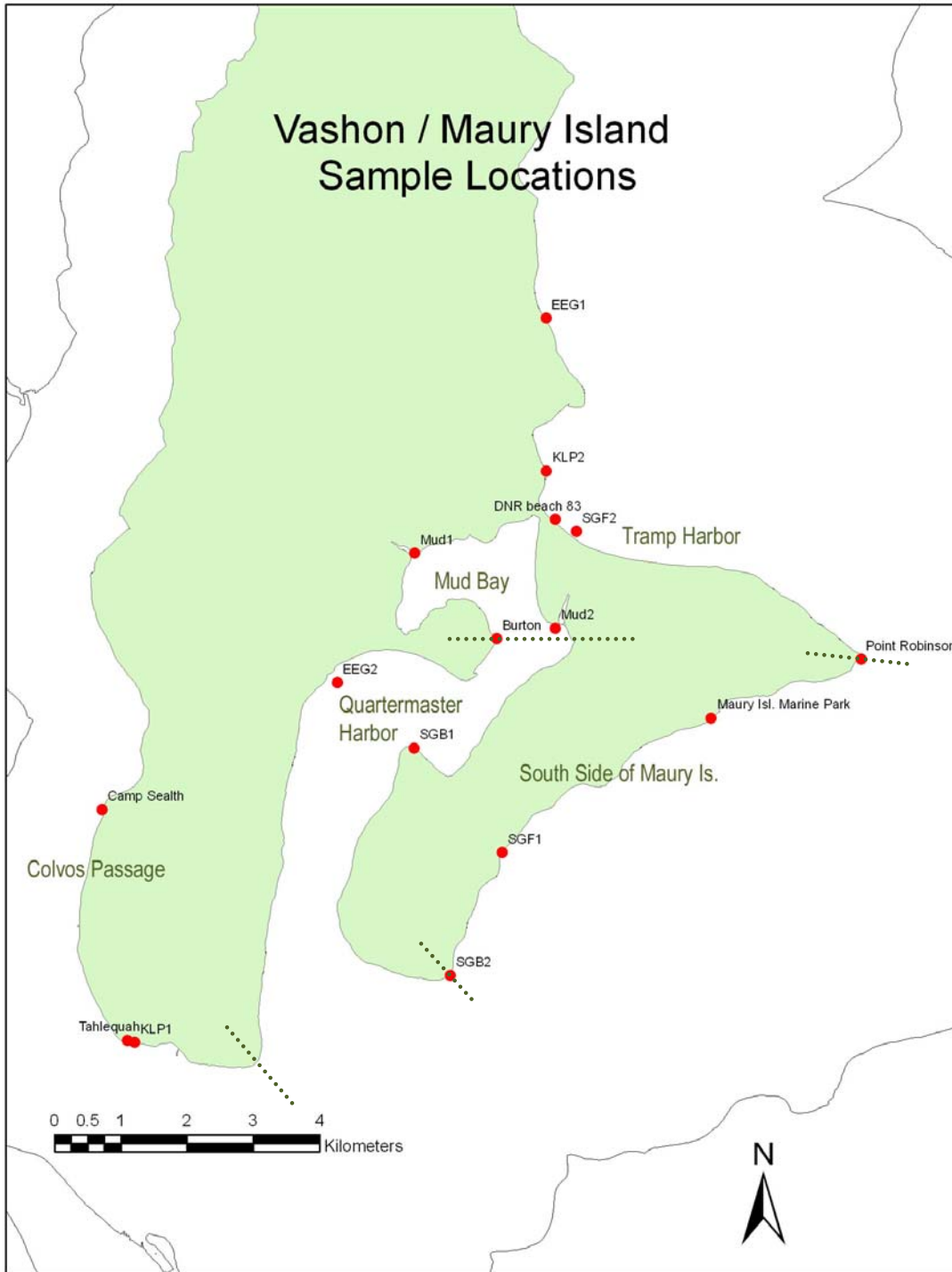


Figure 2 Summary of Visible Shoreline Oiling- ground crew observations October 15-17, 2004



Restoration area and Fish Population Estimate – Affect Area Subregions



**Appendix B. Parks in Affected Area**



Figure 3 Map of Parks in the Region

**Washington State Parks:**

The three State Parks within the affected spill area are Dash Point State Park, Saltwater State Park, and Blake Island State Park. Fortunately, no State Parks were directly impacted by the spill.

**Dash Point State Park** is located on the northeast end of Dalco Passage. Dash Point State Park is a 398-acre camping park with 3,301 feet of saltwater shoreline on Puget Sound.

**Saltwater State Park** is located across Puget Sound's East Passage, east of Maury Island, halfway between the cities of Tacoma and Seattle. Saltwater State Park is an 88-acre marine camping park with 1,445 feet of saltwater shoreline on Puget Sound.

**Blake Island State Park**, located north of Vashon Island and Colvos Passage, is a 475-acre marine camping park with five miles of saltwater shoreline.

### **King County Parks:**

King County parks on Vashon and Maury Island with saltwater shoreline include the Maury Island Marine Park, Dockton Beach Park, and Piner Point Natural Area. King County had to close parks on Vashon and Maury Islands for over 2 weeks after the spill.

The **Maury Island Marine Park**, located on the southeast side of Maury Island, has more than a mile of beach and a wooden dock, once used for loading barges. The beach is known for its diverse population of invertebrates, including limpets, periwinkles, isopods, bivalves, sea stars, crabs etc. Scuba diving is popular around the old pier pilings.

