

**Environmental Assessment
Commencement Bay, Washington: Wasser/Winter,
Nursery, and Meeker Restoration Projects**

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**Environmental Assessment (EA)
Commencement Bay, Washington Wasser/Winter,
Nursery, and Meeker Restoration Projects**

- LEAD FEDERAL AGENCY FOR EA:** National Oceanic and Atmospheric Administration (NOAA)
- COOPERATING FEDERAL AGENCY FOR EA:** U.S. Fish and Wildlife Service (U.S. Department of the Interior)
- STATE ENVIRONMENTAL POLICY ACT (SEPA) LEAD AGENCY:** City of Tacoma
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- ABSTRACT:** This EA has been prepared for the Wasser/Winter, Nursery, and Meeker restoration projects to disclose potentially significant impacts to the human environment associated with restoration of natural resources in Commencement Bay, Washington.
- The Wasser/Winter and Nursery projects generally consist of restoration of intertidal habitat through re-grading and replanting of previously disturbed sites. The Wasser/Winter site is approximately 2.3 acres, while the Nursery site comprises approximately 0.66 acres. A "no action" alternative is proposed for the Meeker site.

ADMINISTRATIVE RECORD:

Copies of the EA may be reviewed at the following locations:

Tacoma Public Library
Downtown Branch
1102 Tacoma Avenue South
Tacoma, WA 98402
(253) 591-5666

Citizens for a Healthy Bay
917 Pacific Avenue, Suite 406
Tacoma, WA 98402
(253) 383-2429

Copies of the EA are also available for download at:
<http://www.darcnw.noaa.gov/projects/htm>.

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Executive Summary

This Environmental Assessment was prepared under the requirements of the National Environmental Policy Act to disclose potentially significant impacts to the quality of the human environment from implementation of the preferred alternative for three habitat restoration projects in Commencement Bay, Tacoma, Washington.

Three projects are proposed by the Commencement Bay Natural Resource Trustees under their Natural Resource Damage Assessment Restoration Plan. The projects are the Wasser/Winter project, the Nursery project, and the Meeker project, and restoration would occur at three separate but functionally related sites. The projects would re-create lost intertidal habitat for a variety of plants and animals and provide particular benefit for juvenile salmonids, including chinook salmon, which are listed as "threatened" under the federal Endangered Species Act.

Based on a review of the environmental impacts associated with the proposed alternatives, the Trustees solicited public input and identified a preferred restoration alternative for each of the three sites.

The preferred Wasser/Winter site alternative would restore/enhance estuarine habitat, increase off-channel habitat for juvenile salmonids, and provide landscape connectivity with a Washington State Department of Transportation mitigation site just upstream on Hylebos Creek. The project includes removal of existing fill material to create permanently flooded backwater pools and tideflats and provide a natural gravel substrate. A salt marsh would be planted at an elevation near mean higher high water on gently sloping surfaces. To the extent feasible, the salt marsh would be tied in elevation to the historical tideflats.

The Nursery site's preferred alternative includes expanding an area supporting intertidal vegetation by grading an area north of the existing vegetation line. The project would improve juvenile salmonid habitat by enhancing nearshore vegetated shallows essential for feeding, seawater acclimation, migration guidance and refuge from predators. Runoff from a hillside on the north side of Marine View Drive, which forms the site's eastern boundary, would be intercepted and routed through the project site in a dendritic channel pattern. The fresh water would lower salinity and encourage growth of species that tolerate brackish conditions. Intertidal and riparian vegetation would be enhanced. Excavated materials would be shaped into a berm next to the adjacent Marine View Drive to discourage trespassers from entering the site.

For the Meeker site, the Trustees selected the No Action alternative as the preferred alternative. Due to the exposure of the site to high wave energy, the Trustees determined that the probability of success for proposed restoration alternatives on the site was low. In addition, the Trustees determined that subtidal habitat on the site was in good condition and offered only marginal opportunities for enhancement. As a result, the Trustees determined that leaving the site in its current condition, and monitoring the site, was most consistent with the goals of the Plan.

The projects would not result in any significant adverse environmental impacts. Both action alternatives would result in temporary, localized construction-related impacts to water quality and air quality, and temporary increases in noise from the use of construction equipment. Because of their short duration and localized nature, these impacts would not be significant. Over the long-term, the restoration projects would benefit fish and wildlife, help to protect and improve water quality, and enhance the visual quality of the project area. Taken together, the three projects would provide functional connectivity among all three sites by maintaining, creating, or restoring a diversity of nearshore habitat used by juvenile salmonids for feeding, rearing, and outmigration.

1.0 Introduction: Purpose of and Need for Restoration

1.1 Overview

Commencement Bay is the harbor for Tacoma, Washington, occupying about 5,700 acres in south Puget Sound. In 1981, the federal Environmental Protection Agency (EPA) placed the Bay on a national interim list of the 115 highest priority hazardous waste sites due to elevated concentrations of hazardous substances. The Bay and its surrounding environment are heavily urbanized and serve as an industrial and commercial activity center. Based on a remedial investigation/feasibility study, the EPA and Washington Department of Ecology (Ecology) issued a record of decision in 1989 that identified contaminated sediment problem areas in the Bay that have elevated concentrations of chemicals of concern (EPA, 1989).

In a related process, a group of federal and state agencies and tribes, called the Commencement Bay Natural Resource Trustees (Trustees), are conducting a natural resource damage assessment (NRDA).¹ The damage assessment is being performed to determine the extent of injuries to the Bay's fish, shellfish, sediments, and water from the release of hazardous substances or the discharge of oil. The Trustees are also conducting a parallel planning process to determine the best approach to restoring, replacing, rehabilitating, or acquiring the equivalent of the injured natural resources and/or services.

The Trustees consist of the following agencies and tribes: The National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce; the U.S. Department of the Interior, including the U.S. Fish and Wildlife Service (USFWS) and the Bureau of Indian Affairs; the Washington Department of Ecology (Ecology, as lead state Trustee); the Washington Department of Fish and Wildlife (WDFW); the Washington Department of Natural Resources (WDNR); the Puyallup Tribe of Indians; and the Muckleshoot Indian Tribe.

The primary study area for the Trustees' NRDA restoration activities encompasses 25 square miles of Commencement Bay and the immediate surrounding area where injury to natural resources of concern primarily has occurred. This planning process has been used to determine the best approach to restoring, replacing, rehabilitating, and/or acquiring the equivalent natural resources and/or services injured. Building on the work of a restoration panel, the Trustees prepared a NRDA Restoration Plan and Programmatic Environmental Impact Statement (RP/EIS) to guide restoration project site selection, design and development. The Trustees formally adopted the Restoration Plan (Plan) in October 1997 (Trustees, 1997). The Plan includes a combination of projects designed to provide maximum benefit to Commencement

¹ The NRDA is being conducted pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601 et seq.; the Oil Pollution Act of 1990 (OPA), 33 USC 2701-2761; and other applicable laws.

Bay's injured natural resources and services in accordance with the goals and objectives of the Trustees, and is incorporated here by reference. The Plan's objectives include:

- Provide a functioning and sustainable ecosystem where selected habitats and species of injured fish and wildlife will be enhanced to provide a net gain of habitat function beyond existing conditions;
- Integrate restoration strategies to increase the likelihood of success;
- Coordinate restoration efforts with other planning and regulatory activities to maximize habitat restoration; and
- Involve the public in restoration planning and implementation.

1.2 Purpose and Need

This Environmental Assessment (EA) was prepared under the requirements of the National Environmental Policy Act (NEPA)² to determine whether or not there would be significant impacts to the quality of the human environment from implementation of the preferred environmental restoration alternatives selected at each site. This EA includes a project-specific environmental review of three projects, incorporating by reference the RP/EIS (Trustees, 1997). NOAA is the lead agency for purposes of this EA. The other Commencement Bay Natural Resource Trustees are cooperating agencies. This EA has also been prepared to be consistent with the Washington State Environmental Policy Act (SEPA)³ (see Appendix A). The City of Tacoma has assumed lead agency status for the purposes of SEPA.

The Wasser/Winter, Nursery, and Meeker restoration projects were selected in accordance with the criteria set forth in Section 3.1 below. Because these projects have a common purpose to maintain, enhance, and re-create intertidal habitat for injured fish and wildlife, particularly juvenile salmonids, and are functionally- interrelated, the Trustees determined that the evaluation of the alternatives and their environmental impacts were similar enough in nature and scope that they could be addressed together in this EA. The salt marshes and tidal mudflats that once covered extensive areas of Commencement Bay have been substantially degraded over time due to industrial and commercial development and activity. The loss of intertidal mudflats, tidal marsh habitats, and other habitat features has reduced populations of many plants and animals; decreased benthic production; and degraded habitat for anadromous salmonids, demersal fish, clams, crabs, and shrimp. Shoreline areas of the Bay are used by juvenile salmon for rearing, by adult salmon as migration routes, and by forage fish for spawning. Nearshore areas are also used by migratory and resident birds as resting and feeding areas. Since high quality habitats have become scarce throughout the Bay, restoring these areas is important for the overall health and function of the Bay's ecosystems. Of particular importance is the improvement of habitat for

² NEPA, 42 USC 4321 et seq., 40 CFR Parts 1500-1508, and requirements set out in NOAA's Administrative Order 216-6.

³ SEPA, Ch. 43 RCW; Ch. 197-11 WAC.

chinook salmon (*Oncorhynchus tshawytscha*) because they are listed as threatened in Puget Sound under the federal Endangered Species Act.⁴

The three projects would maintain or improve habitat for juvenile salmonids. The Wasser/Winter and Nursery projects would increase areas for rearing and feeding, enhance conditions for prey resources, and reduce stress from elevated water temperatures and suspended sediment loads. All three projects are located in the eastern shoreline Habitat Focus Area (HFA) as identified in the Plan. The area is suitable for restoration because, among other criteria, it is used as a migratory route for salmonids, waterfowl and shorebirds, and it contains one of the largest areas of original tideflats remaining in the Bay. In combination, the projects would re-create or enhance over four acres of intertidal habitat through re-grading, restoration of intertidal vegetation and enhancement of substrate.

The lead federal agency and the other Trustees will be monitoring these three projects to ensure that any potential environmental impacts that may arise during the course of project development are addressed.

1.3 Public Participation

The Trustees have provided numerous opportunities for the public to comment on the overall Plan, and to comment on the conceptual designs for the Wasser/Winter, Nursery, and Meeker projects. The Trustees hold quarterly public briefings, and public meetings are held throughout the year depending on the need. For the three projects analyzed in this EA, a public meeting was held in March 1999 to solicit comments on conceptual restoration designs and to help the Trustees select preferred designs for each project site. The Trustees envision ongoing public involvement in a monitoring and stewardship role. Public opportunities to comment on the scope and design of the projects will also be available through the federal and state permitting process that may be required for these projects.

1.4 Administrative Record

This EA references a number of resource documents prepared by and for the Trustees and through the NEPA and SEPA processes. These documents, incorporated by reference into this EA, are part of the administrative record on file for these projects with the lead federal agency and may be viewed at:

⁴ ESA, 16 USC 1531 et seq. National Oceanic and Atmospheric Administration. Final Rule: Threatened Status for Three Chinook Salmon Evolutionarily Significant Units in Washington and Oregon, and Endangered Status of One Chinook Salmon Evolutionarily Significant Unit in Washington. 64 Fed. Reg. 14307-1529 (March 24, 1999).

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2.0 Affected Environment

Commencement Bay, located at the southern end of Puget Sound, is an estuarine bay of approximately 5,700 acres comprised of a variety of shoreline areas, intertidal areas and waterways. The Bay serves as the port harbor for the City of Tacoma. Beginning around the turn of the century, intertidal areas and tideflats were filled in and meandering streams were channelized to allow for industrial and commercial development. This development has resulted in the present configuration of eight waterways (Hylebos, Blair, Sitcum, Milwaukee, St. Paul, Middle, Thea Foss, and Wheeler-Osgood) leading into the Bay. The Wasser/Winter, Nursery, and Meeker projects are located on or near the Hylebos Waterway (Figure 1).

The Commencement Bay area provides habitat for a variety of fish and wildlife. Fish and wildlife populations in Commencement Bay are described in greater detail in the RP/EIS, Appendix A. The three restoration sites, though modified, provide some habitat for intertidal fish and wildlife including salmonids (chinook, coho, chum, and pink salmon as well as steelhead trout), flatfish, epibenthic macroinvertebrates, benthic infaunal invertebrates (polychaetes and bivalves), epibenthic invertebrates (amphipods), benthic macroinvertebrates (decapods and echinoderms), birds, and mammals. In particular, mudflats provide feeding habitat for salmonids, crabs, flatfish, invertebrates as well as cover, feeding, nesting, and habitat corridors for waterfowl, wading birds, diving birds, harbor seal, raccoon and opossum. Emergent marsh and estuarine areas provide particularly valuable habitat for juvenile salmonids (Trustees, 1997).

2.1 Size and Location of Projects

2.1.1 Wasser/Winter Site

The Wasser/Winter site is located in the City of Tacoma between Marine View Drive and the lower turning basin of the Hylebos Waterway (Figure 1). The project site is located on property owned by the Port of Tacoma near the tidally influenced mouth of Hylebos Creek where the creek drains into the Hylebos Waterway. Upland areas of the project site encompass a flat area vegetated with grasses and shrubs adjacent to a highly channelized portion of the creek. The site itself extends northeast from the centerline of the creek to a fence that bounds an asphalt cap installed by the Port of Tacoma, and seaward to the pierhead line in the turning basin. A log storage yard borders the site to the west across Hylebos Creek, while a large parking area borders the site to the east. Immediately south of the site is a bridge where State Route (SR) 509 crosses the Hylebos Creek. The site dimensions are approximately 1,000 by 100 feet, totaling about 2.3 acres. Soils are characterized as being sandy/silt dredge fill overlying pre-development tideflats.

The upland portion of the Wasser/Winter site is used by birds, notably Canadian geese, for nesting and feeding. There are limited occurrences of salt marsh vegetation on the banks of Hylebos Creek and on the edges of the log-loading ramp. The extent of this vegetation is limited by unsuitable substrate and by the condition of the stream banks, which are steep and subject to slumping.

Upstream of the SR-509 bridge over Hylebos Creek is a compensatory mitigation site completed by the Washington State Department of Transportation (WSDOT) comprised of two acres of intertidal marsh surrounded by two acres of riparian vegetation. Further upstream of the WSDOT project site, Hylebos Creek contains riparian and riverine habitat for a variety of anadromous and resident fish, birds and small mammals. The Puyallup Tribe stocks Hylebos Creek with chum, coho and pink salmon. The nearshore area and Hylebos Waterway are used extensively as rearing and feeding habitat by numerous marine species, and as a migratory pathway for salmonids. The Hylebos Waterway is also extensively used for industrial and commercial activities.

2.1.2 Nursery Site

The Nursery site is located waterward of Marine View Drive near the middle of the Hylebos Waterway on property owned by the Puyallup Tribe (Figure 1). The site is approximately 360 by 80 feet, or 0.66 acres, and contains some hardwood trees, blackberry bushes, and a strip of intertidal marsh vegetation approximately three to four feet wide. The site contains salt marshes and low-gradient mudflats that provide habitat for benthic, or bottom-dwelling organisms important to the food chain. These organisms are of particular importance to shorebirds and juvenile salmon. The site contains several pilings, logs and pieces of downed wood indicative of previous log storage activities in the area.

The general area around the project site includes narrow intertidal and subtidal margins broken by commercial marinas and log storage activities. To the north of Marine View Drive is a woody, steep-sloped area. East and west of the site are additional intertidal and mudflat areas that have been designated as natural resource conservancy areas by the Puyallup Tribe. The project is situated in a portion of the Bay containing the largest area of original mudflats. The Bay's eastern edge is also an important migratory route for salmonids, waterfowl and shorebirds.

2.1.3 Meeker Site

The Meeker site is located north and east of the Nursery site, waterward of Marine View Drive. The Meeker site is the smallest of the three sites, encompassing approximately 0.25 acres. The site contains a small upland area dominated by invasive plant species and a small area of cobble beach. The shoreline of the site consists of a bank approximately three feet high. The steep nature of the bank suggests that it is actively eroding. Erosion of the bank tends to nourish the beach, which is recognized as an important function in developed areas of the Puget Sound shoreline. A pipe conveying stormwater from an adjacent hillside discharges on the site just below the ordinary high water mark.

Residential properties are present to the north and south of the Meeker site. A steep wooded hillside is located to the east of the site adjacent to Marine View Drive.

3.0 Description of Alternatives

3.1 Selection and Assessment Criteria

The Wasser/Winter, Nursery, and Meeker sites are among the first group of sites selected by the Trustees for restoration in accordance with the Plan. All three sites were selected by a Commencement Bay Restoration Panel after a thorough screening of potential sites through site visits and review of aerial surveys. In the preliminary inventory of potential restoration sites conducted as part of the Plan, all three sites were given a "high" priority ranking. Briefly, this ranking was based on several factors including the availability of the site for restoration, the ability to provide adequate source control, and the likelihood that the site would provide functional benefits to injured natural resources. The panel gave greater weight to sites benefiting multiple species and having functional connectivity to other existing or potential habitat sites. Location and cost-effectiveness were also factors of high importance in the site screening and selection process. Pages 3-3 to 3-6 of the Plan provide additional details on the screening process.

3.1.1 NEPA Intensity Factors

The Panel also evaluated another tier of factors prior to selecting suitable sites for restoration. These factors, related to the severity (significance) of the potential impacts (see 40 CFR, 1508.27) included:

1. Impacts that may be both beneficial and adverse.
2. Degree to which the project affects public health and safety.
3. Unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, etc.
4. Degree to which the effects on the quality of the human environment are likely to be highly controversial.
5. Degree to which possible effects of implementing the project are highly uncertain or involve unique or unknown risks.
6. Degree to which the action establishes a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
7. Individually insignificant but cumulatively significant impacts.
8. Degree to which the action adversely affects entities listed or eligible for listing in the National Register of Historic Places, or may cause loss or destruction of significant scientific, cultural, or historic resources.
9. Degree to which endangered or threatened species, or their habitat, are adversely affected by the project.

10. Whether the action threatens a violation of federal, state, or local law or requirements imposed by the protection of the environment.

3.2 Selection of the Preferred Alternative

During the conceptual design process the Trustees and a consultant team held a number of meetings and work sessions to identify possible restoration designs for the Wasser/Winter, Nursery, and Meeker sites. Initially, several restoration options were explored given each site's location, condition and potential habitat function. This range of alternatives was narrowed to two action alternatives and a no action alternative for the Wasser/Winter and Nursery sites, and three action alternatives and a no action alternative for the Meeker site. Input was solicited from the public to select a preferred restoration design for each site.

The Trustees reviewed a variety of factors to select a preferred alternative for each site. Public input was reviewed to determine public preferences for restoration on each site. The Trustees also evaluated the ability to maximize ecological benefits and restore habitat functions and the probability of success given both onsite and surrounding conditions. In addition to providing the greatest restoration value and offering the greatest likelihood for success, the Trustees selected preferred alternatives that would minimize adverse environmental impacts through implementation of best management practices and other measures during construction. The following sections describe the preferred alternative for each project site.

The alternatives, including the preferred alternatives, for the Wasser/Winter, Nursery, and Meeker sites are discussed below. Table 1 provides a comparative evaluation of key issues by alternative for each site.

3.2.1 Wasser/Winter Site

3.2.1.1 Alternative 1 (Not Selected)

Alternative 1 was the first of the two designs for the Wasser/Winter site that was presented to the Trustees and the public. It includes the creation of intermittently flooded, shallow off-channel flats or marsh areas containing a natural gravel substrate (Figure 2). Permanently flooded flow-through channels along with intermittently flooded side channels would also be created, and riparian vegetation restored. The channel pattern would increase edge length to provide salmonid passage and habitat. This alternative emphasizes fish passage, feeding in smaller channels and resting in the smallest channels.

This alternative was determined to be infeasible due to the steep slope that would be required to create the permanently flooded channels. Additionally, this alternative would be more expensive than Alternative 2 due to additional excavation requirements. Implementation of this alternative would result in temporary impacts to water quality and fish and wildlife resources from increased turbidity during construction, but would result in long-term improvements in fish and wildlife habitat. The project would enhance habitat for chinook salmon. Cultural resources could be

disturbed during construction, although the site has been previously modified and there are no known cultural resources on the site. There is no public access to the site, and public access would be limited to monitoring and stewardship activities once the project is completed. Recent investigations did not identify any contaminated soils on the site.

3.2.1.2 Alternative 2 (Preferred)

The preferred alternative designated by the Trustees (Alternative 2) emphasizes resting and feeding habitat for juvenile salmonids in backwater pools (Figure 3). The Wasser/Winter site would provide approximately 2.3 acres of intertidal habitat by excavating approximately 17,700 cubic yards of material to create three permanently flooded backwater pools and tideflats with natural substrate. A salt marsh would be planted with sedges, saltgrass, pickleweed, rush, and arrowgrass at an elevation near Mean Higher High Water (MHHW) on gently sloping surfaces and would be tied elevationally into the historical tideflats to the extent feasible. Upland vegetation would be restored with plantings of red alder, black cottonwood, Douglas fir, and a variety of understory shrubs. The project's goal is to restore/enhance estuarine habitat, maximize residence time for juvenile salmonids in pool habitat, and provide landscape connectivity with a WSDOT mitigation site just upstream on Hylebos Creek. Compared to other alternatives evaluated, this alternative would also provide a greater reduction in water velocities, greater water surface area, and more edge area.

Compared to the other action alternative for the Wasser/Winter site (Alternative 1), implementation of the preferred alternative would result in similar impacts to water quality and fish and wildlife resources from increased turbidity during construction. Less excavation would be required for the preferred alternative, however, resulting in slightly less impact. The project would result in long term improvements in fish and wildlife habitat, including habitat for chinook salmon. Cultural resources could be disturbed during construction, although the probability is slightly lower compared to Alternative 1 because there would be less excavation. There is no public access to the site, and public access would be limited to monitoring and stewardship activities once the project is completed. Recent investigations did not identify any contaminated soils on the site.

3.2.1.3 Alternative 3 (Not Selected)

Under Alternative 3, the No Action alternative, the project would not be constructed. Over the short-term, the project site would remain in its presently modified condition, which would continue to provide poor intertidal habitat due to the simplified creek channel and lack of off-channel and shallow intertidal areas. Over the long-term, the site could be redeveloped or restored by the Port of Tacoma, which could result in additional adverse impacts to water quality, fish and wildlife resources, and cultural resources depending on the nature of the site development. Such redevelopment also may or may not provide for additional public access. This alternative was determined to be inconsistent with the Plan's habitat restoration goals.

3.2.2 Nursery Site

Similar to the Wasser/Winter site, the Trustees evaluated three action alternatives for the Nursery site after a review of several restoration options. The two action alternatives carried forward shared the goal of expanding the area supporting intertidal vegetation by grading the area north of the existing vegetation line, and increasing the production of native estuarine plants to benefit fish and wildlife and fulfill the secondary, long-term objective of providing seed and plant stock for restoration projects elsewhere in Commencement Bay.

3.2.2.1 Alternative 1 (Not Selected)

Alternative 1 for the Nursery site would entail creation of a series of ponds using redirected fresh water from two small streams flowing on to the site, and additional estuarine marsh plantings (Figure 4). Addition of a gravel substrate to create interstices for invertebrates and juvenile salmonids was a potential component of the project depending on the nutrient availability of the existing material.

Alternative 1 was not selected for the Nursery site because it provides less area for salt marsh vegetation by including pools. The Trustees believed that the value of additional vegetation was more important than the limited habitat potential provided by small pools. Implementation of the project would result in short-term, localized impacts to water quality and fish and wildlife resources from increased turbidity during construction. The project would result in long-term improvements in fish and wildlife habitat, including nearshore habitat for chinook salmon. Cultural resources could be disturbed during construction, although no cultural resources are known to exist on the site. Public access and use of the site is presently limited, and public access would be limited to monitoring and stewardship activities once the project is completed. There are no known contaminated soils on the site.

3.2.2.2 Alternative 2 (Preferred)

Alternative 2, the preferred alternative designated by the Trustees, entails construction of a more dendritic channel pattern in place of the ponds considered in the second action alternative for the site. The project would restore approximately 0.66 acres of intertidal habitat by excavating about 2,000 cubic yards of material and grading an area north of the existing vegetation line. An intertidal vegetation community would be restored through plantings of sedges, saltgrass, pickleweed, rush, and arrowgrass (Figure 5). Upland areas would be planted with red alder, Douglas fir, black cottonwood, and a variety of understory species. Runoff from the hillside on the north side of Marine View Drive, which forms the eastern project boundary, would be intercepted and routed through the project site in a dendritic channel pattern. Fresh water inputs would lower salinity and encourage growth of species that tolerate brackish conditions. Substrate enhancement may be a component of the project depending on the nutrient availability of the existing materials. Excavated materials would be shaped into a berm next to Marine View Drive to discourage trespassers from entering the site.

Compared to Alternative 1, implementation of the preferred alternative would result in similar impacts to water quality and fish and wildlife resources from increased turbidity during construction. The project would result in long-term improvements in fish and wildlife habitat, including habitat for chinook salmon. Cultural resources could be disturbed during construction, similar to the other action alternative. There is limited public access and use of the site, and public access would be limited to monitoring and stewardship activities once the project is completed. There are no known contaminated soils on the site.

3.2.2.3 Alternative 3 (Not Selected)

Under the No Action alternative, the project would not be implemented. Over the short-term, the project site would remain in its presently modified condition, which provides poor intertidal habitat due to the steep profile of the shoreline and modified condition of vegetation communities. Over the long-term, the site could be redeveloped or restored by the Puyallup Tribe, which could result in additional adverse impacts or benefits to water quality, fish and wildlife resources, and cultural resources depending on the nature of the project. Such redevelopment also may or may not provide for additional public access. This alternative was determined to be inconsistent with the Plan's habitat restoration goals, similar to the Wasser/Winter site.

3.2.3 Meeker Site

3.2.3.1 Alternatives 1-3 (Not Selected)

For the Meeker site, four alternatives initially evaluated by the Trustees sought to enhance nearshore area and intertidal habitat, enhance salmonid use of the area, and incorporate the erosional nature of the site into the project. Alternative 1 sought to create a stable bank with overhanging willows to provide shade and food for migrating salmonids. Alternative 2 would create a freshwater wetland to act as a food source for salmonids. Alternative 3 was intended to maximize intertidal marsh habitat and create a freshwater habitat to sustain migrating salmonids.

3.2.3.2 Alternative 4 (Preferred)

Alternative 4, the No Action Alternative, was selected as the preferred alternative. After consultations among the Trustees, the public, and the design team, it was determined that, given the rate of erosion at the site and the current quality of the subtidal habitat, that none of the action alternatives were consistent with the Trustees' restoration goals and that a more conservative approach would be more prudent at this time. Monitoring of the site would be continued to determine whether restoration intervention by the Trustees would be needed.

3.2.4 Monitoring and Adaptive Management

Ongoing project monitoring and adaptive management will be important components for all of the projects. Together, NOAA and the other Trustees will monitor the restoration sites to evaluate success of the projects, and to identify and address any potential environmental impacts that may arise.

A monitoring plan will be developed for each project site. In addition to being consistent with permit requirements, monitoring will be used to determine if projects are meeting restoration goals, to establish whether adjustments are needed to meet those goals, to provide information to improve the design and implementation of future projects, and to determine if additional construction or plantings are needed. The Trustees will also consider how the public could contribute to implementing the monitoring program.

4.0 Environmental Consequences: Direct, Indirect or Cumulative Impacts

Because the No Action alternative was selected for the Meeker site, only the Wasser/Winter and Nursery sites are discussed below. The Wasser/Winter and Nursery sites are discussed together because, under the preferred alternatives, environmental impacts potentially resulting from each project are similar in scope due to their proximity to each other and the design of the projects. Any potential adverse impacts at each restoration site would be short-term and construction-related in nature. The magnitude of these impacts would generally be a function of the extent and duration of construction. Appropriate plans would be implemented to minimize these short-term impacts and the project will be in compliance with all applicable local, state, and federal permits and approvals.

4.1 Aesthetic and Light/Glare Impacts

Habitat at both the Wasser/Winter and Nursery sites has been extensively modified and simplified due to past industrial and commercial activity in the area. At the Wasser/Winter site, the stream channel has been straightened, and the site largely overtaken by non-native plant species. The Nursery site, while apparently less extensively modified, also exhibits signs of modification. At both sites, natural habitat conditions would be restored through re-grading and re-vegetation. Although the project would result in short-term aesthetic impacts during earth-moving activities, restoration would help restore native vegetation communities and habitat, which would improve aesthetic conditions over the long-term. Views of the sites and their surrounding area from property adjacent to the sites would not be adversely impacted. At the Nursery site, excavated soil would be used to create a berm along Marine View Drive, which would modify existing views from the roadway. This berm would be planted with riparian vegetation; no significant visual impacts would occur.

There would be no light and glare produced by the finished restoration projects, as lighting would not be provided. Lighting from the surrounding parcels would not impact the project sites, as the sites would not be occupied nor provide nighttime recreational opportunities.

4.2 Air Quality

During the construction phase at each site, there would be minimal short-term increases in dust and vehicle exhaust from earth moving activities (e.g. clearing, grubbing, dredging, soil and sediment transport, planting) and operation of construction equipment. Construction is expected to last approximately 4 to 8 weeks at each site, and construction is expected to occur at approximately the same time. No significant impacts are expected due to the relatively small amounts of excavation; the temporary nature of construction activities; and the lack of sensitive receptors such as residences, schools, or parks immediately surrounding each site. Exhaust controls would be used on all construction equipment to minimize exhaust emissions. Dust would be controlled by watering down exposed earth. Only the Wasser/Winter site would

require transport of earth off-site. Haul trucks would be covered or have loads that are below sideboards to control blowing dust along the haul route. A grading permit would be required from the City of Tacoma for construction at the Wasser/Winter site, which would require implementation of practices to control dust.

4.3 Connected Actions

The Plan focuses on restoring various habitat components such as vegetated shallows, mudflats and salt marshes, off-channel sloughs and lagoons, tidal creeks, freshwater marshes, upland buffers, and creek and river channel corridors in Commencement Bay. This framework recognizes the value of restoration through a landscape ecology approach, rather than creating isolated fragments of habitats. As a result, each distinct restoration project, including the three projects analyzed in this EA, is intended to provide functional connectivity with other projects by maintaining, creating, or restoring a diversity of nearshore habitat used by juvenile salmonids for feeding, rearing, and outmigration.

The Wasser/Winter site extends northeast from the centerline of the creek to a fence that bounds an asphalt cap installed by the Port of Tacoma, and seaward to the pierhead line in the turning basin. A log storage yard borders the site to the west across Hylebos Creek, and a large parking area borders the site to the east. Immediately south of the site is a bridge where State Route (SR) 509 crosses the Hylebos Creek. Restoration of the site would not result in any adverse impacts to any of these sites, and would provide connectivity with a WSDOT wetland mitigation site located south of the SR 509 bridge. While there are no known proposals for changes in use on property surrounding the Wasser/Winter site, such land use changes could adversely impact the Wasser/Winter site through increased runoff, shading, or human activity. Any changes in adjacent land use will be evaluated as part of the Trustees' monitoring program. Currently, logs are temporarily stored in the head of the Hylebos Waterway. The logs often block the mouth of Hylebos Creek and may disrupt the intended continuity of the restoration projects unless the log handling and storage practices are modified.

The general area around the Nursery site includes narrow intertidal and subtidal margins broken by commercial marinas and log storage activities. To the north of Marine View Drive is a woody, steep-sloped area. East and west of the site are additional intertidal and mudflat areas that have been designated as natural resource conservancy areas by the Puyallup Tribe. Restoration of the site would not result in any adverse impacts to adjacent land uses. While there are no known proposals for changes in use on property surrounding the Nursery site, such land use changes could adversely impact the Nursery site through increased runoff, shading, or human activity, similar to the Wasser/Winter site. Any changes in adjacent land use will be evaluated as part of the Trustees' monitoring program.

4.4 Controversial Impacts

The restoration projects would pose no uncertain or controversial risks. No contaminated soils were identified during recent investigations of soil conditions at the Wasser/Winter site. Participants in the public meetings and briefings have indicated support for these restoration

projects and have participated in the evaluation of the proposed alternatives, including the selection of the preferred alternative.

4.5 Cumulative Impacts

The proposed restoration projects are part of an overall Plan. A number of other NRDA restoration projects are being planned and designed under a landscape ecology framework (Figure 6). These completed restoration projects would, on a cumulative basis, contribute to Commencement Bay's overall environmental health, particularly in combination with other remediation and habitat enhancement projects in Commencement Bay. Salmon habitat would be improved, which would have a positive cumulative impact not only to Commencement Bay salmon stocks but also to salmon stocks in Puget Sound. The projects would provide functional connectivity with other restoration projects in Commencement Bay by maintaining, creating, or restoring a diversity of nearshore habitat used by juvenile salmonids for feeding, rearing and outmigration.

Because both sites would be constructed either simultaneously or sequentially, some cumulative construction impacts related to noise and transport of construction equipment could occur. However, construction would be short-term (less than eight weeks), and only small amounts of soil would be transported off-site from the Wasser/Winter site. As a result of their short-term and localized nature, the potential contribution of the projects to any adverse cumulative impacts is minor. The projects will be in compliance with all state and federal permit conditions.

4.6 Economic Impacts

No significant impacts on neighborhoods or community cohesion would occur. Both restoration projects would improve vacant, disturbed land by restoring biological diversity and ecological functions, and would increase community awareness about natural resources. Both projects could preclude future commercial or industrial development on each site, but such economic impacts would likely be offset by economic benefits tied to the improvement of environmental quality. As a result, values of adjacent property should not be adversely affected. The Port of Tacoma owns the Wasser/Winter site, while the Nursery site is on Puyallup Tribal land. Both sites are uninhabited. There would be no land acquisition or displacement required and housing would not be affected. No job losses are expected to occur.

4.7 Endangered Species/Threatened Species and Critical Habitat

A fall run of chinook salmon, which is listed as a threatened species under the federal Endangered Species Act, inhabits the Hylebos Creek system and its tributaries during its life cycle. Juvenile chinook also inhabit nearshore areas near both project sites. The proposed restoration projects would provide additional intertidal and nearshore habitat for chinook salmon, and may benefit other listed species in the area such as bald eagle. During construction, short-term impacts to salmon habitat could occur from excavation and earth-moving activities, resulting in increased turbidity and total suspended solids. However, through avoidance of

construction during chinook migration periods and implementation of methods to control erosion and in-water turbidity, short-term impacts to listed species would be relatively minor. Appendices C (letters) and D (Biological Evaluation) provide copies of the informal Section 7 ESA consultation with the NMFS and the USFWS. State consultations applicable to these projects can be found in the RP/EIS.

4.8 Energy

During the construction phase of both projects, construction equipment would use fossil fuels for energy. Energy use would be temporary. Energy needs for the completed projects are expected to be minor, limited primarily to ongoing monitoring and management.

4.9 Fish and Wildlife Impacts/Essential Fish Habitat (EFH)

Over the long-term, no fish or wildlife habitat would be adversely impacted by the proposed projects. Soil excavation would only occur during designated time periods to avoid salmonid migration periods. Minor disturbances to waterfowl and mammals would occur during the construction phase and may cause them to temporarily relocate, but these impacts would be short-term in nature.

Over the long-term, the proposed restoration projects would increase biological diversity and improve fish and wildlife habitat structure and function on each site. Juvenile anadromous salmonids would benefit from increased habitat quantity and quality. The projects would enhance resting areas for rearing and feeding, increase prey species and reduce environmental stresses from elevated water temperatures and suspended sediment loads.

The locations of the restoration sites are designated by the City of Tacoma as critical areas. According to Tacoma Municipal Code (TMC) Chapter 13.11, Critical Areas Preservation, a review of development activity shall occur during the Shoreline Permit review process. A separate critical areas permit is not required. Because both sites provide salmonid habitat, including habitat for chinook salmon (a threatened species), they are classified as fish and wildlife habitat conservation areas. Restoration would be consistent with City regulations for such areas.

Federal laws pertaining to fish and wildlife and essential fish habitat will be followed to ensure that no long-term adverse impacts would result from any selected alternative.⁵ Appendices C (consultation letter) and D (Biological Evaluation) provide the EFH consultation with the National Marine Fisheries Service regarding the Pacific Coast Groundfish estuarine composite EFH. The project will be in compliance with all state and federal permit conditions.

⁵ Magnuson-Stevens Fishery Conservation and Management Act, 16 USC 1801 *et seq.*, 50 CFR 600-920(a).

4.10 Historic and Cultural Resources

The primary study area on Commencement Bay contains numerous recorded archaeological and historical sites. However, much of the Bay has not been subject to surface or subsurface investigation. As a result, the Programmatic EIS notes that restoration projects could affect prehistoric sites, historic shipwrecks or buildings and Native American traditional cultural properties (USFWS and NOAA, 1996).

Due to the extensively modified nature of both sites and the presence of fill material, particularly at the Wasser/Winter site, encountering of cultural or historic resources is unlikely. Both the Washington Office of Archaeology and Historic Preservation (OAHP) and the Puyallup Tribe of Indians were consulted during preparation of the EA. The OAHP indicated no concerns with construction at either site (Whitlam, personal communication, August 1999). The Puyallup Tribe indicated that a village and fishing weir have been identified in the project area, but their exact location is unknown (Wright, personal communication, August 1999). If any significant cultural materials are exposed or discovered during excavation or subsurface disturbance, operations would cease and a qualified archaeologist contacted for further recommendations. Both OAHP and the Puyallup Tribe would be contacted. 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.

4.11 Land and Shoreline Use

Both project sites are located in a heavily developed area dominated by industrial and commercial activities. At the Wasser/Winter site, there is an active log storage yard along the west side of the project site. To the east of the project site is a vacant parking area separated from the project site by a wooden fence. Upstream of the project site, across the SR-509 bridge is a mix of vacant property and a WSDOT mitigation site (described above). The site is owned by the Port of Tacoma, though the Trustees have secured an easement from the Port for restoration purposes.

Consistent with its surrounding land use, the Wasser/Winter site is zoned for industrial uses by the City of Tacoma. According to the City, habitat restoration is a permitted use. The site is also in a shoreline area designated as Urban under the City of Tacoma's shoreline management master program⁵. According to the City's shoreline regulations, "habitat improvement" is a permitted use in the urban shoreline environment.

The Nursery site is within the Puyallup Indian Tribe's conservancy area, and land use activities on the site are under the jurisdiction of the Tribe. Though land immediately around the site is vacant, residential dwellings are located on the bluff overlooking the site. There are industrial uses located across the waterway and to the south. According to the Tribe, habitat restoration is a permitted land use activity on the site.

⁵ TMC Chapter 13.10.

4.12 Noise

Both projects would result in short-term noise impacts from the use of heavy equipment. 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. All construction activities would be conducted in compliance with the City of Tacoma's noise regulations.

No significant noise impacts would occur. Construction would be temporary, and there are no sensitive receptors (e.g. schools, residential areas, and parks) within the immediate vicinity of either site. Both sites are also located in proximity to traffic and industrial activities, which generate substantial amounts of ambient noise.

4.13 Plants

Existing vegetation on upland portions of both sites is characteristic of highly modified habitats, including Scot's broom, Himalayan blackberry, alder, willow and black cottonwood. Bladder wrack (*Fucus*), pickleweed, and *Caryx* were also observed at the Nursery site. Neither project would result in significant impacts to threatened, endangered, or sensitive plants. At the Wasser/Winter site, vegetation in the existing upland area to the east of the creek channel would be removed and replaced with native vegetation characteristic of intertidal areas. At the Nursery site, some vegetation would be removed to re-contour the beach, but the existing stand of large trees on the site would be left. Native intertidal vegetation would be planted on the site. At both sites, intertidal areas (below MHHW) would be planted with sedges, saltgrass, pickleweed, rush, and arrowgrass. Upland vegetation would be enhanced with plantings of red alder, paper birch, black cottonwood, Douglas fir, and a variety of understory species. Impacts could be minimized by saving and replanting native species where possible. There are no known threatened or endangered plant species on or near the project sites.

Refer to Appendix B for a list of species that may be suitable for planting at each site.

4.14 Precedental Effects

Restoration of habitat would be a positive influence on the Bay and its residents and users. The projects would enhance fish and wildlife habitat and benefit the natural resources of the area, as well as enhance the public values by providing public viewing and educational opportunities.

4.15 Public Services and Utilities

There would be limited impacts to public services or utilities during or after construction. Two stormwater outfalls would be intercepted at the Nursery site and the fresh water would be re-directed in the project area to promote vegetative growth. At the Wasser/Winter site, a number of utilities cross Hylebos Creek under the SR-509 bridge (e.g. water, sewer, phone, gas); these utilities would not be disturbed during construction.