**Piner Point Natural Area** is seven acres of undeveloped property on the southern end of Maury Island jointly managed by the Vashon Land Trust and King County.

**Dockton Park** is located on the north side of the island along Quatermaster Harbor. The park provides picnic areas, hiking trails, swimming beach, a boat launch, and moorage.

### **Vashon Park District:**

The Vashon Park District owns/manages the following waterfront properties: Point Robinson, Tramp Harbor, Burton Acres-Jensen Point, Wingehaven Park, the North End Boat Ramp, Lisabeula Park, Spring Beach, Fern Cove, the Lower Shinglemill Creek Salmon Preserve, and Lost Lake.

**Point Robinson** is a historic landmark with a lighthouse, located on the eastern point of Maury Island.

**Tramp Harbor** is a half acre shoreline park located on the east side of Vashon Island. A wooden pier provides fishing access to deeper water and scuba divers use the site for exploring marine life attached to the pilings and surrounding marine bench.

**Burton Acres/Jensen Point** is located at the north end of Quatermaster harbor, on the north side of the Burton peninsula. Its north shore is protected from heavy surf most of the time. The east beach is vulnerable if the winds are come from the south. The flushing in the harbor is greatly restricted by an isthmus at Portage, which connects Vashon and Maury islands. The northeastern point of the beach has prime habitat for Manila and littleneck clams and the lower beach is excellent habitat for geoducks. The Vashon kayak center is located at Jensen Pt boathouse at the park, where kayak rentals and guided tours

are available. Jensen Point has one of the three public motorized boat launches on the island.

**Wingehaven Park** is a 17.7 acre passive shoreline access park and conservancy located on the northeast end of Vashon Island.

**North End Boat Ramp** is privately owned but managed by the Vashon park district. The site has been improved with a concrete ramp parallel to the ferry dock providing access to the beach for kayaks, canoes, and other hand-carried boats.

**Lisabeula Park** is a 5.5 acre shoreline park located on the west side of Vashon Island overlooking Colvos Passage. There is a kayak/canoe boat launch and a Washington Water Trails primitive campsite at the park.

**Fern Cove** is comprised of 13.5 acres with 750 feet of shoreline with two year-round streams, an estuarine system, a paulistrine system, and riparian forest. Both Shinglemill Creek and Baldwin Creek empty into Colvos Passage at Fern Cove creating the extensive estuarine system and the distinct delta when seen from the air.

**Lower Shinglemill Creek Salmon Preserve** consists of 7 parcels totaling 117 acres. Shinglemill Creek is one of the most pristine drainage areas on Vashon. It is one of the few salmon bearing creeks on the island with small runs of coho and cutthroat trout. **Lost Lake** is a 37-acre parcel on southern Vashon Island a sphagnum wetland, 1300 feet of shoreline, and tidelands.

### **Vashon/Maury Island Land Trust**

Founded in 1989, the Vashon-Maury Island Land Trust has worked to protect more than 1,100 acres on 26 island preserves. The majority of the parcels have been transferred to the Vashon Park District.

The **MacLeod Preserve** is the largest remaining unplatted parcel on the north end of Vashon. It is 22 acres of second-growth forest with several hundred feet of waterfront. Located on Colvos Passage, the shoreline is sandy with some cobble. It is backed by a high, eroding cliff that adds sand to the Vashon's west side beaches.

### **Boat Launches:**

There are three public boat launches on Vashon: Dockton Park, Jensen Point, and the North End Boat Ramp. Quartermaster Marina and at the Quartermaster Yacht Club have private boat launches.

Across Dalco Passage to the south of Vashon, the boat launch at Point Defiance was used as a staging area for oil spill response teams, impacting recreational use of the launch for two days.

### **Private Recreation:**

KVI beach, privately owned, is a popular scuba diving area north of Portage. All of Quartermaster Harbor has very active boating activities including kayaking, competitive rowing and sail boating. Camp Sealth is a waterfront Girl Scout camp on the southwest side of Vashon.