The projects are not expected to increase demand for public services and utilities over the long-term. Access to the sites would be limited, and maintenance and monitoring activities are expected to require only limited amounts of water or electricity, if any.

4.16 Recreation

Both proposed projects are located within a developed industrial area; there are no formally developed recreational areas adjacent to either project. The Wasser/Winter site does not presently provide public access, and it is not a recreational area. Although the Nursery site does allow for informal public access, it is not considered a recreational area. As a result, adverse impacts to recreation would be minimal. Once construction is completed, the sites may provide some limited recreational use in a stewardship or educational role.

4.17 Soils and Sediment Quality

Numerous soil samples were collected at the Wasser/Winter site during a previous Remedial Investigation/Feasibility Study conducted by the federal EPA and Ecology. Soils on the Wasser/Winter site include a surface layer of compacted fill, underlain by dredge fill and tidal marsh sediments. Sand was encountered about 18 inches below the surface. Arsenic, the primary contaminant of concern on the site, was found in the highest concentrations at the ground surface; concentrations dropped rapidly with depth. As a result of this sampling effort, the top 2 to 4 feet of earth was removed from the site, removing the bulk of the arsenic contamination. Additional sampling conducted in 1999 did not detect the presence of arsenic at significant concentrations (Ridolfi, 1999). The site is essentially flat, although the banks of the creek channel are steep and eroding in some places.

Soil testing was also conducted at the WSDOT mitigation site upstream of the Wasser/Winter site. Test results were negative for hazardous material contamination except for some limited gasoline constituents associated with an underground storage tank that was reportedly removed (WSDOT, 1994).

On the Nursery site, soils appear to consist of cobble and soft mud below the OHWM. Upland soils appear to be sandy to gravelly. The site is moderately sloped toward the water. While there are no steep slopes on the project site, a steep slope is located just upland of the site, across Marine View Drive.

No significant impacts to soil and sediment quality would occur at either site. Over the short-term, construction would result in a temporary increase in erosion potential, but implementation of erosion control practices would minimize the extent of these impacts. Over the long-term, restoration of a natural soil profile and vegetation community on each site is expected to improve sediment and soil quality.

An area of approximately two acres on the Wasser/Winter site would be graded and/or excavated to restore intertidal habitat conditions. Approximately 17,700 cubic yards (cy) of material would be excavated. If suitable for use, approximately 70 cy would be used on-site for fill, and little to

no import of soils would be required. The project would require a grading permit from the City of Tacoma, and a temporary erosion and sediment control plan (TESCP) would be in place in accordance with the City Erosion Control Manual prior to construction, along with best management practices. These practices may include covering or stabilizing areas of exposed soil, use of silt fences and erosion control mats, and use of sediment curtains or other measures to control sedimentation and turbidity. If contaminated soil is encountered, the soil would be removed and transported offsite to an appropriate disposal facility.

At the Nursery site, approximately 0.66 acres would be graded and/or excavated to restore habitat conditions. Approximately 2,000 cy of excavation would be required. No soil contamination is anticipated, and approximately 230 cy of the excavated soils would be re-used onsite in particular to create a berm between the site and the adjacent Marine View Drive. Appropriate erosion controls would be implemented, similar to the Wasser/Winter site.

4.18 Transportation

The Wasser/Winter and Nursery sites abut Marine View Drive. At the Wasser/Winter site, Marine View Drive is a four-lane arterial road crossing the creek on a bridge, just upstream from the project site. The bridge forms the southeast boundary of the site. Traffic levels are moderate, and include both heavy trucks and cars. There are railroad tracks located across the creek to the northwest and adjacent to Marine View Drive. The nearest intersection to the site is Taylor Way approximately 500 yards to the west. At the Nursery site, Marine View Drive is a two-lane road that is bordered by a steep slope to the east and the project site to the west. Observed traffic levels were light. The 11th Street bridge intersects Marine View Drive several hundred feet to the east of the Nursery site.

No transportation impacts are anticipated. Both projects would add small amounts of construction traffic to local roadways for short periods of time, but impacts would be negligible. Staging areas would be located to minimize disruption of traffic on adjacent roadways. Since public use would be limited after construction is completed, there would be no impacts to transportation over the long term.

4.19 Water Quality

There has been a substantial decline of water quality in Commencement Bay from previous extensive industrial and commercial activity, and from municipal discharges to the Bay. Water quality problems include elevated bacteria levels, higher than normal water temperatures, and elevated levels of chemical pollutants. Arsenic, copper, lead, and PCBs have all exceeded ambient water quality chronic criteria (King County and City of Federal Way, 1990). Several additional contaminants have been identified in outfalls discharging to the Bay. Hylebos Creek runs through the Wasser/Winter site, draining into the Hylebos Waterway and eventually to Commencement Bay and Puget Sound (King County and City of Federal Way, 1990). The Creek provides inputs of both fresh water and sediments to the Bay, and it has been rated as a Class A water body (WAC 173-201A). The Nursery site is located in an area of the Bay designated by Ecology as Class B (WAC 173-201A). Two small streams drain on to the Nursery

sites from culverts under Marine View Drive. During the summer of 1999, the City of Tacoma sampled the water quality in these two streams. During the first two sampling events, there were no consistent contaminant detections (City of Tacoma, 1999). Further sampling is scheduled to occur.

During construction of the intertidal habitat at both sites, there would be minor short-term impacts to water quality resulting from increased turbidity. Overall, impacts are expected to be temporary and localized. Impacts would be greatest at high tide, when the sites experience the greatest inundation. Several measures could be implemented during construction to minimize impacts including:

- Avoidance of work in inundated areas during high tide;
- Use of sediment curtains to contain suspended sediments;
- Use of coffer dams to contain construction area during tidal inundation;
- Avoidance of work during salmonid migration periods; and
- Avoiding releases of gas, oil, and diesel from construction equipment into waters adjacent to the site.

Previously, there have been concerns that construction at the Wasser/Winter site would re-suspend contaminated sediments during in-water work. However, as discussed above, recent soil investigations did not detect any contamination of concern on the site (Ridolfi, 1999). Best Management Practices will be used to minimize the amount of sediment suspension in the water. Construction will only occur during time periods when it will not be detrimental to fish runs.

Over the long-term, both sites would benefit water quality by re-establishing intertidal vegetation communities. These communities would serve to trap sediments and filter water, which would benefit water quality both in Hylebos Creek and in the Bay.

5.0 Project Budget Summary

Factors such as benefits to injured natural resources, diminution of potential environmental impacts, and the probability of success are controlling factors in decisions about these projects. While costs are a factor in restoration implementation, the environmental benefits rather than costs were the determining factors in selecting among design alternatives for these projects. The budgets for the preferred alternatives are being prepared and will be made part of the project records.

6.0 Coordination with Other Programs, Plans and Regulatory Authorities

The Programmatic EIS references a number of area programs that may be potentially applicable to these projects, The project manager will ensure that there is coordination where applicable.

There are a number of potentially relevant laws, regulations and policies that need to be considered during the design and construction of the restoration projects. Several permits and approvals may be required. Among these permits and approvals are:

- U.S. Army Corps of Engineers, Section 404 (Clean Water Act) and Section 10 (River and Harbor Act) permits
- 401 Water Quality Certification, Washington Department of Ecology
- Hydraulic Project Approval, Washington Department of Fish and Wildlife
- Shoreline Substantial Development Permit, City of Tacoma
- Grading Permit, City of Tacoma
- Compliance with Section 7 of the Endangered Species Act
- Compliance with Essential Fish Habitat provisions of the Magnuson-Stevens Fisheries Management Conservation Act.

7.0 List of Agencies Consulted

- U.S. Department of Commerce, National Oceanic and Atmospheric Administration
- National Marine Fisheries Service
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- Puyallup Tribe of Indians
- Muckleshoot Indian Tribe

- Washington Department of Ecology
- Washington Department of Natural Resources
- Washington Department of Fish and Wildlife
- Washington Office of Archaeology and Historic Preservation
- City of Tacoma

8.0 References and Personal Communications

These documents have been included in the Administrative Records for these projects. Other documents will be added to the Record as the projects are proceeding through their planning, design, construction, and monitoring phases.

City of Tacoma. 1999. Laboratory Written Report for the Marine View Drive Surface Water Monitoring Sampling and Analysis Plan. City of Tacoma, Public Works Department, Tacoma, WA.

Commencement Bay Natural Resource Trustees. 1997. Commencement Bay Natural Resource Damage Assessment Restoration Plan. NOAA, Seattle, WA.

EVS Environmental Consultants, Inc. 1999. Sampling and Analysis Results, Soil Sampling Activities in Support of Restoration Designs in the Vicinity of Hylebos Waterway.

King County and City of Federal Way. 1990. Hylebos Creek and Lower Puget Sound Basins Current and Future Conditions Report. King County Surface Water Management Division, Seattle, WA.

U.S. Environmental Protection Agency (EPA). 1989. Commencement Bay Nearshore/Tideflats Record of Decision. EPA, Seattle, WA.

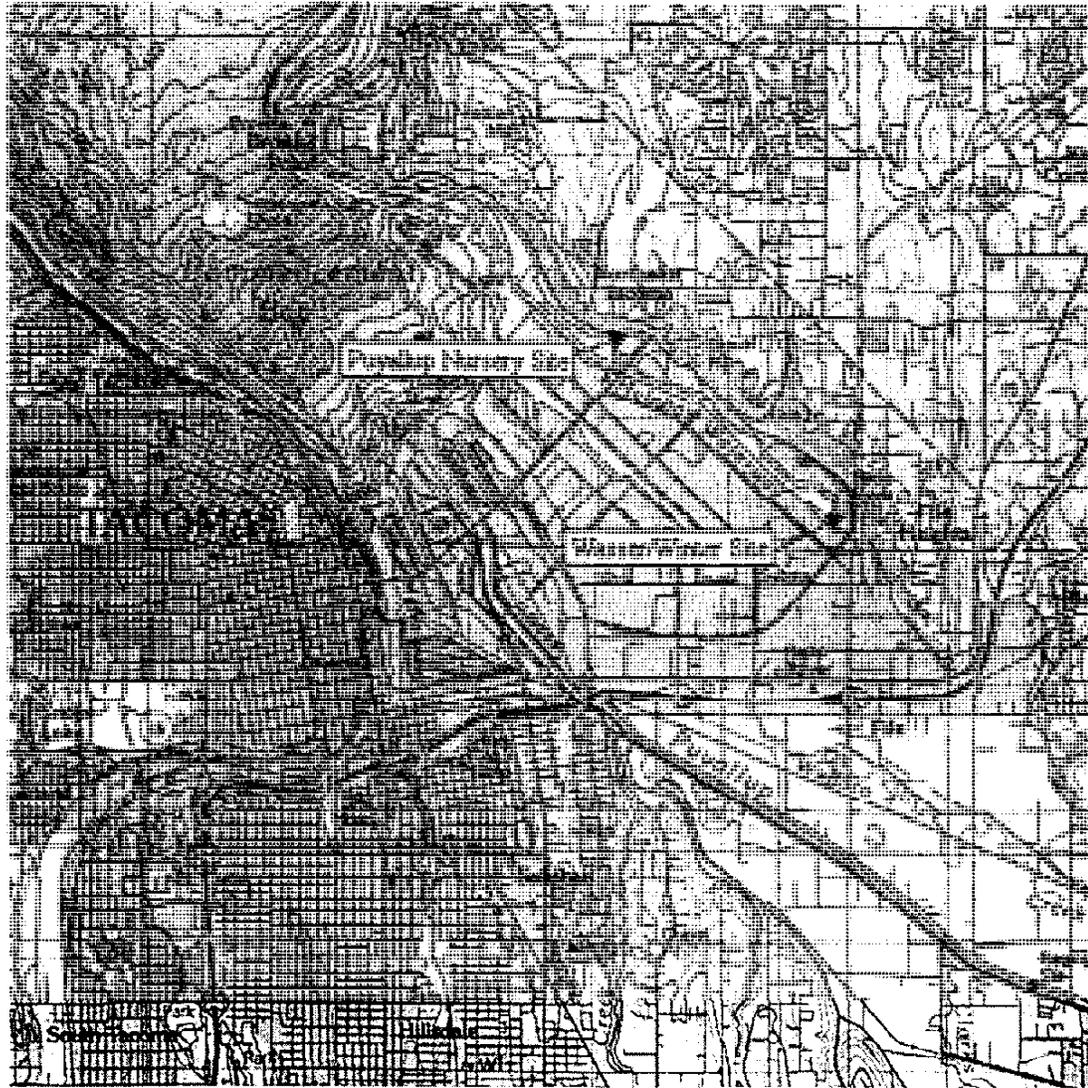
U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration. 1996. Commencement Bay Programmatic EIS, Volume I: Draft EIS. NOAA, Seattle, WA.

WAC 173-201A. Water Quality Standards for Surface Waters of the State of Washington.

Washington State Department of Transportation (WSDOT). 1994. Wetland Mitigation Plan, State Route 509, East-West Corridor. WSDOT District 3.

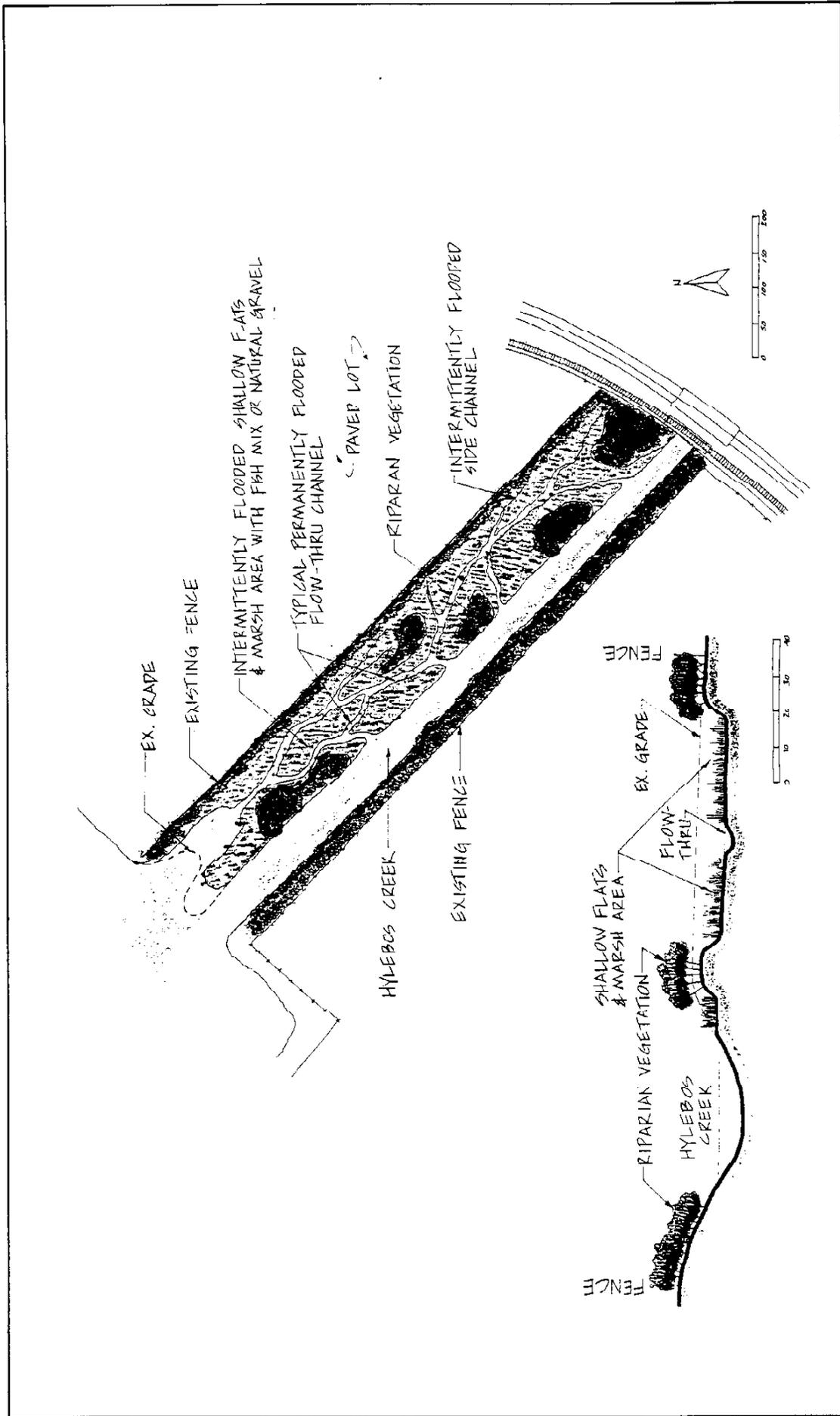
Whitlam, Robert, Ph.D. Washington Office of Archeology and Historic Preservation. Personal communication, telephone conversation with David Wortman, Adolfsen Associates, Inc., August 1999.

Wright, Judy. Puyallup Tribe of Indians. Personal Communication, telephone conversation with David Wortman, Adolfsen Associates, Inc. August 1999.



SOURCE: DeLorme Atlas.

 <p>NORTH Not to Scale</p> <p><small>Created by: NLS Last updated on: 8/18/99</small></p>	<p>VICINITY MAP</p> <p>WASSER/WINTER AND NURSERY SITES</p> <p>ENVIRONMENTAL ASSESSMENT</p> <p>COMMENCEMENT BAY, WASHINGTON</p>	<p>FIGURE 1</p>  <p>ADOLFSON</p>
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SOURCE: Osborn Pacific Group, Inc, 1999.

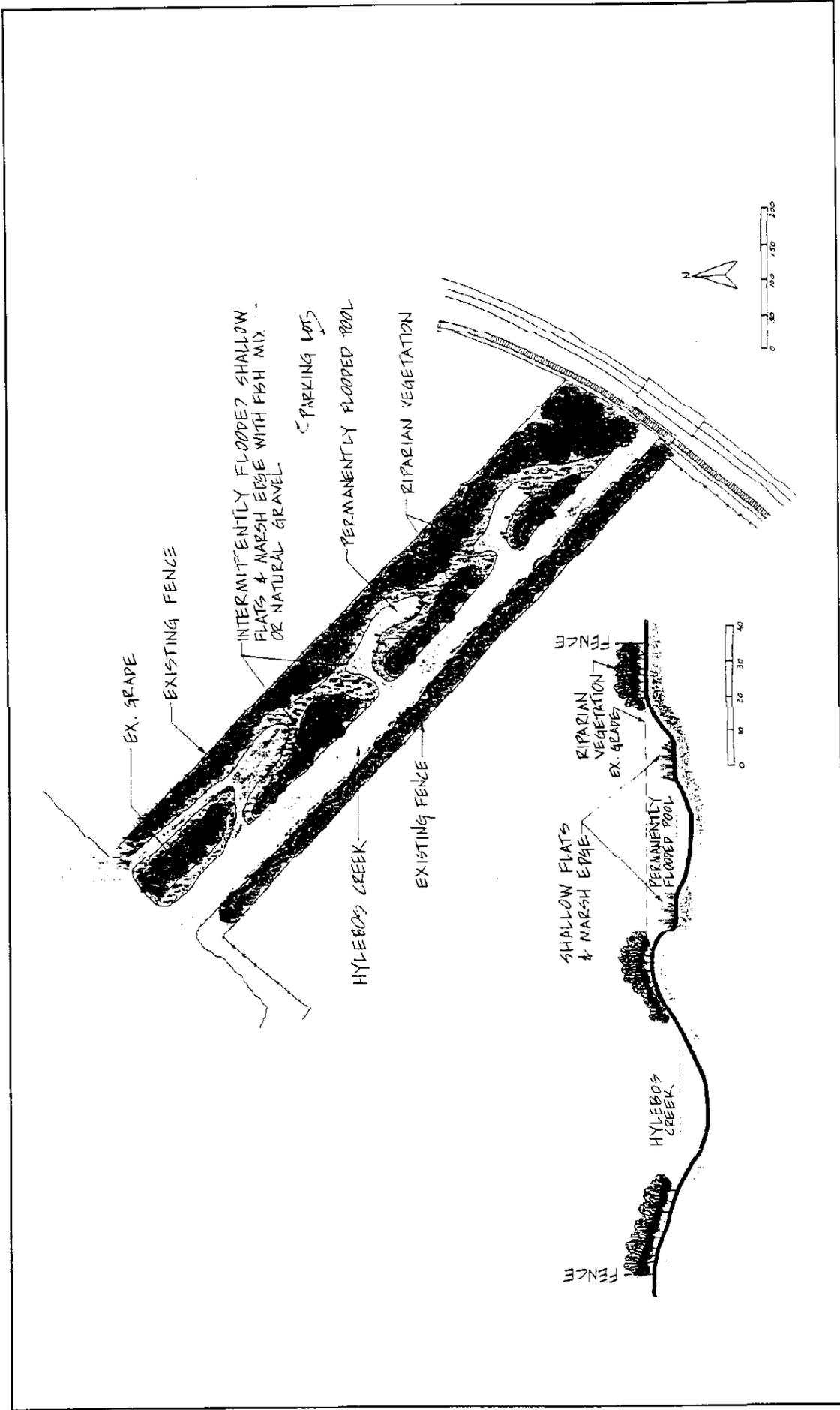
WASSER/WINTER SITE: ALTERNATIVE 1
WASSER/WINTER AND NURSERY SITES ENVIRONMENTAL ASSESSEMENT
COMMENCEMENT BAY, WASHINGTON

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 NORTH
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FIGURE 2





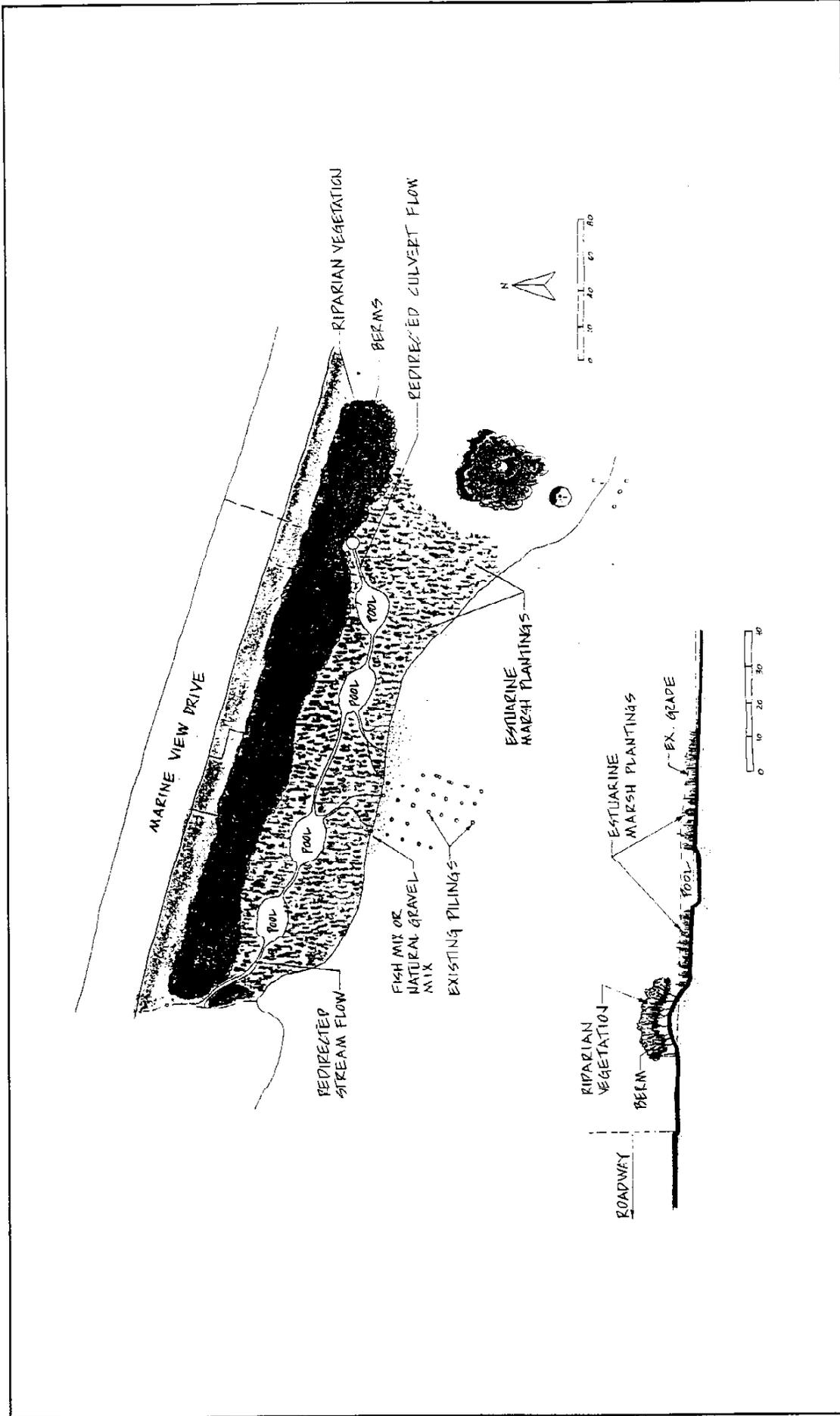
SOURCE: Osborn Pacific Group, Inc, 1999.

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WASSER/WINTER SITE: ALTERNATIVE 2
WASSER/WINTER AND NURSERY SITES ENVIRONMENTAL ASSESSEMENT
COMMENCEMENT BAY, WASHINGTON

FIGURE 3





SOURCE: Osborn Pacific Group, Inc, 1999.

NURSERY SITE ALTERNATIVE 1

WASSER/WINTER AND NURSERY SITES ENVIRONMENTAL ASSESSEMENT

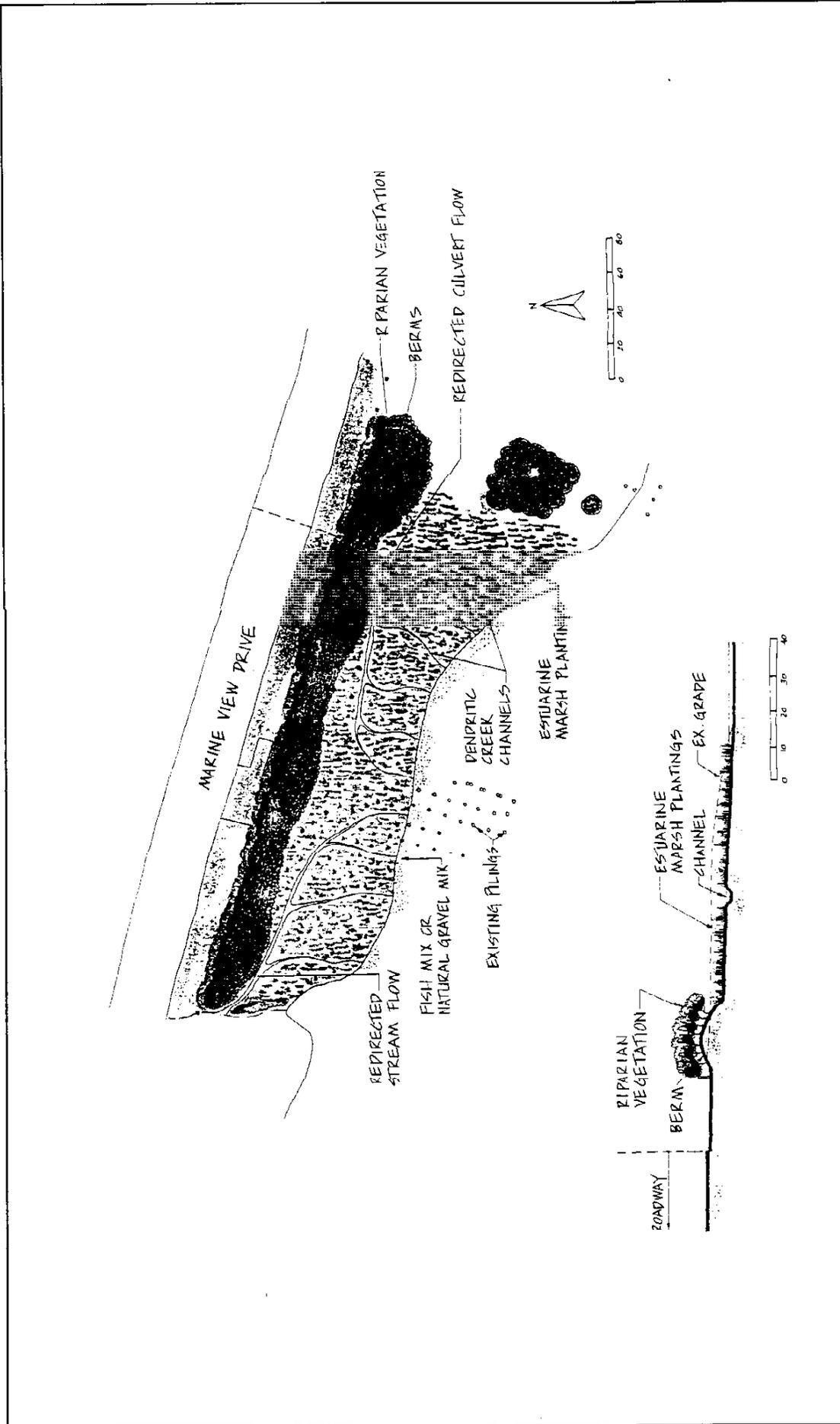
COMMENCEMENT BAY, WASHINGTON

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FIGURE 4





SOURCE: Osborn Pacific Group, Inc., 1999



NURSERY SITE: ALTERNATIVE 2
WASSER/WINTER AND NURSERY SITES ENVIRONMENTAL ASSESSEMENT
COMMENCEMENT BAY, WASHINGTON

FIGURE 5



**Table 1. Comparative Evaluation of Action Alternatives Carried Forward
Wasser/Winter and Nursery Sites**

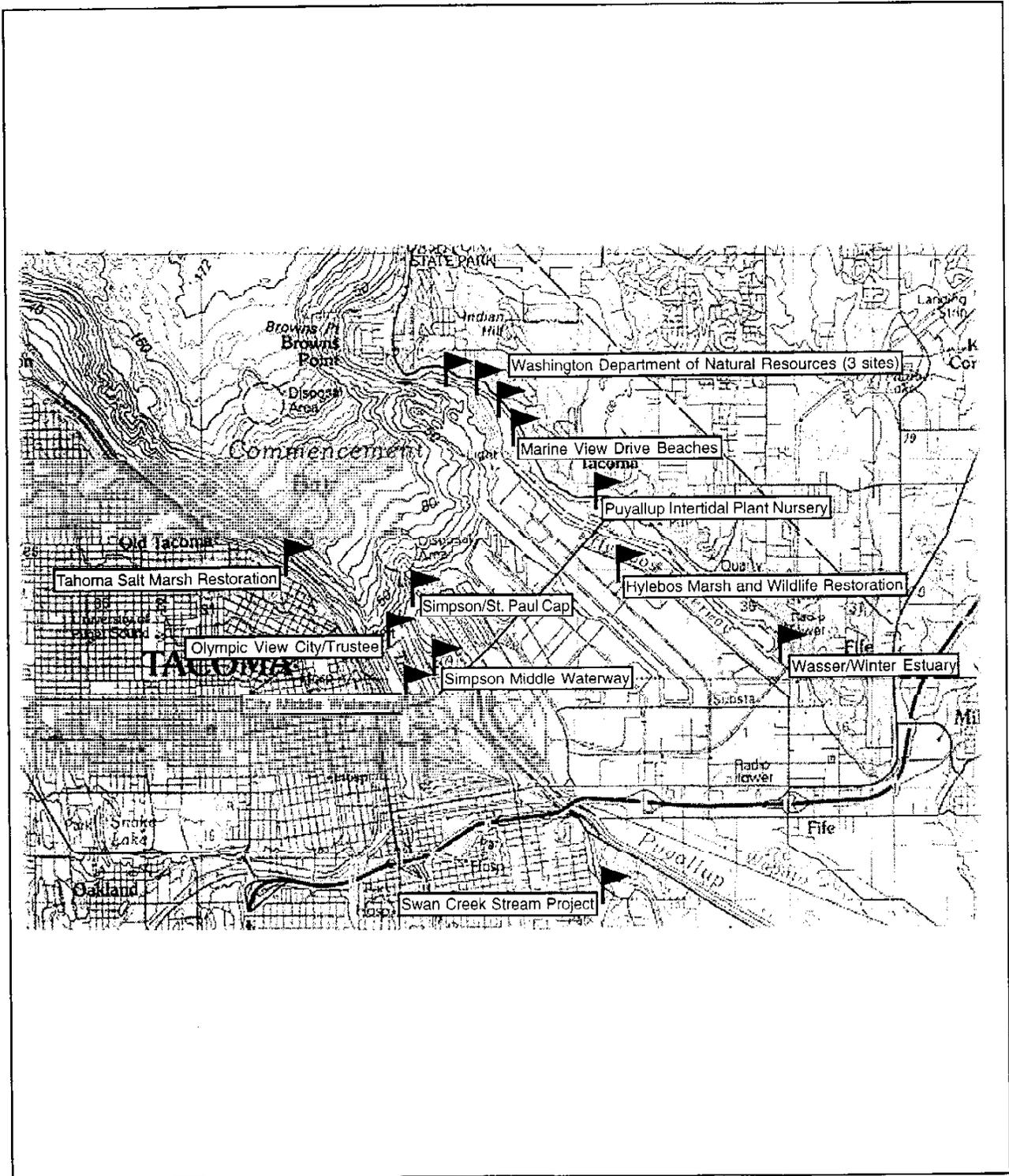
ALTERNATIVES				
	Wasser/Winter Site		Nursery Site	
	Alternative 1	Alternative 2 (Preferred)	Alternative 1	Alternative 2 (Preferred)
<p>Fish Habitat</p> <ul style="list-style-type: none"> • Amount of habitat created • Habitat Diversity • Habitat Connectivity • Impacts to Existing Habitat 	<p>This alternative would create approximately 2 acres of off-channel habitat for fish. The shallow channels would provide connectivity for fish passage and would increase habitat diversity compared with existing conditions.</p> <p>The existing limited habitat in Hylebos Creek would not be impacted.</p>	<p>Three backwater pools would be created, providing resting areas for juvenile salmon. Approximately 2.3 acres of pool and intertidal habitat would be created.</p> <p>Backwater pools would be connected to Hylebos Creek and the Hylebos Waterway. Project is in close proximity to a WSDOT habitat mitigation project.</p>	<p>Alternative does not directly create fish habitat. It would enhance fish habitat by expanding salt marsh vegetation in about 0.66 acres. Vegetation would provide habitat for invertebrates and generate organic detritus that is a food source for salmonids.</p> <p>Habitat connectivity increased by creating a salt marsh adjacent to largest mud flats in Commencement Bay.</p>	<p>No new habitat created. Existing poor quality and spatially limited habitat would remain.</p> <p>No new habitat created. Existing poor quality habitat would remain.</p>
				<p>Alternative would have similar indirect benefits as Alternative 1. The amount of food available for salmonids is expected to be slightly greater than for Alternative 1 because salt marsh vegetation would be maximized at the restoration site.</p> <p>No new habitat created. Existing poor quality habitat would remain.</p>

Key Issues	ALTERNATIVES					
	Wasser/Winter Site	Alternative 1	Alternative 2	Nursery Site		
<p>Wildlife Habitat</p> <ul style="list-style-type: none"> • Amount of habitat created • Habitat Diversity • Habitat Connectivity • Impacts to Existing Habitat 	<p>Alternative 1</p> <p>Waterfowl and small mammals would be displaced during construction. Measures would be taken to prevent grazing while the salt marsh is establishing.</p> <p>In the long-term, there would be less upland area for waterfowl nesting but the new vegetation would provide feeding opportunities.</p>	<p>Alternative 2 (Preferred)</p> <p>The impacts on wildlife are expected to be similar to Alternative 1.</p> <p>There would be more open-water habitat for birds compared to Alternative 1.</p>	<p>Alternative 1</p> <p>Waterfowl and small mammals would be displaced during construction. Measures would be taken to prevent grazing while the salt marsh is establishing.</p> <p>The freshwater pools would provide habitat for small mammals and birds.</p> <p>In the long-term, the new vegetation would provide feeding opportunities for waterfowl.</p>	<p>Alternative 2 (Preferred)</p> <p>The impacts on wildlife are expected to be similar to Alternative 1.</p> <p>The fresh water pool habitat would not exist under this alternative but more salt marsh vegetation would be created instead.</p>	<p>No Action</p> <p>The upland habitat that is currently providing nesting and resting opportunities for Canadian Geese would remain.</p>	<p>No Action</p> <p>The existing poor quality upland habitat would remain. There is some existing intertidal habitat that would remain under the no action alternative.</p>

ALTERNATIVES				
Key Issues	Wasser/Winter Site		Nursery Site	
	Alternative 1	Alternative 2 (Preferred)	Alternative 1	Alternative 2 (Preferred)
<p>Water Quality</p> <ul style="list-style-type: none"> • Turbidity • Temperature 	<p>There would be short-term negative impacts from increased turbidity during construction. The new intertidal vegetation would help filter silt, lowering turbidity in the long-term. Because of the steep channel slopes required under this alternative, there is a potential for periodic bank failure that would increase turbidity.</p>	<p>The short- and long-term impacts would be similar to Alternative 1 except that the risk of bank failure is anticipated to be lower. Riparian vegetation would shade the pools and help maintain adequate temperatures.</p>	<p>There would be short-term negative impacts on turbidity during construction. This alternative would not impact water quality in the long-term.</p>	<p>There would be short-term negative impacts on turbidity during construction. This alternative would not impact water quality in the long-term.</p>
	<p>No Action</p> <p>The existing banks of the Hylebos Creek periodically fail, increasing the turbidity of the water. The existing vegetation provides little shade.</p>		<p>There would be short-term negative impacts on turbidity during construction. This alternative would not impact water quality in the long-term.</p>	<p>No Action</p> <p>There are no adverse water quality impacts associated with the no action alternative.</p>

ALTERNATIVES					
Key Issues	Wasser/Winter Site			Nursery Site	
	Alternative 1	Alternative 2 (Preferred)	No Action	Alternative 1	Alternative 2 (Preferred)
Threatened and Endangered Species (chinook salmon, bald eagle)	The impacts described under fish habitat apply to the Chinook salmon. The alternative would not impact bald eagle.	The impacts described under fish habitat apply to the Chinook salmon. The alternative would not impact bald eagle.	The impacts described under fish habitat apply to the Chinook salmon. The no action alternative would not impact bald eagle.	The impacts described under fish habitat apply to the Chinook salmon. The alternative would not impact bald eagle.	The impacts described under fish habitat apply to the Chinook salmon. The alternative would not impact bald eagle.
Public Access	Public access is currently not provided. Access would be increased for monitoring and stewardship purposes.	Similar to Alternative 1.	Public access is currently not provided. Port-owned property. No public stewardship or monitoring opportunities would be provided.	Public access is currently limited. Access would be increased for monitoring and stewardship purposes.	Similar to Alternative 1.
				Public access is currently limited. No public stewardship or monitoring opportunities would be provided.	Public access is currently limited. No public stewardship or monitoring opportunities would be provided.

ALTERNATIVES					
Significant Issues	Wasser/Winter Site			Nursery Site	
	Alternative 1	Alternative 2 (Preferred)	No Action	Alternative 1	Alternative 2 (Preferred)
Cultural Resources	No known cultural resources on site. Village and fishing weir were located in project area. Site has been previously disturbed and covered with fill.	Impacts similar to Alternative 1. Slightly greater amounts of excavation could increase potential for disturbance to cultural resources.	No soil disturbance would occur. No potential for disturbance to cultural resources.	No known cultural resources on site. Village and fishing weir were located in project area.	No known cultural resources on site. Village and fishing weir were located in project area.
Off-Site Impacts from Soil Disposal	No contaminated soil identified or site during recent soil investigations. No off-site impacts would occur.		No soil disturbance would occur.	No known contaminated soil on site.	No soil disturbance would occur.



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NORTH
 Not to Scale
Created by: ACT
 Last edited on: 10/15/99

COMMENCEMENT BAY NRDA
RESTORATION PROJECTS
 WASSER/WINTER AND NURSERY SITES
 ENVIRONMENTAL ASSESSMENT
COMMENCEMENT BAY, WASHINGTON

FIGURE 6



ADOLFSON

APPENDIX A

SEPA COMPLIANCE

The following table serves as a guide to the EA for the purposes of SEPA compliance. WAC 197-11-630 permits SEPA lead agencies to adopt NEPA documents for the purpose of complying with SEPA. Elements of the environment addressed by a SEPA checklist are listed on the right hand side of the table. The corresponding section of this EA that addresses each SEPA section is listed on the left.