## Appendix C. NRDA Sampling Details

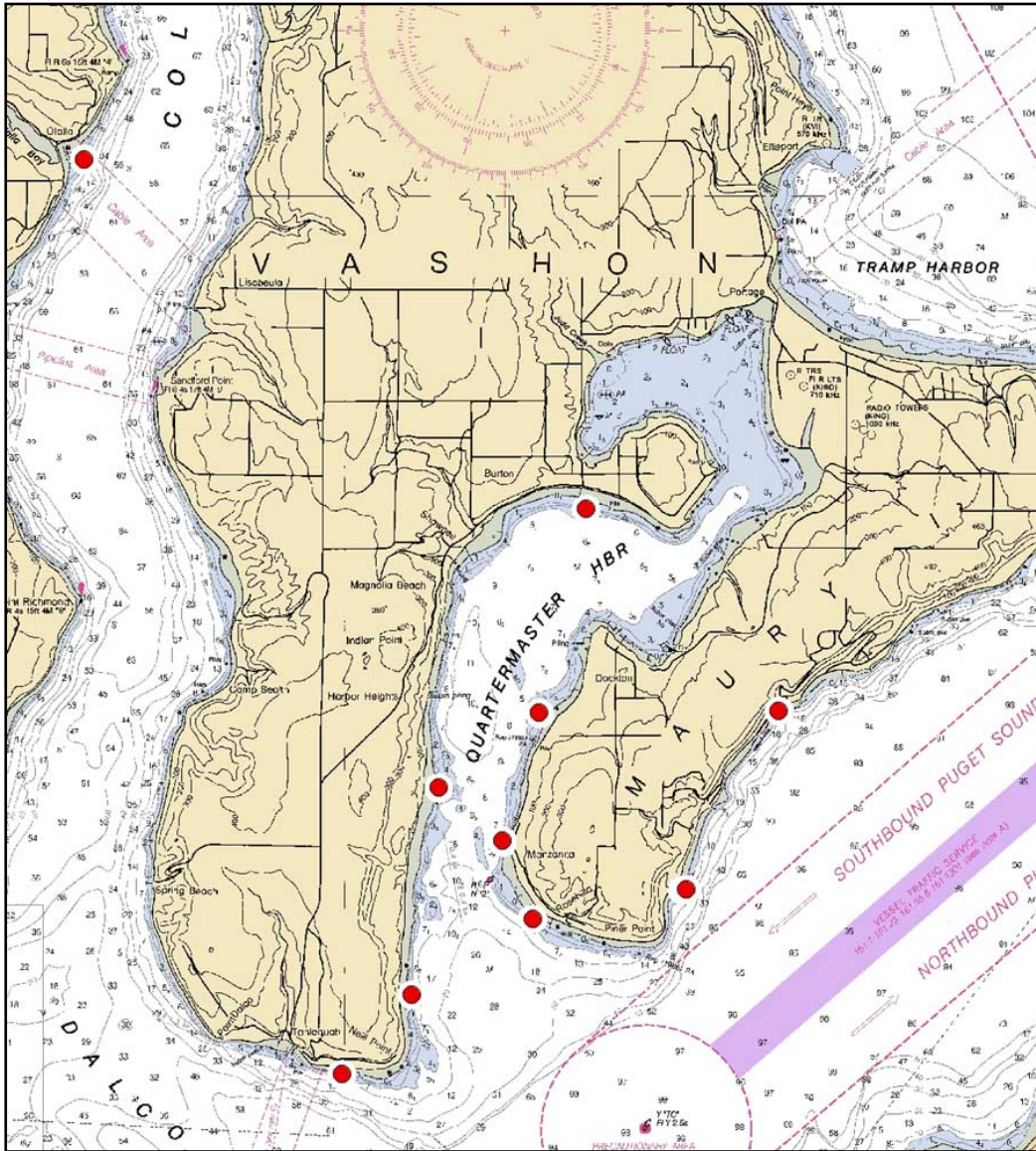


Figure 4 Subtidal Sediment Sample Locations – December 2004



Figure 5 Sediment, water and oil sample locations – October 2004



## Appendix D. Full Project List

Highlighted projects were selected for more detailed review. The following table contains all of the projects that the Trustees reviewed. Included in the table is the project number, the project name and the project description.

Project #	Project Name	Description
1	Any quality Intertidal/Nearshore fill, structure, armoring project in primary restoration focus area (PRFA)	TBD
2	Beaconsfield	Removal of 535' of bulkhead to allow erosion of feeder bluffs. Site on mainland due east of Vashon
3	Beall Creek fish barrier at WD 19 diversion	Rehabilitate or replace diversion structure to provide water withdrawal that allows fish passage.
4	bulkhead assessment and Nearshore Habitat Restoration	Establish identification and prioritization methods restoring nearshore habitats on public and private property.
5	Camp Burton Tidal Marsh Conservation	Conserve the Camp Burton tidal marsh to maintain existing habitat function. This marsh provides high functioning rearing habitat for juvenile salmonids., Western Quartermaster Harbor,
6	Contaminated sediment site removal/enhancement in SRFA	TBD
7	Develop list of landowners located adjacent to the PRFA who would allow voluntary restoration projects to be completed on their property including a description of restoration potential	See Memo
8	Dockton Park Feeder Bluff Conservation	Conserve unarmored feeder bluffs and vegetation along drift cell from Dockton Park to Raab's Lagoon. This drift cell includes unarmored feeder bluffs and wide corridors of intact riparian vegetation. The drift cell provides high quality habitat, and the shoreline contains documented herring spawning habitat. , Eastern Quartermaster Harbor,
9	Dockton Park Nearshore Restoration	Replace deteriorating cross tiles and catch basins. Repair or remove the bulkhead.
10	Dockton Shoreline Rehabilitation	Rehabilitate the Dockton shoreline by removing deteriorating over-water structures, pilings, and wood rubble on the beach. Enhance riparian habitat with native plantings. In addition, longshore sediment transport could be improved by removing or reconfiguring shoreline armoring., Eastern Quartermaster Harbor, King County Priority
11	East Fork Judd Creek Habitat Erosion	Identify source of erosion, reduce erosion rates, and improve instream habitat.
12	Ellis Creek Saltmarsh Protection and Restoration on Vashon Island:	Acquire salmonid-accessible saltmarsh and riparian land at the mouth of Ellis Creek on

<b>Project #</b>	<b>Project Name</b>	<b>Description</b>
		Tramp Harbor on the east side of Vashon Island.
13	Ellisport Creek Restoration	Remediate or remove soils and replace culverts to restore dynamic nearshore and creek mouth connection. Restore salt tolerant riparian plant communities.
14	Eradication of non-native species and/or noxious plants/weeds located in intertidal/nearshore habitats or the riparian shoreline habitat of the PRFA	TBD
15	Establish Vashon Minimum Instream Flows	Investigate and establish surface and groundwater withdrawals to establish in-stream flow levels and effects on salmonids for streams across Vashon/Maury Island.
16	Fee simple acquisition of private intertidal/nearshore aquatic lands with good quality habitat or restoration potential in PRFA	TBD
17	Fee simple acquisition of shoreline riparian zones and/or sediment feeder bluffs that maintain littoral processes in the PRFA	TBD
18	Fish Screens at Water Diversions on Vashon	Work with property owners with surface water withdrawal rights to install fish screens at all water diversions with salmonid presence.
19	Functioning Nearshore Habitat Protection on Vashon/Maury Island:	Protect sites with high habitat resource values - Maury Island Marine Park
20	Functioning Nearshore Habitat Protection on Vashon/Maury Island:	Protect sites with high habitat resource values - Neill Pt
21	Functioning Nearshore Habitat Protection on Vashon/Maury Island:	Protect sites with high habitat resource values - Piner West
22	Functioning Nearshore Habitat Protection on Vashon/Maury Island:	Protect sites with high habitat resource values - Lost Lake
23	Functioning Nearshore Habitat Protection on Vashon/Maury Island:	Protect sites with high habitat resource values - Raab's Lagoon Pocket Estuary
24	Functioning Nearshore Habitat Protection on Vashon/Maury Island:	Protect sites with high habitat resource values - Pt. Robinson
25	Functioning Nearshore Habitat Protection on Vashon/Maury Island:	Protect sites with high habitat resource values - Inspiration Pt
26	Functioning Nearshore Habitat Protection on Vashon/Maury Island:	Protect sites with high habitat resource values - Manzanita
27	Functioning Nearshore Habitat Protection on Vashon/Maury Island:	Protect sites with high habitat resource values - Dockton
28	Glacier Nearshore Conservation	Permanently protect 1 mile of functional marine riparian buffer adjacent to gravel mine, specific area to be determined by geomorphological attributes. Consider conservation easement, partial interest or fee title acquisition.



Project #	Project Name	Description
29	Glacier Riparian Vegetation Restoration	Restore native riparian vegetation at Glacier Mine by planting native trees to accelerate the recolonization of vegetation and promote restoration of mature trees. Currently, much of the vegetation is non-native and has colonized the area., East Maury Is.,
30	Gorsuch Creek Channel Degradation Erosion	Stabilize portion of Gorsuch and prevent further degradation.
31	Grand Canyon on Shinglemill Creek	Correct drainage diversion to prevent further erosion and reduce sediment loading in Shinglemill Creek.
32	Harper Estuary Culvert Replacement-Feasibility/Design	Currently Harper Estuary is a pocket estuary with most of the habitat being salt marsh and intertidal mudflat. The estuary has one main channel and a disconnected fresh water wetland.
33	Implement any conceptual project listed for PRFA in the Secondary Restoration Focus Area (SRFA)	TBD
34	Judd Ck Estuarine Conservation & Restoration	Conserve unarmored shoreline and intact riparian vegetation at the mouth of Judd Creek, one of the largest salmon producing creeks on the Vashon-Maury Island; and rehabilitate the armoring and riparian vegetation conditions just outside the creek mouth. The area has extensive riparian vegetation and provides desirable pocket estuary habitat., Inner Quartermaster Harbor, King County Priority
35	Judd Creek Headwater Wetland Property	Acquire 83.15 acres of property to protect habitat supporting functions of Jedd Creek (groundwater inflow, regulate instream flows, wetland function) and provide for passive recreation opportunities and forest health.
36	KVI Beach Conservation	Work with Fisher Broadcasting to develop a program of property management to protect the salt marsh, by considering property enhancements like interpretive signage and site path improvements.
37	Leede Parcel Acquisition and Restoration (Judd Creek)	The acquisition of this parcel will protect Judd Creek from the potential effects of residential development, 19 acres
38	LID and Natural Drainage Standards	Establish LID/natural drainage standards for all construction projects, including road drainage standards to promote pervious surfaces, improve water quantity and quality, and to reduce facility construction and maintenance costs. Examples include maximizing native vegetation and minimizing impervious surface, narrower roads, using pervious materials such as pervious concrete f, green roofs for buildings, promoting bioretention and infiltration. Implement LID/natural drainage projects specifically in Vashon Town Center and Islandwide as opportunities warrant.