SEPA Checklist Environmental Element	Corresponding EA Section
Earth	4.17
Air	4.2
Water	4.19
Plants	4.13
Animals	4.9
Energy and Natural Resources	4.8
Environmental Health	4.12 and 4.17
Land and Shoreline Use	4.11
Housing	4.11
Aesthetics	4.1
Light and Glare	4.1
Recreation	4.16
Historic and Cultural Preservation	4.10
Transportation	4.18
Public Services	4.15
Utilities	4.15

**APPENDIX B:
RESTORATION PLANT LIST**

Plant List for Commencement Bay Restoration Sites

ELEVATION

		ELEVATION		
		LOW	HIGH	
SALINITY	HIGH	MARINE	<i>Salicornia virginica</i> <i>Zostera marina</i> <i>Zostera japonica</i>	<i>Elymus mollis*</i> <i>Frageria chiloensis</i>
	ESTUARINE	<i>Atriplex patula</i> <i>Cuscuta salina</i> <i>Distichlis spicata</i> <i>Jaumea carnosa</i> <i>Lilaeopsis occidentalis</i> <i>Plantago maritima</i> <i>Salicornia virginica</i> <i>Triglochin maritimum</i>	<i>Aster subspicatus</i> <i>Atriplex patula</i> <i>Carex lyngbyei</i> <i>Cuscuta salina</i> <i>Deschampsia caespitosa</i> <i>Distichlis spicata</i> <i>Glaux maritima</i> <i>Grindelia integrifolia</i> <i>Hordeum brachyantherum</i> <i>Jaumea carnosa</i> <i>Juncus balticus</i> <i>Orthocarpus castillejoideus</i> <i>Plantago maritima</i> <i>Potentilla pacifica</i> <i>Scirpus acutus</i> <i>Scirpus maritimus</i> <i>Trifolium wormskjoldii</i>	
	BRACKISH	<i>Carex lyngbyei</i> <i>Lilaeopsis occidentalis</i> <i>Scirpus americanus</i> <i>Triglochin maritimum</i>	<i>Eleocharis palustris</i> <i>Juncus balticus</i> <i>Scirpus americanus</i> <i>Scirpus maritimus</i> <i>Trifolium wormskjoldii</i>	
	TIDAL FRESH	<i>Bidens cernua</i> <i>Carex obnupta</i>	<i>Agrostis alba</i> <i>Carex obnupta</i> <i>Physocarpus capitatus</i> <i>Rosa nutkana</i> <i>Scirpus acutus</i> <i>Typha latifolia</i>	
LOW				

*Should not be widely planted.

Latin and Common Names for Commencement Bay Plant List

Latin Name	Common Name
<i>Agrostis alba</i>	Creeping bentgrass
<i>Aster subspicatus</i>	Douglas aster
<i>Atriplex patula</i>	Saltweed, orache, fat hen
<i>Bidens cernua</i>	Nodding beggar-tick
<i>Carex lyngbyei</i>	Lyngby's sedge
<i>Carex obnupta</i>	Slough sedge
<i>Cuscuta salina</i>	Saltmarsh dodder
<i>Deschampsia cespitosa</i>	Tufted hairgrass
<i>Distichlis spicata</i>	Seashore saltgrass
<i>Eleocharis palustris</i>	Creeping spikerush
<i>Elymus mollis</i>	American beachgrass
<i>Frageria chiloensis</i>	Beach strawberry
<i>Glaux maritima</i>	Sea milk-wort
<i>Grindelia integrifolia</i>	Fuget-Sound gumweed
<i>Hordeum brachyantherum</i>	Meadow barley
<i>Jaumea carnosa</i>	Fleshy jaumea
<i>Juncus balticus</i>	Baltic rush
<i>Lilaeopsis occidentalis</i>	Western lilaeopsis
<i>Orthocarpus castillejoides</i>	Paintbrush owl-clover
<i>Physocarpus capitatus</i>	Pacific ninebark
<i>Plantago maritima</i>	Seaside plantain
<i>Potentilla pacifica</i>	Pacific silverweed
<i>Rosa nutkana</i>	Nootka rose
<i>Salicornia virginica</i>	Pickleweed
<i>Scirpus acutus</i>	Hardstem bulrush
<i>Scirpus americanus</i>	Three-square bulrush
<i>Scirpus maritimus</i>	Seacoast bulrush
<i>Trifolium wormskjoldu</i>	Springbank clover
<i>Triglochin maritima</i>	Seaside arrowgrass
<i>Typha latifolia</i>	Common cattail
<i>Zostera japonica</i>	Eelgrass, Grass-Wrack
<i>Zostera marina</i>	Dwarf Eelgrass, Narrow-Bladed Eelgrass

APPENDIX C
ESA/EFH CONSULTATION LETTERS

MEMORANDUM FOR: Craig Johnson

JAN 10 2000

FROM: Russell Bellmer

Russell Bellmer

SUBJECT: Informal ESA Section 7 consultation and Concurrence with a Determination of Not Likely to Adversely Affect Listed Species for the Proposed Wasser/Winter and Nursery Site Restoration Projects.

Wasser/Winter Proposed Project Site. The Wasser/Winter site is located in the City of Tacoma between Marine View Drive and the upper turning basin of the Hylebos Waterway, on land owned by the Port of Tacoma. The site is adjacent to the tidally influenced, channelized, lower reach of Hylebos Creek where the creek drains into the Hylebos Waterway. Upland areas of the project site encompass a flat area vegetated with grasses and shrubs. The site itself extends northeast from the centerline of the creek to a fence that borders an asphalt cap/parking area, and seaward to the pierhead line in the turning basin. A log storage yard borders the site to the southwest across Hylebos Creek, and State Route (SR) 509 crosses Hylebos Creek immediately southeast of the site. The site dimensions are approximately 1,000 by 100 feet, totaling about 2.3 acres. Soils are characterized as sandy/silt dredge fill overlying pre-development tideflats.

Upstream of the SR-509 bridge is a two-acre Washington State Department of Transportation (WSDOT) compensatory mitigation site comprised of constructed intertidal marsh surrounded by riparian vegetation (WSDOT, 1994). Further upstream of the WSDOT site, Hylebos Creek contains riparian and riverine habitat for a variety of migratory and resident fish, birds, and small mammals.

Historically, Hylebos Creek has been a prolific salmon-spawning stream (King County and Federal Way, 1990). Salmon runs have declined in part due to urbanization of spawning areas. As of 1990, the watershed was approximately 50 percent developed, which has increased peak flows, degraded the riparian zone, and adversely affected water quality (King County and Federal Way, 1990). Localized areas of suitable spawning habitat exist, however, particularly on the West Branch of Hylebos Creek. In the 1970's and 1980's the Puyallup Tribe stocked Hylebos Creek with chinook, chum and coho (Ladley, personal communication, 1999). Although these

programs have been discontinued, vestigial populations enter the creek annually to spawn. The near-shore area and Hylebos Waterway are used extensively as rearing and feeding habitat by numerous marine species, and as a migratory pathway for salmonids.

Proposed Project Site. At the project site, Hylebos Creek is a straight channel with steep banks, and is tidally influenced. At low tide [below +1 feet above mean lower low water (MLLW)], freshwater flows in a pool and riffle configuration in the channel. Typically, however, the tide is high enough to give this portion of Hylebos Creek the appearance of a tidal slough (Figure 2).

The substrate of Hylebos Creek in the project reach is primarily soft mud with minor components of gravel and larger cobbles. The overlying mud/silt substrate was removed at several points and the underlying materials examined. This qualitative examination revealed apparent anaerobic conditions and no benthic (bottom-dwelling) or epibenthic organisms. There are no barriers to upstream fish migration at the project site. Log rafting activity in the Hylebos Creek proximity may disturb salmon migration.

Proposed Nursery Project Site. The Nursery site is located waterward of Marine View Drive near the Hylebos Waterway west end, on property held in Trust for the Puyallup Tribe. The site is approximately 360 by 80 feet, or 0.66 acres. The upland portion of the site was constructed from a gravelly sand fill material and slopes gently toward the south. Upland vegetation consists of trees, blackberry bushes, and grasses. A strip of intertidal marsh vegetation approximately three to four feet wide is located near the mean higher high water (MHHW) line. Low-gradient mudflats that provide habitat for benthic (bottom-dwelling) organisms of particular importance to shorebirds and juvenile salmonids are located below MHHW. The site contains several pilings, logs, and riprap indicative of previous log storage activities in the area.

The project site vicinity includes narrow intertidal and subtidal margins broken by commercial marinas and log storage areas. To the north, and across Marine View Drive, is a woody, steep sloped area. East and west of the site are additional intertidal and mudflats that have been designated as natural resource conservancy areas by the Puyallup Tribe. The project site is situated in a portion of Commencement Bay containing the largest area of undisturbed mudflats, and is an important migratory route for salmonids, waterfowl, and shorebirds.

Preferred Restoration Alternatives. The projects are to restore and enhance estuarine habitat, maximize residence time for juvenile salmonids and provide landscape connectivity with the WSDOT mitigation site immediately upstream. A salt marsh will be planted at an elevation near MHHW on gently sloping surfaces and will be similar in height to the historical tideflats to the extent feasible.

Wasser/Winter Preferred Alternative. The Wasser/Winter site will provide approximately 2.3 acres of intertidal habitat by removing 17,700 cubic yards (cy) of existing fill material, to create permanently flooded backwater pools and intertidal salt marshes. Proposed work consist of the following:

- Installation of a silt fence and bale dikes on or near the project boundary;

- Removal of 17,700 cy of existing fill;

- Grading the excavated surface to construct backwater pools;

- (Backwater pools will not be exposed to tidal inundation until just before project completion. Fill removal below MHHW will likely require dewatering to allow equipment access)

- Placing a growth media (top soil) to encourage plant growth, and

- Revegetating with native salt marsh and riparian plants and installing several pieces of large woody debris. Approximately 1.5 acres of the site will be graded and/or excavated to restore the habitat.

Heavy equipment used for construction will probably include backhoes, front-end loaders, bulldozers, and dump trucks. No pilings will be installed as part of the project. Neither drilling equipment nor blasting will be used during the project.

Nursery Site Preferred Alternative. The project goal is to create intertidal salt marsh habitat to replace the industrially filled upland areas. Approximately 0.66 acres of intertidal habitat will be restored by grading an area north of the existing vegetation line and by replanting an intertidal vegetation community (Figure 4). Runoff from the hillside on the north side of Marine View Drive will be intercepted and routed through the project site in a dendritic channel pattern. Topsoil will be placed in excavated areas to encourage plant growth. A berm will be constructed next to Marine View Drive and planted with riparian plants to discourage trespassers from entering the site. Proposed work consist of the following:

Installation of a silt fence and straw bale dikes on or near the project boundary;

Removal of 2,000 cy of fill from the existing upland areas;

Demolition of a portion of the stormwater system where it discharges to the mudflats;

Construction of small channels to redirect the stormwater through the site in dendritic channels;

Placing topsoil to support growth of intertidal and riparian vegetation;

and

Replanting with native salt marsh and riparian plants. Approximately 0.66 acres will be graded and/or excavated to restore the habitat.

Heavy equipment used for construction will probably include backhoes, front-end loaders, bulldozers, and dump trucks. No pilings will be installed as part of the project. Neither drilling equipment nor blasting will be used during the project.

Timing/Chronology Of Specific Construction Actions A three-month window is anticipated for all construction at both the Wasser/Winter and Nursery sites, which is expected to include no more than 45 days of actual construction. The timing for in water work will be determined by the Hydraulic Project Approval (HPA) issued by the Washington Department of Fish and Wildlife (WDFW). The expected in-water work window for this project will be between June 15 and August 31 when low tides occur during daylight hours and the most opportunity exists to minimize in-water work. This timing is also consistent with the in-water construction season for Commencement Bay (June 15 through the winter to March 14).

Affected Species. Five species provided protection under the ESA are cited as possibly present in the vicinity of Commencement Bay: humpback whale (*Megaptera novaengliae*), leatherback sea turtle (*Dermochelys coriacea*), Steller sea lion (*Eumetopias jubatus*), bald eagle (*Haliaeetus leucocephalus*), and Puget Sound Evolutionarily Significant Unit (ESU) chinook salmon (*Oncorhynchus tshawytscha*). Additionally, the Puget Sound coastal bull trout (*Salvelinus confluentus*), and Puget Sound/Straight of Georgia ESU coho salmon, proposed and candidate species, respectively, under ESA provisions may occasionally be present in the proposed project area. Humpback whales, leatherback sea turtles and Steller sea lions do not inhabit the proposed projects vicinities, and will not be effected from the proposed

project.

Determinations of Effect. In-water construction schedules are based on times of the year when few salmon, if any, will be in the proposed project area. The construction will observe seasonal conditions established by the Washington Department of Fish and Wildlife in their Hydraulic Project Approval and supported by the National Marine Fisheries Service to avoid impacts. Therefore, potential short-term minor temporary impacts of turbidity, excavation releases, noise, and emissions from construction vehicles, if they occur, will not coincide with the presence of Coho (Candidate) and Chinook salmon at these sites. The proposed projects are not likely to adversely affect any endangered or threatened or candidate species or their habitats due to the methods and timing of all activities. These include the following measures.

Construction shall only occur within the work-window (Mid June to end of August) specified for the project and in the dry to the maximum extent possible. This will limit the sedimentation in the Hylebos Waterway to summer months, after the peak smolt migration, and before spawning, and intragravel development periods for chinook and coho in the fall.

The Temporary Erosion and Sedimentation Control Plan (TESCP) shall be implemented as shown in the contract documents and construction drawings. The TESCP shall be implemented before the start of any ground disturbing activities. The TESCP shall be based on the proponents current Best Management Practices and include measures such as silt fences, straw bale dikes, and dewatering to allow excavation to proceed in unsaturated conditions.

A responsible party shall inspect the site during construction to verify that the contractor is effectively implementing the TESCP. Work procedures that are out of compliance shall be terminated and an acceptable solution developed before work is allowed to continue.

No hazardous materials or toxic materials shall be transferred or stored within 50 feet of the MHHW of Hylebos Creek or Hylebos Waterway.

No equipment shall be refueled or maintained within 50 feet of the MHHW of Hylebos Creek or Hylebos Waterway. Equipment shall be serviced or maintained in designated areas where stormwater runoff can be prevented

from directly entering the water.

An emergency spill kit shall be stored at each work site and construction crews trained in their proper use.

All crewmembers and all onsite personnel shall be informed of any and all environmental precautions. These precautions shall include: clearly marking the work area, clearly marked clearing limits, specifically identifying riparian vegetation to be removed, and all applicable laws and permit conditions.

MEMORANDUM FOR THE RECORD

FROM: Russell Bellmer *Russell Bellmer*

JAN 1 2000

SUBJECT: EFH Concurrence with a Determination of no Adverse Affect for the Proposed Wasser/Winter and Nursery Site Restoration Projects in Tacoma, WA.

Wasser/Winter Proposed Project Site. The Wasser/Winter site is located in the City of Tacoma between Marine View Drive and the upper turning basin of the Hylebos Waterway, on land owned by the Port of Tacoma, WA. The site is adjacent to the tidally influenced, channelized, lower reach of Hylebos Creek where the creek drains into the Hylebos Waterway. Upland areas of the project site encompass a flat area vegetated with grasses and shrubs. The site itself extends northeast from the centerline of the creek to a fence that borders an asphalt cap/parking area, and seaward to the pierhead line in the turning basin. A log storage yard borders the site to the southwest across Hylebos Creek, and State Route (SR) 509 crosses Hylebos Creek immediately southeast of the site. The site dimensions are approximately 1,000 by 100 feet, totaling about 2.3 acres. Soils are characterized as sandy/silt dredge fill overlying pre-development tideflats.

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Historically, Hylebos Creek has been a prolific salmon-spawning stream (King County and Federal Way, 1990) for chinook, chum, and coho. Salmon runs have declined in part due to urbanization of spawning areas. As of 1990, the watershed was approximately 50 percent developed, which has increased peak flows, degraded the riparian zone, and adversely affected water quality (King County and Federal Way, 1990). Localized areas of suitable spawning habitat exist, however, particularly on the West Branch of Hylebos Creek. In the 1970's and 1980's the Puyallup Tribe stocked Hylebos Creek with chinook, chum and coho (Ladley, personal communication, 1999). Although

these programs have been discontinued, vestigial populations enter the creek annually to spawn. The near-shore area and Hylebos Waterway are used extensively as rearing and feeding habitat by numerous marine species, and as a migratory pathway for salmonids.

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The substrate of Hylebos Creek in the project reach is primarily soft mud with minor components of gravel and larger cobbles. The overlying mud/silt substrate was removed at several points and the underlying materials examined. This qualitative examination revealed apparent anaerobic conditions and no benthic (bottom-dwelling) or epibenthic organisms. There are no barriers to upstream fish migration at the project site. Log rafting activity in the Hylebos Creek proximity may disturb salmon migration.

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Installation of a silt fence and straw bale dikes on or near the project boundary;
Removal of 2,000 cy of fill from the existing upland areas;
Demolition of a portion of the stormwater system where it discharges to the mudflats;
Construction of small channels to redirect the stormwater through the site in dendritic channels;
Placing topsoil to support growth of intertidal and riparian vegetation;
and
Replanting with native salt marsh and riparian plants. Approximately 0.66 acres will be graded and/or excavated to restore the habitat.

Heavy equipment used for construction will probably include backhoes, front-end loaders, bulldozers, and dump trucks. No pilings will be installed as part of the project. Neither drilling equipment nor blasting will be used during the project.

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Determinations of Effect. In-water construction schedules are based on times of the year when few salmon, if any, will be in the proposed project area. The construction will observe seasonal conditions established by the Washington Department of Fish and Wildlife in their Hydraulic Project Approval and supported by the National Marine Fisheries Service to avoid impacts. Therefore, potential short-term minor temporary impacts of turbidity, excavation releases, noise, and emissions from construction vehicles, if they occur, will not coincide with the presence of managed species at these sites. The proposed projects will not adversely affect any managed species or EFHs due to the methods and timing of all activities. These include the following measures.

Construction shall only occur within the work-window (Mid June to end of August) specified for the project and in the dry to the maximum extent possible. This will limit the sedimentation in the Hylebos Waterway to summer months, after the peak smolt migration, and before spawning, and intragravel development periods for chinook and coho in the fall.

The Temporary Erosion and Sedimentation Control Plan (TESCP) shall be implemented as shown in the contract documents and construction drawings. The TESCP shall be implemented before the start of any ground disturbing activities. The TESCP shall be based on the proponents current Best Management Practices and include measures such as silt fences, straw bale dikes, and dewatering to allow excavation to proceed in unsaturated conditions.

A responsible party shall inspect the site during construction to verify that the contractor is effectively implementing the TESCP. Work procedures that are out of compliance shall be terminated and an acceptable solution developed before work is allowed to continue.

No hazardous materials or toxic materials shall be transferred or stored within 50 feet of the MHHW of Hylebos Creek or Hylebos Waterway.

No equipment shall be refueled or maintained within 50 feet of the MHHW of Hylebos Creek or Hylebos Waterway. Equipment shall be serviced or maintained in designated areas where stormwater runoff can be prevented from directly entering the water.

An emergency spill kit shall be stored at each work site and construction crews trained in their proper use.

All crewmembers and all onsite personnel shall be informed of any and all environmental precautions. These precautions shall include: clearly marking the work area, clearly marked clearing limits, specifically identifying riparian vegetation to be removed, and all applicable laws and permit conditions.

EFH Determination. The area in which the restoration projects are planned (grading and excavation of fill material, construction backwater pools, revegetating with native salt marsh and riparian plants, installing

several pieces of large woody debris) has been identified as EFH for species managed by the Pacific Fishery Management Council under the Amendment 11 to The Pacific Coast Groundfish Fishery Management Plan (October, 1998).

This Plan identifies twenty-four species and life stages within the estuarine composite EFH. These species include five species of Class Elasmobranchiomorphi and nineteen species of Class Osteichthyes. Eight species of Family Scorpaenidae (rockfish) and four species of Order Pleuronectiformes (flatfish) are identified within the Plan. Environmental conditions (i.e., temperature, salinity, water depth, substrate) greatly reduce the potential for the presence of these species in the project area for even short periods of time during extreme high tides. The species that may occasionally visit the project area include: *Squalus acanthias* (spiny dogfish), *Raja inornata* (California skate), *Pleuronectes vetulus* (English sole), *Errex zachirus* (rex sole), *Citharichthys sordidus* (Pacific sanddab), and *Platichthys stellatus* (starry flounder). The eggs, larval stages, and some juvenile fish may occasionally be present in the area of the activity. However, due to construction activities in the dry or at extreme low tide during periods of the year with minimum fish activities, no adverse impacts will occur to EFH. Therefore, no additional EFH conservation measures have been provided.

If the proposed project plans are substantially revised or if new information becomes available that affects the basis for no adverse affect determination, then EPII consultation will be undertaken.