Project #	Project Name	Description
39	Lower Shinglemill Habitat Improvement	Improve the instream complexity and diversity of habitat types. Determine role, need, and placement of LWD in lower Shinglemill Creek. Determine likelihood of success for different alternatives to improve instream habitat.
40	Maury Island Intertidal Fill Removal	Remove intertidal fill and reestablish a natural grade to the shoreline. The fill is located between Gold Beach and the Glacier Northwest pier. The fill appears to be causing sediment to accumulate on the downdrift side of the fill pile. The fill also appears to be inhibiting natural erosion of the adjacent bluffs onto the beach, East Maury Is.,
41	Maury Island Restoration-CPS Opp. Grant	Restore Maury Island property. People For Puget Sound is working with a private landowner and other partners to remove 63 creosote-treated pilings from a failed bulkhead the intertidal zone that spans 200 feet of marine shoreline immediately northeast of King County's Maury Island Marine Park. In addition, we will remove an additional 90 feet of a marine bulkhead in order to further enhance the shoreline. This project will extend a contiguous natural shoreline that runs from the west end of the Marine Park through two other private lots (an additional 290 feet) to the edge of the
42	Middle Judd Creek Conservation	Preserve the best spawning habitat on Judd Creek by conserving 40 acres along this section of Judd Creek.
43	Mileta Ck Mouth Conservation & Rehabilitation	Conserve the mouth of Mileta Ck (located immediately south of Raab's Lagoon). The riparian vegetation and creek alignment is largely intact and functioning naturally. Restoration of riparian vegetation to the north side would provide additional terrestrial inputs to the aquatic food web., Eastern Quartermaster Harbor, King County Priority
44	Mileta Creek Fish Passage Project	Provide construction options and costs for fish passage up to and through box culvert and add LWD to stream in culvert vicinity.
45	Monitor outfall and creek water quality in Quartermaster Harbor to identify pollutions sources that lead to restoration projects of water quality problems in/near Quartermaster Harbor	See Memo
46	Natal estuary/delta projects in SRFA at/near the Puyallup River and associated urban waterways	TBD
47	Piner Point Acquisition	Acquire 5 properties totaling 6 acres encompassing Piner Point on Maury Island.
48	Portage Salt Marsh Habitat Restoration	Conduct feasibility study of scoped or new alternatives. Implement project to improve tidal exchange, protect and enhance salt marsh plant species, remove added or accumulated fill as appropriate. Wrok with adjacent land owner to resolve flooding and related septic failure.

Project #	Project Name	Description
49	Pt. Robinson Eastern Drift Cell & Feeder Bluff Conservation	Conserve intact feeder bluffs and mature riparian vegetation in reach along eastern shoreline of Maury Island from Maury Island Marine Park to Pt. Robinson. This feeder bluff provides sediment source for Pt. Robinson, and provides good salmon rearing habitat, East Maury Is., King County Priority
50	Puget Creek	Contaminant remediation and wood waste removal, eel grass and forage fish spawning habitat restoration and shoreline armoring modifications at a site in Commencement Bay.
51	Raab's Creek and Estuary Restoration	Examine lagoon to determine whether and how it could be modified to improve habitat value for salmonids. Potential changes could range from modifications of the water control structure operations to restoration of full fish access and tidal inundation of the lagoon by removing the water control structure and reestablishing a sand spit across the mouth. If changes to the control structure increased salinity in the lagoon, salt marsh restoration could be undertaken where elevations are appropriate. The riparian area also could be planted.
52	Rapid Shoreline Inventory of Vashon/Maury Islands	The Rapid Shoreline Inventory gathers physical and biological information about shoreline and nearshore habitats on contiguous 150-foot segments of beach. Volunteers and staff hit the beach during extreme low-tide windows in order to gather information about eelgrass, invertebrates, and substrates that are not otherwise visible.
53	Replanting and permanent protection of shoreline vegetation in PRFA	TBD
54	Restore/Acquire Burton Pocket estuary	TBD
55	Restore/Acquire Judd Creek pocket estuary	TBD
56	Restore/Acquire Quartermaster pocket estuary	To Be Determined (TBD)
57	Singer Parcel Acquisition and Restoration / Judd Creek	The acquisition of this parcel will protect Judd Creek from the potential effects of residential development, 16 acres
58	Tahlequah Creek Habitat Improvement	Work with landowners to evaluate opportunities to enhance instream and riparian habitat and improve fish passage.
59	Tramp Harbor Fill Removal	Remove fill and reestablish a natural grade to the shoreline. There are currently two large areas of intertidal fill located near the public dock along Dockton Road Southwest. The two areas of fill are being held in place by old creosote bulkheads. There are no structures on the fill. The project would complement a previous King County transportation project that removed a smaller amount of fill adjacent to a pier., Eastern Vashon,

<b>Project #</b>	<b>Project Name</b>	<b>Description</b>
60	Vashon Fish Barrier Removal	Numerous culverts, diversion structures and bulkheads are identified as fish barriers by Washington Trout inventory. This project is to correct several on an annual basis in addition to those listed as discrete projects in this database.
61	Vashon Instream Habitat Survey	Conduct stream habitat surveys, starting with the larger watershed to develop an inventory of baseline data.
62	Vashon Island Olympia Oyster Restoration	expansion of the currently funded small-scale project to enhance native oyster habitat in Raab's Lagoon
63	Vashon Natural Resource Land Inventory	Develop an Islandwide analysis of natural resource lands for a coordinated approach to preservation restoration efforts. Utilize existing studies and GIS as primary sources of information.
64	Vashon Riparian Habitat Restoration	Work with landowners to improve riparian habitat through a variety of actions including: planting native tree, to implement Ag BMP's, to restrict livestock in riparian corridor.
65	Vashon Septic Improvements	Work with Health Dept to identify and implement solutions for septic system failures on surface water, groundwater, and nearshore environments.
66	West Fork Judd Creek Habitat Improvement	Restore degraded instream, riparian, and wetland habitat with cooperative property owners.
67	West Quartermaster Riparian Veg. Restoration	Rehabilitate riparian vegetation at available locations by planting tree and plant species in locations that balance the habitat benefits with the desire for views in this and other residential areas., Western Quartermaster Harbor, King County Priority
68	Western Quartermaster Feeder Bluff Conservation	Conserve unarmored feeder bluffs, intact riparian vegetation, and LWD across the intertidal zone along the southern third of the shoreline., Western Quartermaster Harbor,

**Appendix E. Dockton Park Nearshore Restoration – Additional Documentation**

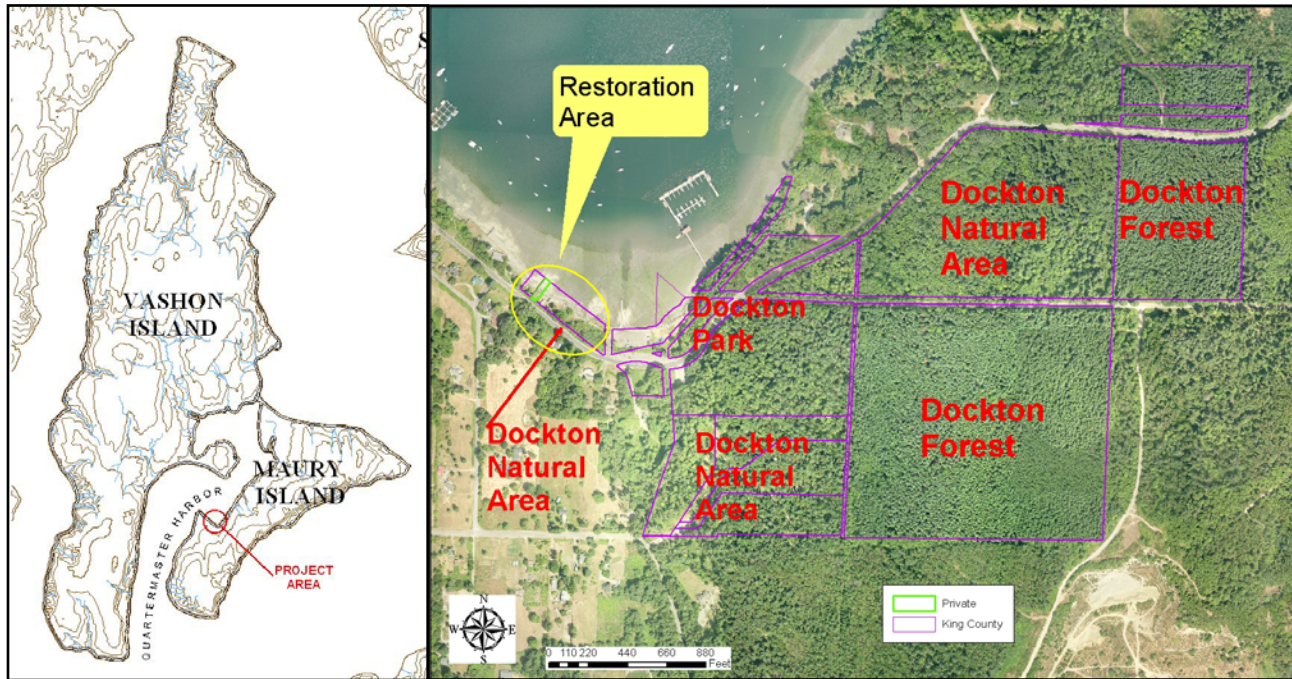


Figure 6 Dockton – Project Location

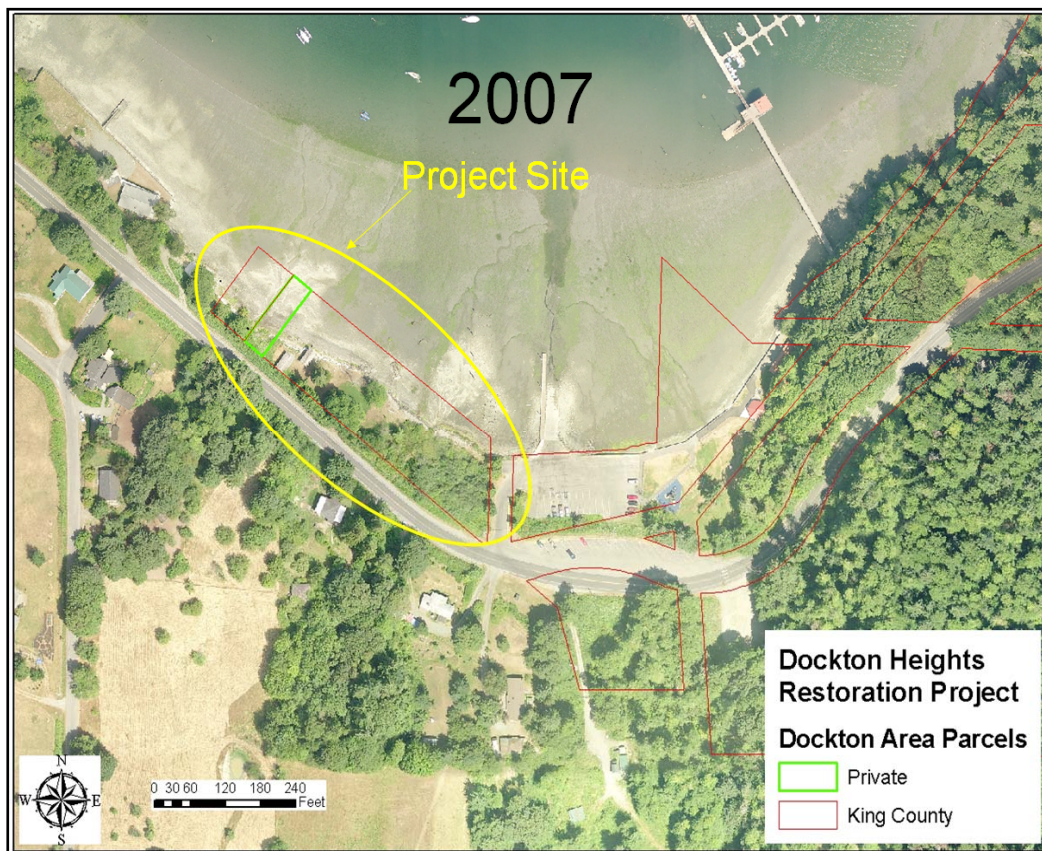




Figure 7 Dockton Site Location – Quartermaster Harbor, Vashon Island



Figure 8 Dockton Major Restoration Components



Figure 9 Dockton Major Restoration Components Continued