APPENDIX D
BIOLOGICAL EVALUATION

COMMENCEMENT BAY, WASHINGTON
WASSER/WINTER AND NURSERY
SITE HABITAT RESTORATION PROJECTS

BIOLOGICAL ASSESSMENT

FOR COORDINATION WITH THE
NATIONAL MARINE FISHERIES SERVICE
U.S. FISH AND WILDLIFE SERVICE

PREPARED FOR:
COMMENCEMENT BAY NATURAL RESOURCE TRUSTEES

PREPARED BY:
ADOLFSON ASSOCIATES, INC.

EXECUTIVE SUMMARY

In compliance with the Section 7(c) of the Endangered Species Act (ESA), this Biological Assessment (BA) evaluates the potential impacts to listed species resulting from construction and rehabilitation of estuarine wetlands habitat at the Wasser/Winter and Nursery sites in Commencement Bay, Washington. The Commencement Bay Natural Resource Trustees (Trustees) propose to re-create previously lost intertidal habitat on Hylebos Waterway, near Tacoma, for a variety of plants and animals, providing particular benefit for juvenile salmonids. This BA will be used in informal consultation with the Trustees and US Fish and Wildlife Service and the National Marine Fisheries Service.

Project Site Description

The Wasser/Winter and Nursery sites are adjacent to the Hylebos Waterway where the original tidelands have been filled to accommodate industrial activities. Both sites are characterized as highly to moderately disturbed, and do not provide optimum habitat for aquatic or terrestrial species.

Project Description

The projects will provide approximately 2.41 acres of intertidal habitat by removing existing fill material to create permanently flooded backwater pools, salt water marshes and tideflats. Estuarine vegetation will be planted on gently sloping surfaces tied to the same elevation as the historical tideflats.

Affected Species

Five species provided protection under the ESA are cited as possibly present in the vicinity of Hylebos Creek and Hylebos Waterway: humpback whale (*Megaptera novaengliae*), leatherback sea turtle (*Dermochelys coriacea*), Steller sea lion (*Eumetopias jubatus*), bald eagle (*Haliaeetus leucocephalus*), and Puget Sound Evolutionarily Significant Unit (ESU) chinook salmon (*Oncorhynchus tshawytscha*). Additionally, this BA considers potential impacts to Puget Sound coastal bull trout (*Salvelinus confluentus*), and Puget Sound/Straight of Georgia ESU coho salmon, proposed and candidate species, respectively, under ESA provisions.

An analysis of the proposed habitat rehabilitation project, including construction sequences and habitat safeguards, concludes that these projects may affect, but are not likely to adversely affect, Puget Sound ESU chinook, bald eagles, coastal bull trout, and Puget Sound/Straight of Georgia coho salmon.

Humpback whales, leatherback sea turtles and Steller sea lions do not normally inhabit the project vicinity, and will realize no effect from the action.

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1.0 INTRODUCTION

The Commencement Bay Natural Resource Trustees (Trustees) include Federal, State, and Tribal entities responsible for evaluating injury to the Commencement Bay environment, and restoring the environment with damage settlement funds. The Trustees are involved in a Commencement Bay Natural Resource Damage Assessment (CB/NRDA) program in Tacoma, Washington. National Oceanic and Atmospheric Administration (NOAA) serving as the lead agency for the Trustees, contracted with Ridolfi Engineers Inc (Ridolfi) to perform restoration design services.

Adolfson Associates Inc. (Adolfson) prepared this Biological Assessment (BA) under subcontract to Ridolfi, on behalf of the Trustees, for two habitat restoration projects on the Hylebos Waterway: The Wasser/Winter site and the Nursery site (Figure 1)¹. The projects would re-create previously lost intertidal habitat for a variety of plants and animals, providing particular benefit for juvenile salmonids including chinook salmon, which is listed as "threatened" under the Endangered Species Act (ESA). Section 7 of the ESA requires federal agencies to consult with the National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Service (USFWS) if they conduct, authorize, or fund an action that may impact a listed species or designated critical habitat.

1.1 STUDY PURPOSE

This BA was prepared to facilitate coordination between the action agency [U.S. Army Corps of Engineers (COE)], and NMFS and USFWS, jointly referred to as the Services. NMFS regulates federally-listed threatened and endangered marine wildlife and anadromous fish stocks. Threatened and endangered terrestrial wildlife, plants, and inland fish stocks are under the jurisdiction of the USFWS. The purpose of this BA is to determine the need for consultation or conference with the Services by providing information regarding the proposed habitat rehabilitation, site specific information, and a discussion of the effects on federally-listed, proposed, and candidate species

1.2 BACKGROUND INFORMATION

Project Name:	Wasser/Winter and Nursery Site Habitat Restoration Projects, Commencement Bay, Washington
Project Location:	Tacoma, Washington (Pierce County) Sections 26 and 36, Township 21 North, Range 3 East
Project Proponent:	National Oceanic and Atmospheric Administration NOAA Damage Assessment and Restoration Center NW 7600 Sand Point Way NE Seattle, WA 98115
Contact:	Jennifer Steger, NOAA Phone: (206) 526-4363

¹ A third site (Meeker) had been considered previously, but was found unsuitable for restoration due to high wave energy and the likelihood of only marginal habitat improvement. That site is not considered in this BA.

Proposed timing or schedule: Work will begin no earlier than Spring 2000. In-water work will occur no earlier than July 2000. All work will be completed in 45 days or less, inside a three-month period.

Project Engineer: Ridolfi Engineers, Inc.
1411 Fourth Ave., Suite 770
Seattle, Washington 98101

Contact: Colin Wagoner, P.E.
Phone: (206) 682-7294

Preparer: Adolfsen Associates, Inc.
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2.0 DESCRIPTION OF THE PROJECT AREA AND HABITAT

This section identifies the project sites and describes current environmental conditions. The two sites are described separately because they are located approximately 2.3 miles apart. Both sites are on the Hylebos Waterway, an industrial waterway created by dredging operations beginning about 100 years ago. Dredging converted the delta of Hylebos Creek and the associated mudflats and salt marshes into a shipping channel. Dredge spoils were used to create upland industrial areas adjacent to the waterway.

2.1 WASSER/WINTER SITE

The Wasser/Winter site is located in the City of Tacoma between Marine View Drive and the upper turning basin of the Hylebos Waterway, on land owned by the Port of Tacoma (Figure 1). The site is adjacent to the tidally influenced, channelized, lower reach of Hylebos Creek where the creek drains into the Hylebos Waterway. Upland areas of the project site encompass a flat area vegetated with grasses and shrubs. The site itself extends northeast from the centerline of the creek to a fence that borders an asphalt cap/parking area, and seaward to the pierhead line in the turning basin. A log storage yard borders the site to the southwest across Hylebos Creek, and State Route (SR) 509 crosses Hylebos Creek immediately southeast of the site. The site dimensions are approximately 1,000 by 100 feet, totaling about 2.3 acres. Soils are characterized as sandy/silt dredge fill overlying pre-development tideflats.

Upstream of the SR-509 bridge is a two-acre Washington State Department of Transportation (WSDOT) compensatory mitigation site comprised of constructed intertidal marsh surrounded by riparian vegetation (WSDOT, 1994). Further upstream of the WSDOT site, Hylebos Creek contains riparian and riverine habitat for a variety of migratory and resident fish, birds, and small mammals.

Historically, Hylebos Creek has been a prolific salmon-spawning stream (King County and Federal Way, 1990). Salmon runs have declined in part due to urbanization of spawning areas. As of 1990, the watershed was approximately 50 percent developed, which has increased peak flows, degraded the riparian zone, and adversely affected water quality (King County and Federal Way, 1990). Localized areas of suitable spawning habitat exist, however, particularly on the West Branch of Hylebos Creek.

In the 1970's and 1980's the Puyallup Tribe stocked Hylebos Creek with chinook, chum and coho (Ladley, personal communication, 1999). Although these programs have been discontinued, vestigial populations enter the creek annually to spawn. The near-shore area and Hylebos Waterway are used extensively as rearing and feeding habitat by numerous marine species, and as a migratory pathway for salmonids.

At the project site, Hylebos Creek is a straight channel with steep banks, and is tidally influenced. At low tide [below +1 feet above mean lower low water (MLLW)], freshwater flows in a pool and riffle configuration in the channel. Typically, however, the tide is high enough to give this portion of Hylebos Creek the appearance of a tidal slough (Figure 2).

The substrate of Hylebos Creek in the project reach is primarily soft mud with minor components of gravel and larger cobbles. The overlying mud/silt substrate was removed at several points and the underlying materials examined. This qualitative examination revealed apparent anaerobic conditions and no benthic (bottom-dwelling) or epibenthic organisms.

There are no barriers to upstream fish migration at the project site. Log rafting activity in the Hylebos Creek proximity may disturb salmon migration.

Water Quality and Quantity in Hylebos Creek

Hylebos Creek is classified by the Washington Department of Ecology (Ecology) as a class A water body. Hylebos Creek streamflow data for the period of May 1995 through May 1999 were obtained from a U. S. Geological Survey (USGS) gauging station approximately 1.8 miles upstream from Hylebos Waterway. The entire Hylebos Creek Watershed drains an area of approximately 18 square miles, 16.8 square miles that are upstream of the USGS gauging station. Streamflow ranged from 3.5 cubic feet per second (cfs) to 367 cfs, averaging 29 cfs for the two-year period.

Quantitative measurements of turbidity are not available for Hylebos Creek near the project site. Qualitative turbidity observations were made during site inspections where Fife Ditch enters Hylebos Creek approximately 300 feet upstream from the project site. At that location, Fife Ditch is noticeably turbid and degrades Hylebos Creek water quality. A joint study by King County and the City of Federal Way found elevated levels of fecal coliform bacteria, phosphorous, nitrogen, suspended solids, copper, lead, mercury, and zinc in samples collected from Hylebos Creek (King County and Federal Way 1990).

2.2 NURSERY SITE

The Nursery site is located waterward of Marine View Drive near the Hylebos Waterway west end, on property held in Trust for the Puyallup Tribe (Figure 1). The site is approximately 360 by 80 feet, or 0.66 acres. The upland portion of the site was constructed from a gravelly sand fill material and slopes gently toward the south. Upland vegetation consists of trees, blackberry bushes, and grasses. A strip of intertidal marsh vegetation approximately three to four feet wide is located near the mean higher high water (MHHW) line. Low-gradient mudflats that provide habitat for benthic (bottom-dwelling) organisms of particular importance to shorebirds and juvenile salmonids are located below MHHW. The site contains several pilings, logs, and riprap indicative of previous log storage activities in the area (Figure 2).

The project site vicinity includes narrow intertidal and subtidal margins broken by commercial marinas and log storage areas. To the north, and across Marine View Drive, is a woody, steep-sloped area. East and west of the site are additional intertidal and mudflats that have been designated as natural resource conservancy areas by the Puyallup Tribe. The project site is situated in a portion of Commencement Bay containing the largest area of undisturbed mudflats, and is an important migratory route for salmonids, waterfowl, and shorebirds.

Water Quality and Quantity at the Nursery Site

Hylebos Waterway is classified by Ecology as a Class B water body. There are no barriers to migrating fish at the Nursery site, and the mudflats drain on a daily basis with the tides.

Surface water enters the Nursery Site through two discrete outfalls. Both outfalls direct stormwater through the project area and discharge into the intertidal mudflats, one directly through a 12-inch concrete pipe, and the other through a 12-inch concrete pipe and into a short, narrow, incised channel flowing into the mudflats. The westernmost outfall discharges runoff from Marine View Drive and the steep, forested slopes north of the site. The eastern outfall discharges runoff from Marine View Drive, runoff from the slopes north of the site, and runoff from paved commercial areas east of the site along East 11th Street.

An analysis of the quantity and quality of water being discharged to the Nursery Site from the two outfalls is currently being conducted by the City of Tacoma (1999). Based on data from the first two sampling events, the estimated rate of flow from the western outfall is 15 gallons per minute (gpm) in May 1999 and 10 gpm in July 1999. The estimated rate of flow from the eastern outfall was 17 gpm in both May and July 1999.

Water quality, including turbidity, tests are not available for the Nursery site, though outfall waters appear clear at low flow conditions.

3.0 DESCRIPTION OF THE PROPOSED ACTIONS

This section reviews the relevant information regarding the habitat rehabilitation projects. Adolfson reviewed ninety-percent complete design drawings to obtain information on project

elements. Additionally, the project proponents and engineer were consulted to provide additional detail as required.

3.1 WASSER/WINTER SITE

The project goal is to restore and enhance estuarine habitat, maximize residence time for juvenile salmonids and provide landscape connectivity with the WSDOT mitigation site immediately upstream. A salt marsh will be planted at an elevation near MHHW on gently sloping surfaces and will be similar in height to the historical tideflats to the extent feasible.

The Wasser/Winter site will provide approximately 2.3 acres of intertidal habitat by removing 17,700 cubic yards (cy) of existing upland fill material, to create permanently flooded backwater pools and intertidal salt marshes (Figure 3). Specific construction techniques for this project will be developed by the contractor; however, based on past experience with these types of projects the work will progress in the following manner:

1. Installation of a silt fence and bale dikes on or near the project boundary;
2. Removal of 17,700 cy of existing upland fill;
3. Grading the excavated surface to construct backwater pools;
(Backwater pools will not be exposed to tidal inundation until just before project completion. Fill removal below MHHW will likely require dewatering to allow equipment access)
4. Placing a growth media (top soil) to encourage plant growth, and
5. Revegetating with native salt marsh and riparian plants and installing several pieces of large woody debris. Approximately 1.5 acres of the site will be graded and/or excavated to restore the habitat.

Heavy equipment used for construction will probably include backhoes, front-end loaders, bulldozers, and dump trucks. No pilings will be installed as part of the project. Neither drilling equipment nor blasting will be used during the project.

3.2 NURSERY SITE

The project goal is to create intertidal salt marsh habitat to replace the industrially filled upland areas. Approximately 0.66 acres of intertidal habitat will be restored by grading an upland area north of the existing vegetation line and by replanting an intertidal vegetation community (Figure 4). Runoff from the hillside on the north side of Marine View Drive will be intercepted and routed through the project site in a dendritic channel pattern. Topsoil will be placed in excavated areas to encourage plant growth. A berm will be constructed next to Marine View Drive and planted with riparian plants to discourage trespassers from entering the site.

Specific construction techniques for this project will be developed by the contractor; however, based on past experience with these types of projects, the project proponents and project engineer anticipate that work will progress in the following manner:

1. Installation of a silt fence and straw bale dikes on or near the project boundary;
2. Removal of 2,000 cy of upland fill from the existing upland areas;
3. Demolition of a portion of the stormwater system where it discharges to the mudflats;

4. Construction of small channels to redirect the stormwater through the site in dendritic channels;
5. Placing topsoil to support growth of intertidal and riparian vegetation; and
6. Replanting with native salt marsh and riparian plants. Approximately 0.66 acres will be graded and/or excavated to restore the habitat.

Heavy equipment used for construction will probably include backhoes, front-end loaders, bulldozers, and dump trucks. No pilings will be installed as part of the project. Neither drilling equipment nor blasting will be used during the project.

3.3 TIMING/CHRONOLOGY OF SPECIFIC CONSTRUCTION ACTIONS

A three-month window is anticipated for all construction at both the Wasser/Winter and Nursery sites, which is expected to include no more than 45 days of actual construction. The timing for in-water work will be determined by the Hydraulic Project Approval (HPA) issued by the Washington Department of Fish and Wildlife (WDFW). The expected in-water work window for this project will be between June 15 and August 31 when low tides occur during daylight hours and the most opportunity exists to minimize in-water work. This timing is also consistent with the in-water construction season for Commencement Bay (June 15 through the winter to March 14).

4.0 STATUS OF THE SPECIES AND CRITICAL HABITAT

Information provided by NMFS (1999a, 1999b) and USFWS (1999) indicates that the project will occur within the general range of the following species:

Common Name	Scientific Name	Regulatory Agency/Status*
Humpback whale	<i>Megaptera novaengliae</i>	NMFS/ Endangered
Leatherback sea turtle	<i>Dermochelys coriacea</i>	NMFS/ Endangered
Steller sea lion	<i>Eumetopias jubatus</i>	NMFS/ Threatened
Bald eagle	<i>Haliaeetus leucocephalus</i>	USFWS/ Threatened
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	NMFS/Threatened
Bull trout	<i>Salvelinus confluentus</i>	USFWS/ Proposed Threatened
Coho salmon	<i>Oncorhynchus kisutch</i>	NMFS/Candidate

There are no records of humpback whales, leatherback sea turtles, or steller sea lions occurring in the Hylebos Waterway.

* See Glossary for category definitions

4.1 HUMPBACK WHALE (*Megaptera novaengliae*)

The most recent documented sighting of humpback whales in Puget Sound occurred in 1999 near Seattle (Calambokidis, personal communication, 1999). Such sightings are rare, however, occurring about every one to two years. The occurrence of humpback whales in Commencement Bay is more rare: about once every three to four years.

Due to the proximity of industrial activity, lack of prey and insufficient water depth, the possibility of humpback whales entering the Hylebos Waterway is effectively zero.

4.2 LEATHERBACK SEA TURTLE (*Dermochelys coriacea*)

Leatherback sea turtles are seen infrequently on the outer coast of the Olympic Peninsula. The closest documented observation to Commencement Bay occurred at Port Angeles, more than 100 miles north (McAllister, personal communication, 1999).

Due to the lack of documented sightings of leatherback sea turtles in southern Puget Sound, the possibility of an encounter in Hylebos Waterway during the proposed habitat restoration projects is effectively zero.

4.3 STELLER SEA LION (*Eumetopias jubatus*)

The Steller sea lion ranges from the Channel Islands of southern California, north to the Bering Sea. There are no regular patterns of occurrence or migration corridors within Puget Sound, but individual animals have been sighted within groups of California sea lions in the Straits of Juan de Fuca and on navigation buoys south of Commencement Bay (Norberg, personal communication, 1999).

There is no habitat suitable to Steller sea lions within the Hylebos Waterway. While the opportunity to feed on salmon migrating through the project area is not zero, the likelihood that Steller sea lions would occur in the project vicinity is discountable.

Based on the low likelihood of occurrence, and the absence of potential impact mechanisms, the habitat rehabilitation projects at the Wasser/Winter and Nursery sites are expected to have no effect on humpback whales, leatherback sea turtles, or Steller sea lions, or their critical habitat. Therefore, these species are not addressed further in this BA.

4.4 PUGET SOUND ESU CHINOOK SALMON (*Oncorhynchus tshawytscha*)

Chinook salmon have a historic range from the Ventura River in California to Point Hope, Alaska in North America, and from Hokkaido, Japan to Anadyr River in Russia. The Puget Sound Evolutionarily Significant Unit (ESU) chinook salmon was listed as a threatened species on March 16, 1999. The ESU includes "all naturally spawned populations of chinook salmon from rivers and streams flowing into Puget Sound including the Straits of Juan De Fuca from the Elwha River, eastward, including rivers and streams flowing into Hood Canal, South Sound, North Sound and the Strait of Georgia in Washington" (NMFS, 1999a).

Spring and fall run chinook spawn in the Puyallup River above river mile (RM) 10.5, and in the White River and its tributaries (WDFW, 1994). Puget Sound ESU Chinook are listed as threatened under the ESA in Washington State, and have been identified as inhabiting the project areas (NMFS, 1999).

Hylebos Creek Salmon

Although chinook salmon do not occur naturally in Hylebos Creek, the Puyallup Tribe has attempted to introduce fall run chinook, and have augmented the creek with chum and coho salmon (Ladley, personal communication, 1999). This program was discontinued in recent years, and no attempt has been made to quantify the vestigial populations. Hylebos Creek salmon migrate through the Hylebos Waterway as both adults and juveniles, though are not afforded specific protection under the ESA.

Impacts to these populations are expected to be minimal as the work window occurs outside the known adult (October–December) and juvenile (spring) migration periods (Ladley, personal communication, 1999).

Critical Habitat

There is no critical habitat designated for Puget Sound ESU Chinook Salmon. Critical habitat is currently proposed by NMFS, though not yet granted specific protection. Proposed critical habitat includes all marine, estuarine and river reaches accessible to chinook salmon in Puget Sound, including Commencement Bay.

Life History

Chinook require varied habitats during different phases of their life cycle. Spawning habitat typically consists of riffles and the tailouts of pools with clean substrates dominated by gravel located in the mainstem of rivers and large tributaries. Adult summer and fall chinook salmon in the Puyallup Basin spawn in freshwater streams in the late summer and fall, and fry emerge in the late winter and early spring. Juvenile chinook rear from three months to two years in the lower mainstem of rivers before entering the estuary and salt marshes. Chinook generally migrate to salt water as smolt in the spring and summer, and thereafter spend from two to four years feeding in the North Pacific Ocean before returning to spawn (WDFW, 1994).