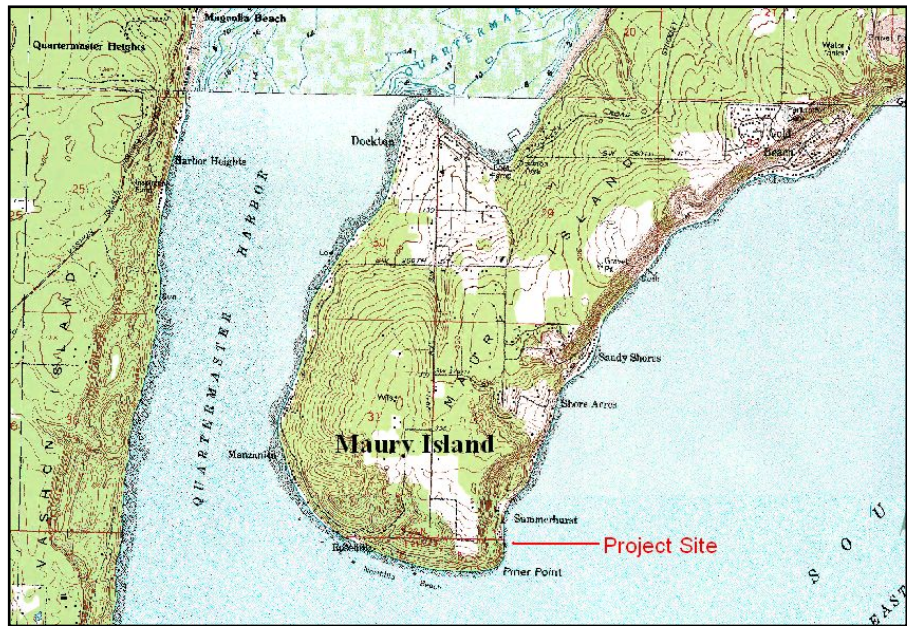




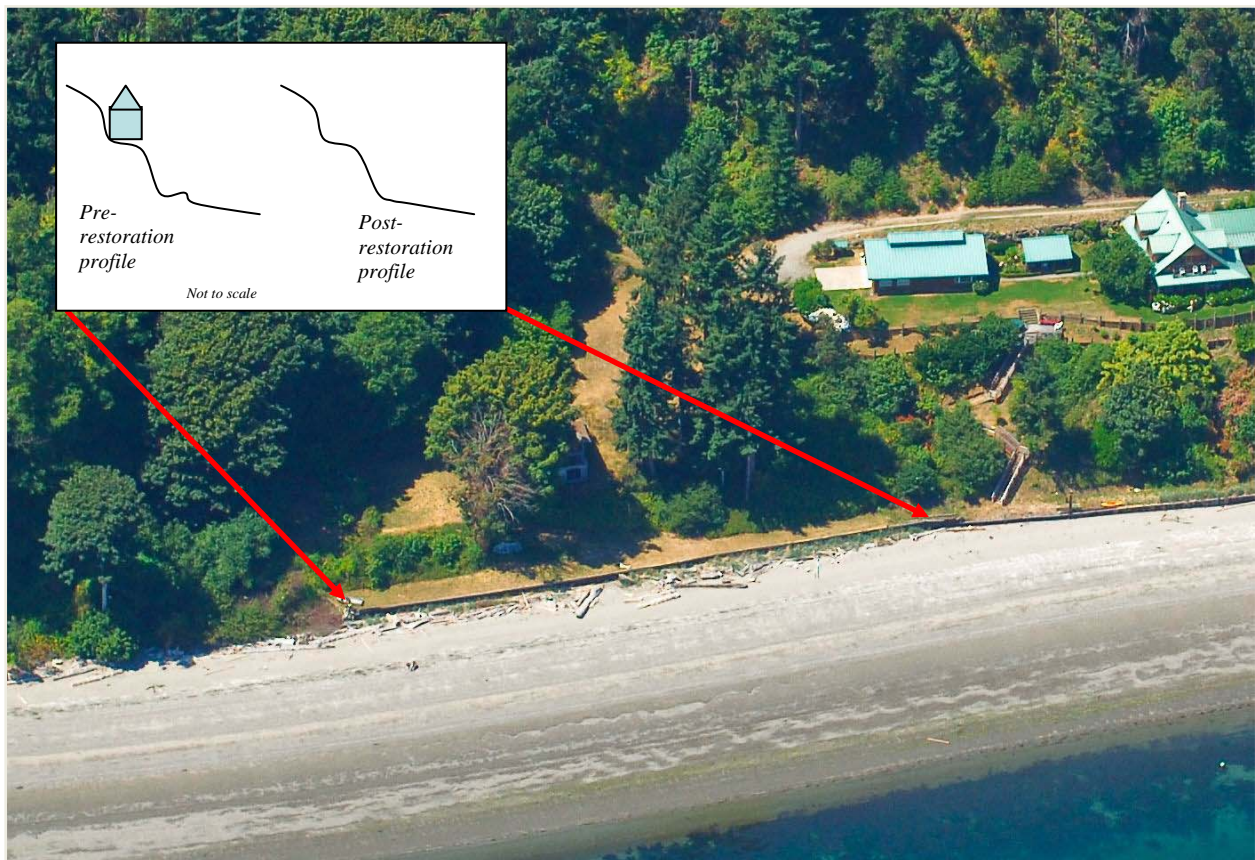
Figure 10 Dockton Conceptual Design



**Appendix F. Piner Point Acquisition / Nearshore Restoration – Additional Documentation**



*Figure 11 The Piner Point project site in relation to Maury Island.*



*Figure 12 Oblique image of Piner Point project site (2006) with an example cross section of the project site before and after the restoration project.*



Appendix G. Vashon Riparian Habitat Restoration – Additional Documentation

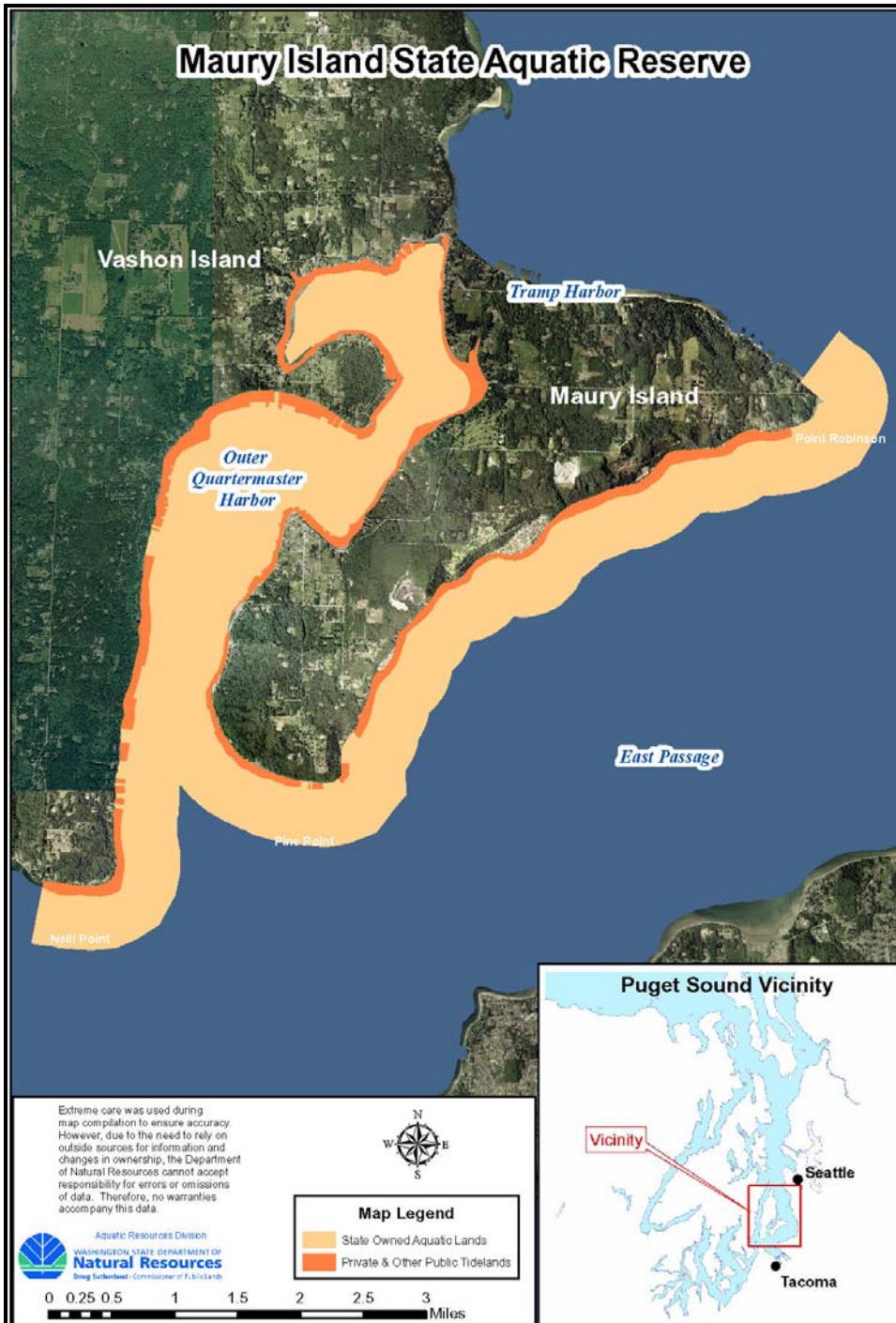


Figure 13 Map of Maury Island State Aquatic Reserve



*Figure 14 Map showing revegetation sites along the marine shorelines of southern Vashon and Maury Islands.*