Environmental Baseline

Wasser/Winter Site

The mouth of the Hylebos Creek is tidally influenced and does not provide chinook salmon spawning habitat. Additionally, the substrate in the Hylebos Creek is primarily silt and mud underlain with black-stained substrates that appears anoxic and unsuitable for chinook salmon spawning. There is little cover or other habitat suitable for foraging juvenile chinook salmon.

Nursery Site

There is no habitat in the Nursery Site vicinity considered suitable to adult chinook salmon. The proposed habitat rehabilitation work will occur above MHHW, in habitat where juvenile chinook

salmon would not likely occur. Nevertheless, the many stranded logs and other materials on the mudflats would likely provide cover for feeding and migrating juveniles while the area is inundated by high tide, and the mudflats provide a source of benthic prey.

4.5 COASTAL BULL TROUT (*Salvelinus confluentus*)

The historical distribution of bull trout extends from northern California to Alaska. In Washington, bull trout are found throughout coastal and inland streams and lakes (WDFW, 1998), and are proposed for listing by the USFWS as threatened. Bull trout in the Puyallup Basin are considered coastal bull trout.

Critical Habitat

The USFWS has not established or identified critical habitat for coastal bull trout.

Life History

Bull trout have a complex life history with two primary life history types: a resident form and a migratory form. Bull trout considered migratory may be stream dwelling (fluvial), lake-dwelling (adfluvial), or ocean- or estuarine-dwelling (anadromous) (USFWS, 1998). Individuals of each form may be represented in a single population, though, migratory populations may dominate where migration corridors and subadult rearing habitats are in good condition (USFWS, 1998). Most inland populations of bull trout are either fluvial or adfluvial, migrating from larger rivers and lakes to spawn in smaller tributary streams in August through October (Wydoski and Whitney, 1979). Bull trout spawn in streams with clean gravel substrates and cold (<9°C) water temperatures (USFWS, 1998). Spawn timing is relatively short, occurring from late October through early November. Redds are dug by females in water eight to 24 inches deep, in substrate gravel 0.2 to 2 inches in diameter (Wydoski and Whitney, 1979), and emergence generally occurs in the spring. Bull trout are opportunistic feeders, consuming fish in the water column and insects on the bottom (WDFW, 1998).

Bull trout have been found in the Puyallup River, though in low numbers and only in the upper reaches (above river mile 43). Little is known of this species occurrence in Commencement Bay, though it is conceivable that the anadromous form could migrate through, or rear within, Hylebos Waterway.

Environmental Baseline

Low stream temperatures and clean substrates are essential features of bull trout habitat. This species is most commonly associated with pristine or only slightly disturbed basins (USFWS, 1998), conditions that do not exist in Hylebos Waterway and Hylebos Creek.

4.6 BALD EAGLE (*Haliaeetus leucocephalus*)

The occurrence of bald eagles in Puget Sound and the Tacoma area has been documented since pre-settlement times (Stalmaster, 1987). Eagle populations have decreased within the region because of hunting and the widespread use of DDT, but their numbers have been increasing since the early 1970's. The species is currently under consideration for de-listing.

Critical Habitat

No critical habitat has been established or identified for bald eagles.

Life History

Bald eagles generally perch, roost, and build nests in mature trees near water bodies where they spot prey while soaring or from perches (Ehrlich et al., 1988). Stalmaster (1987) reports that over 50 percent of an eagle's diet comes from fish, 25 percent from other birds, and 15 percent from mammals, although they will also feed on carrion (Stokes and Stokes, 1989).

Bald eagles are both residents in, and migrants through, Pierce County where populations are usually highest in January, as birds that had moved north to feed in late summer return to the region. Bald eagles breed in mid- to late-winter, usually returning to one of several nests located within an established nesting territory (Stalmaster, 1987). As bald eagles are primarily fish eaters, they usually nest within one mile of open water, where their home range can extend up to eight miles. Eggs laid in March or April will hatch within one and a half months, and the young eagles fledge in mid-summer (August).

Environmental Baseline

Hylebos Waterway and Hylebos Creek provide foraging habitat for both nesting and wintering bald eagles, though sightings are uncommon. There are no large trees at the Wasser/ Winter site, though there are several large cottonwood trees in and around the Nursery site (Figure 2). Nonetheless, there are no eagle nest sites, perches or roosts known to occur within one mile of the project (WDFW, 1999). A transient bald eagle may occur within the vicinity of the Hylebos Waterway during project construction, but eagle use in the project area is unlikely due to the high level of ambient industrial-based noise.

4.7 PUGET SOUND/STRAIGHT OF GEORGIA ESU COHO SALMON (*Oncorhynchus kisutch*)

On July 25, 1995, NMFS determined that listing was not warranted for Puget Sound/Straight of Georgia ESU coho salmon. The ESU, however, is designated as a candidate for listing due to concerns over specific risk factors. The ESU includes all naturally spawned populations of coho salmon from drainages of Puget Sound and Hood Canal, the eastern Olympic Peninsula (east of Salt Creek), and the Strait of Georgia from the eastern side of Vancouver Island and the British

Columbia mainland (north to and including the Campbell and Powell Rivers), excluding the upper Fraser River above Hope (NMFS, 1999).

As a candidate species, no specific protections are afforded under the ESA, and section 7 consultation or conference with NMFS is not required for anticipated impacts to these species. Summary information for this candidate species is included herein in the event these candidate species become "listed" or "proposed" before project completion.

Critical Habitat

No critical habitat has been proposed for Puget Sound/Straight of Georgia ESU coho salmon.

Life History

Coho salmon occur in most major river basins around the Pacific Rim from central California to Korea and northern Hokkaido, Japan. Adult coho salmon spawn in freshwater streams in the late fall and early winter. Coho typically spawn in low gradient riffles with clean substrates ranging from pea-sized gravel to orange-sized cobbles. Rearing juveniles prefer off-channel pools with complex cover including both large and small woody debris. Juvenile coho rear in freshwater for a year to 18 months, and smolts migrate to the ocean in the spring of their second year. Most male coho, and all female coho, spend from 16 to 20 months rearing in the ocean and return to spawn in fresh water as three-year old adults. The spawner distribution of the Puyallup coho salmon stock includes Hylebos Creek (WDFW, 1994).

Environmental Baseline

Natural coho populations in the Puget Sound/Strait of Georgia ESU have been influenced by hatchery introductions and harvests focused on exploiting hatchery augmented stocks. Coho escapement data are the most comprehensive in Puget Sound, and indicate that the Puyallup Basin coho salmon stock in the Puget Sound/Strait of Georgia ESU is depressed (WDFW, 1994).

Wasser/Winter Site

Hylebos Creek upstream of the SR 509 bridge provides coho salmon rearing habitat, though the project site and the vicinity of the Hylebos Waterway near the creek mouth provides little cover or other suitable habitat. The substrate in Hylebos Creek downstream of the SR 509 bridge is primarily sandy silt with some smaller gravel, unsuitable for coho salmon spawning. A qualitative survey found the mud/silt substrate underlain by anaerobic conditions, and no benthic prey items in the project reach of Hylebos Creek and Hylebos Waterway. Additionally, this portion of the creek is brackish and not suitable spawning habitat for Coho.

Nursery Site

There is no habitat in the Nursery Site vicinity considered suitable to adult coho salmon. The many stranded logs and other materials on the mudflats would likely provide cover, and mudflats

provide benthic prey items for feeding and migrating juveniles while the area is inundated by high tide.

5.0 EFFECTS OF THE ACTION

5.1 DIRECT EFFECTS

Wasser/Winter Site

Habitat at the Wasser/Winter site has been extensively modified and simplified due to past industrial and commercial activity. The stream channel has been straightened; fill material has raised the ground surface and the site largely overtaken by non-native plant species. Work on Wasser/Winter site rehabilitation will include three main project elements that will result in direct effects to the project area:

- 1) Removal of the existing upland fill materials from an area of approximately 2.0 acres;
- 2) Grading the site to tie into the upstream rehabilitated projects, constructing a number of backwater pools; and
- 3) Revegetating with native salt marsh and riparian plants to improve habitat.

Clearing vegetation from the existing fill materials will temporarily eliminate riparian vegetation adjacent to Hylebos Creek. Grading and soil movement will be necessary to construct the improved habitat, including several permanently flooded backwater pools and tideflats. Work will not require the diversion or dewatering of Hylebos Creek. Clearing, fill removal, grading, and the preparation of the backwater areas will require the use of heavy machinery above and below the MHHW, and may require dewatering. To avoid excessive siltation, backwater pools will not be connected to Hylebos Creek until just before project completion. The connections will be made at low tide when the site is physically inaccessible to fish. Additionally, conservation measures including limiting work to the summer months and erosion control best management practices, as outlined in Section 8.0, will be used to reduce impacts. National Marine Fisheries Service Habitat Pathways for Hylebos Creek will be restored, enhanced, or unchanged (Table 1).

Nursery Site

Upland portions of the Nursery site contain fill materials that were used to raise the ground surface. Additionally, remnants of a structure built from pilings and riprap are present below MHHW. Work on the Nursery site habitat rehabilitation will include three main project elements that will result in direct affects to the project area:

- 1) Removal of upland fill materials from approximately 0.66 acres of the existing upland area;
- 2) grading to construct a dendritic channel system to distribute fresh water on the site; and
- 3) replanting with salt marsh and riparian vegetation.

Construction will temporarily eliminate riparian vegetation adjacent to MHHW. Grading and soil movement will be necessary to construct the improved habitat. Clearing, grading, and the

APPENDIX E

FINDING OF NO SIGNIFICANT IMPACT

FINDING OF NO SIGNIFICANT IMPACT
FOR THE WASSER/WINTER, PUYALLUP NURSERY,
AND MEEKER RESTORATION PROJECTS
TACOMA, WASHINGTON

The National Oceanic and Atmospheric Administration (NOAA) is the lead federal agency for National Environmental Policy Act (NEPA) compliance for the proposed Wasser/Winter, Puyallup Nursery, and Meeker Restoration Projects, Tacoma, Washington. The cooperating agencies and tribes include the other Commencement Bay Natural Resource Trustees -- the Puyallup Tribe of Indians, the Muckleshoot Indian Tribe, the Washington Department of Ecology (as lead state Trustee), the Washington Department of Fish and Wildlife, the Washington Department of Natural Resources, and the U.S. Department of the Interior (U.S. Fish and Wildlife Service and the Bureau of Indian Affairs). These parties are participating in damage assessment and restoration planning activities in the Commencement Bay environment.

NOAA prepared an Environmental Assessment (EA) for these projects to evaluate environmental project alternatives at three separate but functionally similar sites. The restoration projects will recreate lost intertidal habitat for a variety of plants and animals and provide benefits for juvenile salmonids, including chinook salmon. The preferred alternative at the Wasser/Winter site emphasizes resting and feeding habitat for juvenile salmonids in backwater pools. The Nursery site's preferred alternative creates a dendritic channel pattern in place of ponds. For the third project, the Meeker parcel, the Trustees selected the No Action Alternative as the preferred alternative. All three sites will be monitored and evaluated for their ability to enhance estuarine habitat and provide landscape connectivity with nearby mitigation and restoration sites. The preferred alternatives are based upon the best available technologies and best meet the goals and objectives of the natural resource trustees by maximizing ecological benefits and minimizing any potential for adverse environmental impacts to the environment. The public and other interested parties have participated through public meetings and workshops in the evaluation of these sites and the selection of the preferred alternatives.

DETERMINATION:

Based upon an environmental review and evaluation of the Environmental Assessment for the Wasser/Winter, Puyallup Nursery, and Meeker Restoration Projects, I have determined that the proposed actions do not constitute major Federal actions significantly affecting the quality of the human environment within the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969, as amended. Accordingly, environmental impact statements are not required for these projects.

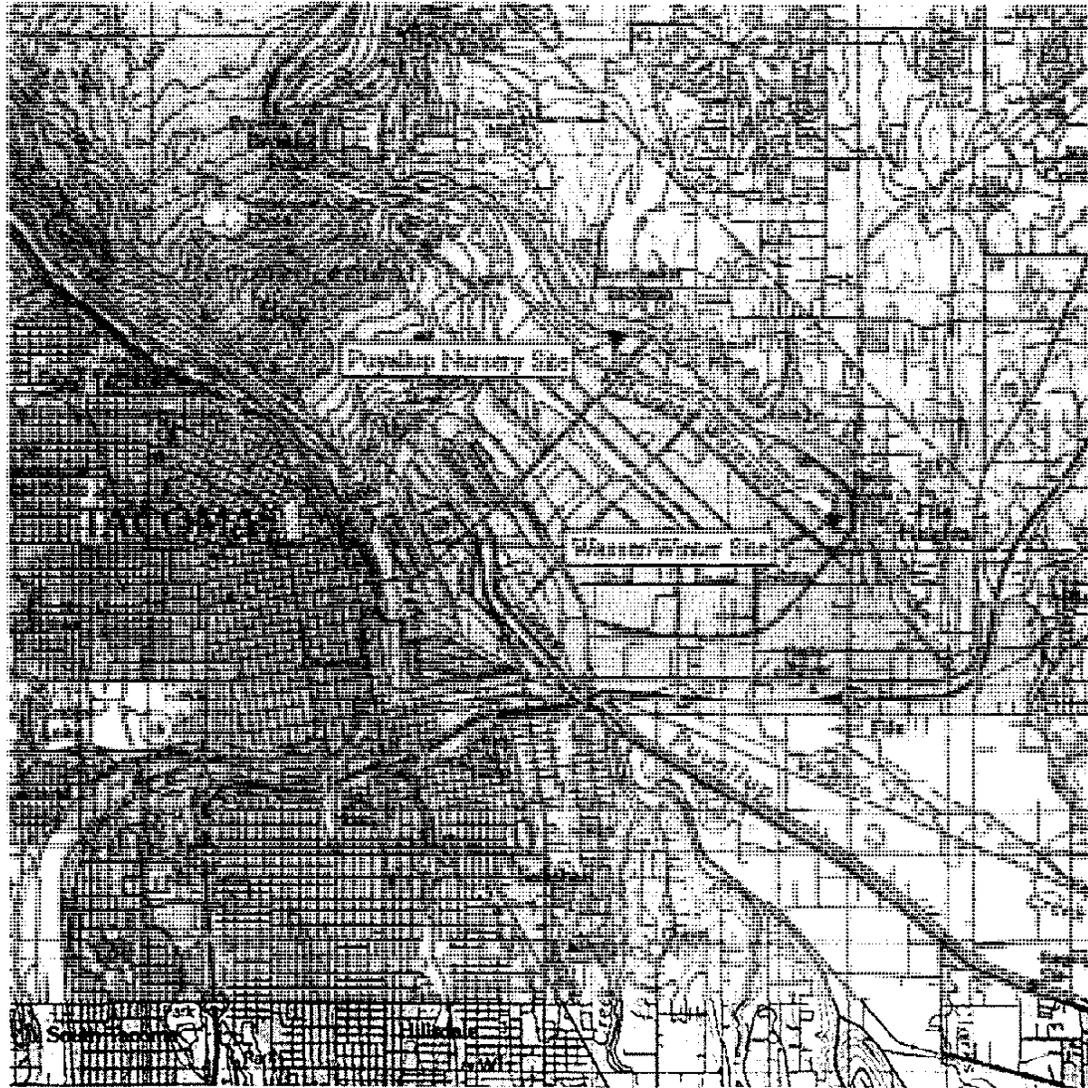


Penelope D. Dalton

Assistant Administrator for Fisheries
National Marine Fisheries Service

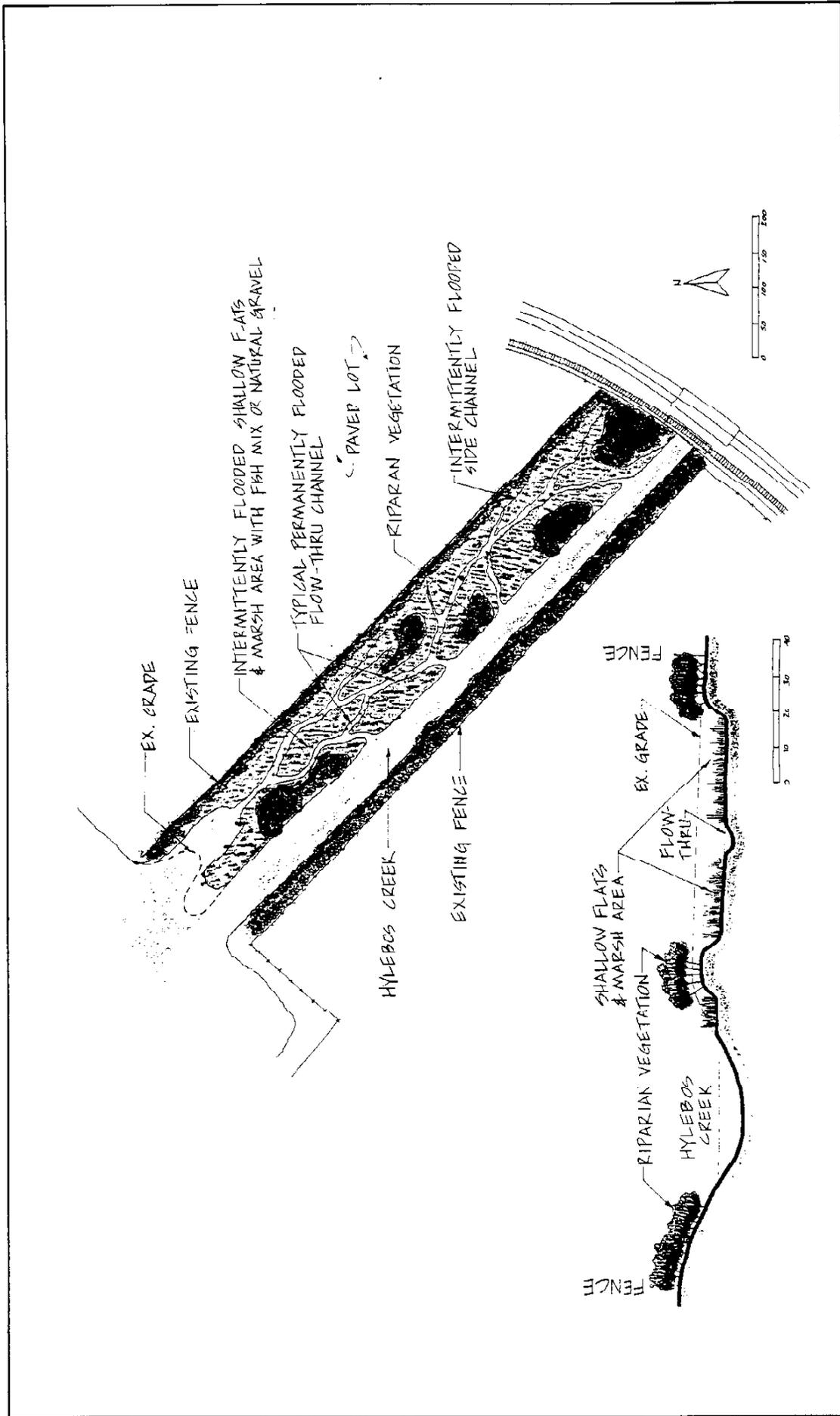
National Oceanic and Atmospheric Administration

Date: 1/12/00



SOURCE: DeLorme Atlas.

 <p>NORTH Not to Scale</p> <p><small>Created by: NLS Last updated on: 8/18/99</small></p>	<p>VICINITY MAP</p> <p>WASSER/WINTER AND NURSERY SITES</p> <p>ENVIRONMENTAL ASSESSMENT</p> <p>COMMENCEMENT BAY, WASHINGTON</p>	<p>FIGURE 1</p>  <p>ADOLFSON</p>
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SOURCE: Osborn Pacific Group, Inc, 1999.

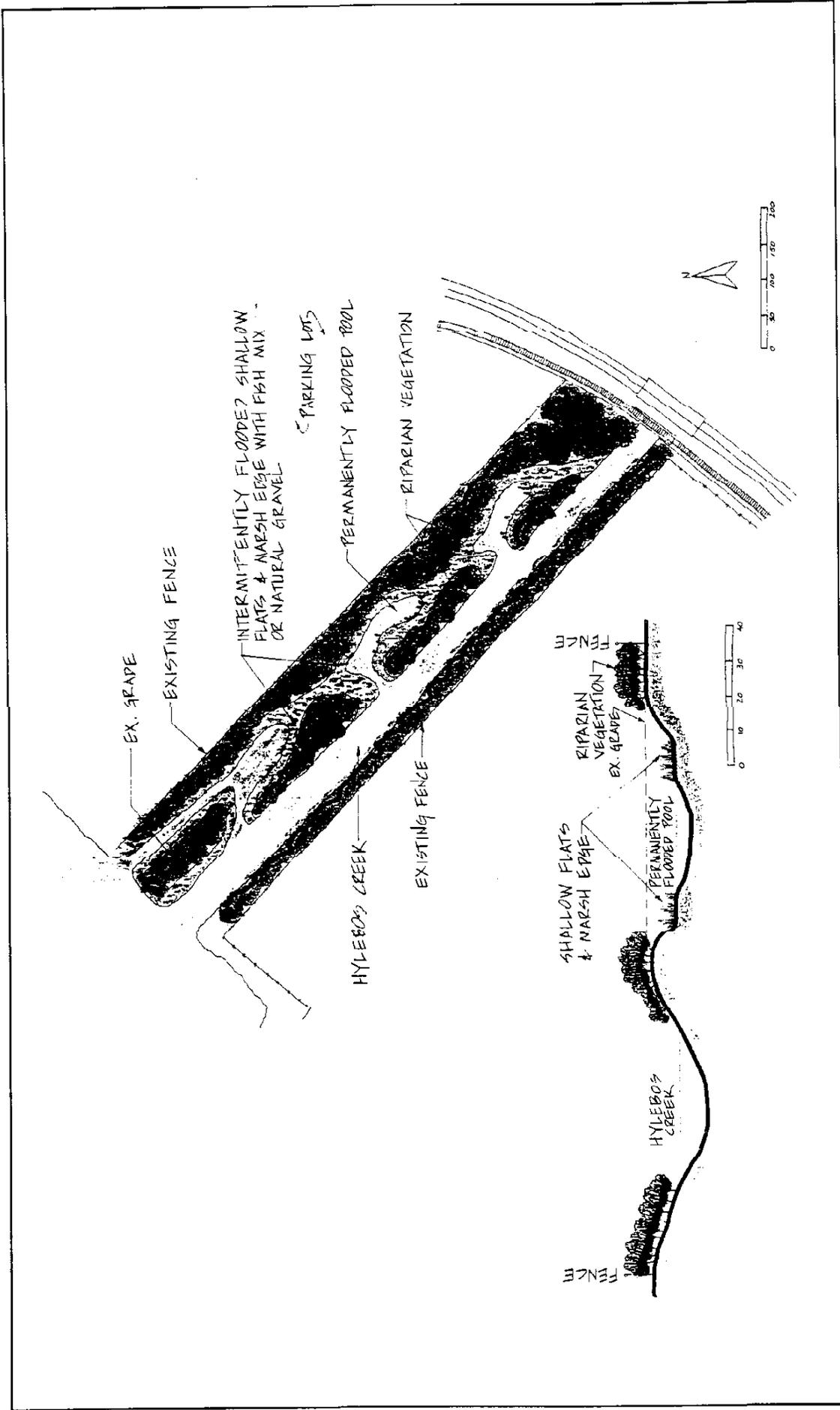
WASSER/WINTER SITE: ALTERNATIVE 1
WASSER/WINTER AND NURSERY SITES ENVIRONMENTAL ASSESSEMENT
COMMENCEMENT BAY, WASHINGTON

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FIGURE 2





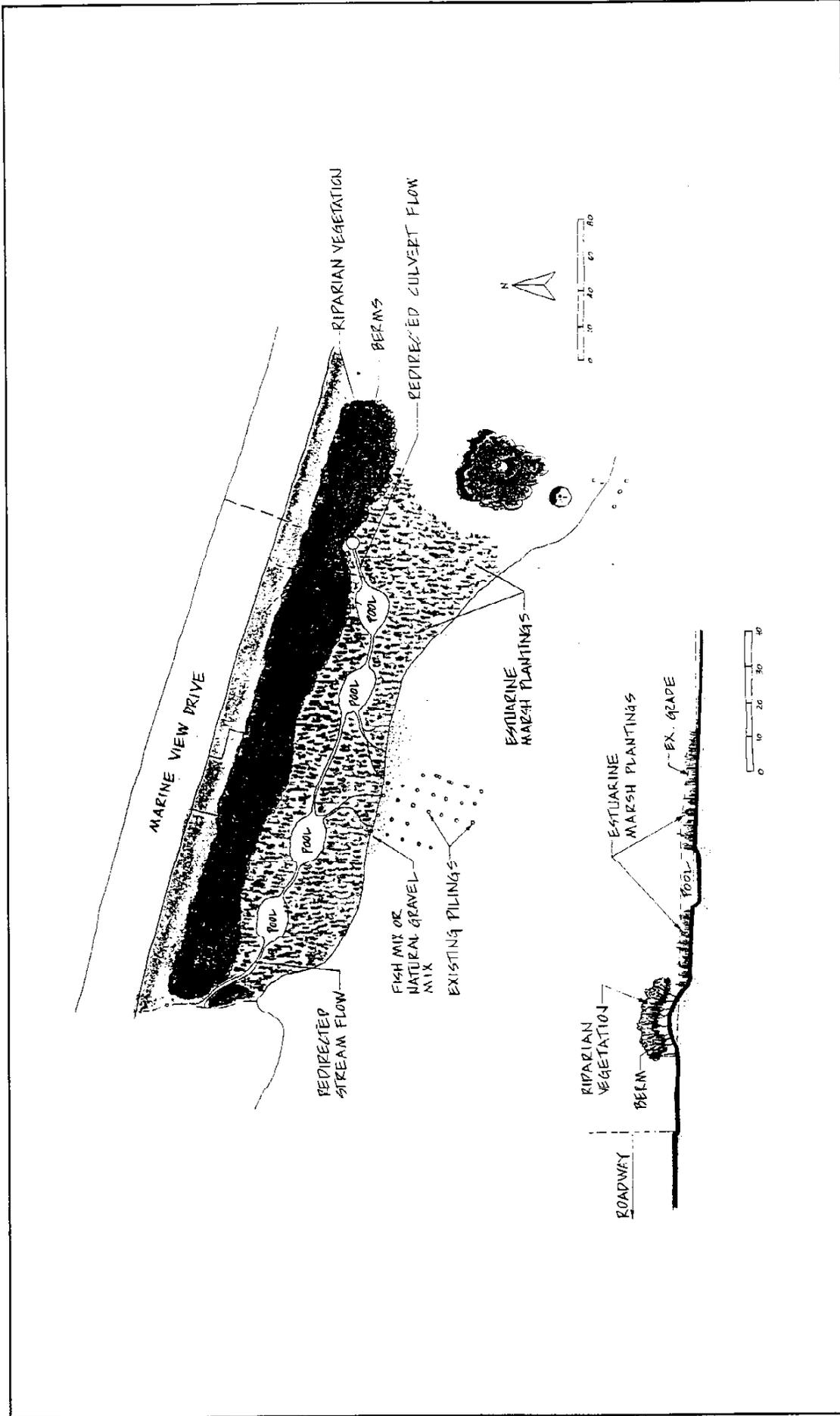
SOURCE: Osborn Pacific Group, Inc, 1999.

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WASSER/WINTER SITE: ALTERNATIVE 2
WASSER/WINTER AND NURSERY SITES ENVIRONMENTAL ASSESSEMENT
COMMENCEMENT BAY, WASHINGTON

FIGURE 3





SOURCE: Osborn Pacific Group, Inc, 1999.

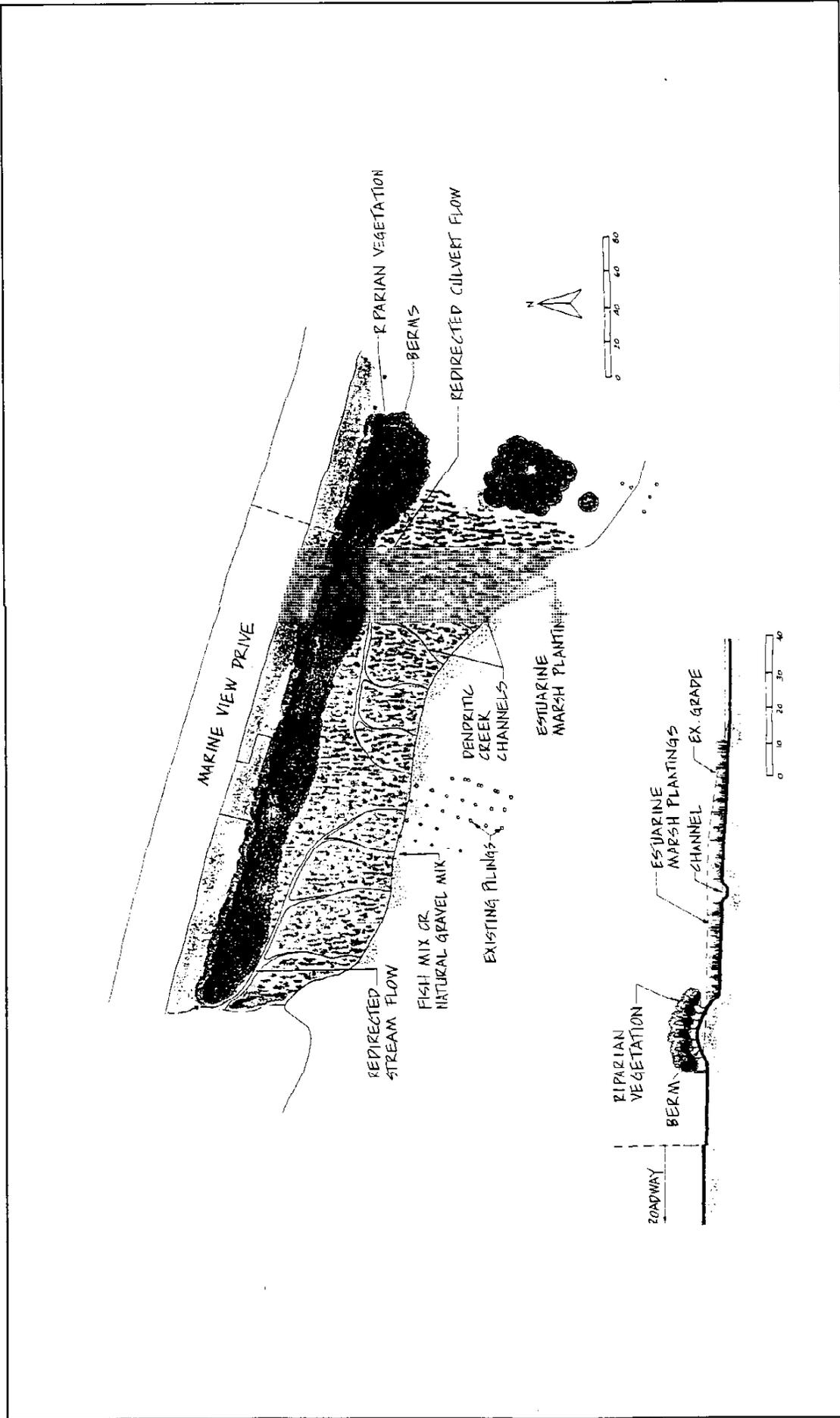
NURSERY SITE ALTERNATIVE 1
WASSER/WINTER AND NURSERY SITES ENVIRONMENTAL ASSESSEMENT
COMMENCEMENT BAY, WASHINGTON

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FIGURE 4





SOURCE: Osborn Pacific Group, Inc., 1999



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NURSERY SITE: ALTERNATIVE 2 WASSER/WINTER AND NURSERY SITES ENVIRONMENTAL ASSESSEMENT COMMENCEMENT BAY, WASHINGTON

FIGURE 5



**Table 1. Comparative Evaluation of Action Alternatives Carried Forward
Wasser/Winter and Nursery Sites**

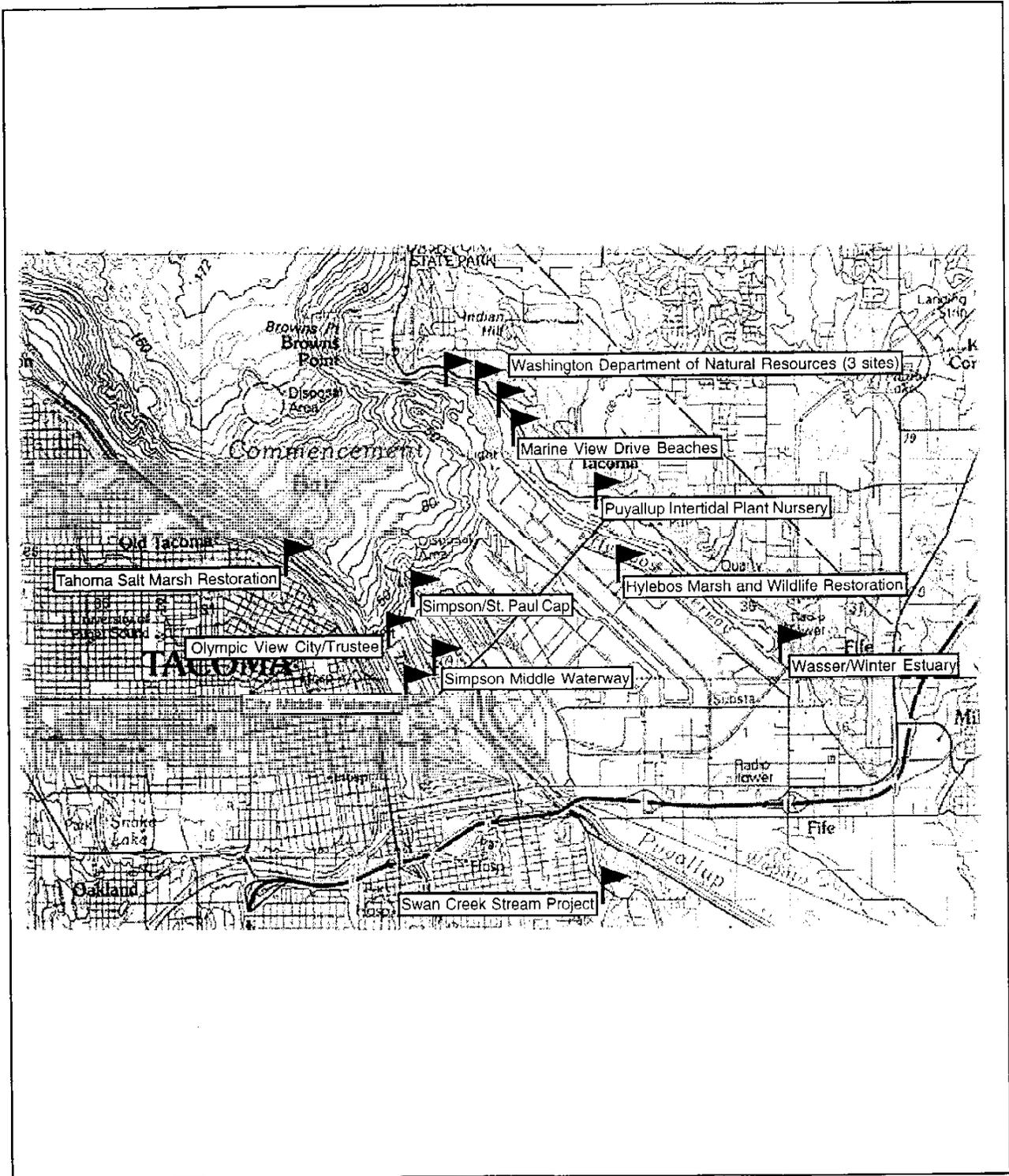
ALTERNATIVES				
	Wasser/Winter Site		Nursery Site	
	Alternative 1	Alternative 2 (Preferred)	Alternative 1	Alternative 2 (Preferred)
<p>Fish Habitat</p> <ul style="list-style-type: none"> • Amount of habitat created • Habitat Diversity • Habitat Connectivity • Impacts to Existing Habitat 	<p>This alternative would create approximately 2 acres of off-channel habitat for fish. The shallow channels would provide connectivity for fish passage and would increase habitat diversity compared with existing conditions.</p> <p>The existing limited habitat in Hylebos Creek would not be impacted.</p>	<p>Three backwater pools would be created, providing resting areas for juvenile salmon. Approximately 2.3 acres of pool and intertidal habitat would be created.</p> <p>Backwater pools would be connected to Hylebos Creek and the Hylebos Waterway. Project is in close proximity to a WSDOT habitat mitigation project.</p>	<p>Alternative does not directly create fish habitat. It would enhance fish habitat by expanding salt marsh vegetation in about 0.66 acres. Vegetation would provide habitat for invertebrates and generate organic detritus that is a food source for salmonids.</p> <p>Habitat connectivity increased by creating a salt marsh adjacent to largest mud flats in Commencement Bay.</p>	<p>No new habitat created. Existing poor quality and spatially limited habitat would remain.</p> <p>Alternative would have similar indirect benefits as Alternative 1. The amount of food available for salmonids is expected to be slightly greater than for Alternative 1 because salt marsh vegetation would be maximized at the restoration site.</p>
	No Action	No Action	No Action	No Action

Key Issues	ALTERNATIVES					
	Wasser/Winter Site	Nursery Site	Alternative 1	Alternative 2		
<p>Wildlife Habitat</p> <ul style="list-style-type: none"> • Amount of habitat created • Habitat Diversity • Habitat Connectivity • Impacts to Existing Habitat 	<p>Alternative 1</p> <p>Waterfowl and small mammals would be displaced during construction. Measures would be taken to prevent grazing while the salt marsh is establishing.</p> <p>In the long-term, there would be less upland area for waterfowl nesting but the new vegetation would provide feeding opportunities.</p>	<p>Alternative 2 (Preferred)</p> <p>The impacts on wildlife are expected to be similar to Alternative 1.</p> <p>There would be more open-water habitat for birds compared to Alternative 1.</p>	<p>No Action</p> <p>The upland habitat that is currently providing nesting and resting opportunities for Canadian Geese would remain.</p>	<p>Alternative 1</p> <p>Waterfowl and small mammals would be displaced during construction. Measures would be taken to prevent grazing while the salt marsh is establishing.</p> <p>The freshwater pools would provide habitat for small mammals and birds.</p> <p>In the long-term, the new vegetation would provide feeding opportunities for waterfowl.</p>	<p>Alternative 2 (Preferred)</p> <p>The impacts on wildlife are expected to be similar to Alternative 1.</p> <p>The fresh water pool habitat would not exist under this alternative but more salt marsh vegetation would be created instead.</p>	<p>No Action</p> <p>The existing poor quality upland habitat would remain. There is some existing intertidal habitat that would remain under the no action alternative.</p>

ALTERNATIVES				
Key Issues	Wasser/Winter Site			Nursery Site
	Alternative 1	Alternative 2 (Preferred)	No Action	Alternative 1
<p>Water Quality</p> <ul style="list-style-type: none"> • Turbidity • Temperature 	<p>There would be short-term negative impacts from increased turbidity during construction. The new intertidal vegetation would help filter silt, lowering turbidity in the long-term. Because of the steep channel slopes required under this alternative, there is a potential for periodic bank failure that would increase turbidity.</p>	<p>The short- and long-term impacts would be similar to Alternative 1 except that the risk of bank failure is anticipated to be lower. Riparian vegetation would shade the pools and help maintain adequate temperatures.</p>	<p>The existing banks of the Hylebos Creek periodically fail, increasing the turbidity of the water. The existing vegetation provides little shade.</p>	<p>Alternative 1 There would be short-term negative impacts on turbidity during construction. This alternative would not impact water quality in the long-term.</p>
				<p>Alternative 2 (Preferred) There would be short-term negative impacts on turbidity during construction. This alternative would not impact water quality in the long-term.</p>
				<p>No Action There are no adverse water quality impacts associated with the no action alternative.</p>

ALTERNATIVES					
Key Issues	Wasser/Winter Site			Nursery Site	
	Alternative 1	Alternative 2 (Preferred)	No Action	Alternative 1	Alternative 2 (Preferred)
Threatened and Endangered Species (chinook salmon, bald eagle)	The impacts described under fish habitat apply to the Chinook salmon. The alternative would not impact bald eagle.	The impacts described under fish habitat apply to the Chinook salmon. The alternative would not impact bald eagle.	The impacts described under fish habitat apply to the Chinook salmon. The no action alternative would not impact bald eagle.	The impacts described under fish habitat apply to the Chinook salmon. The alternative would not impact bald eagle.	The impacts described under fish habitat apply to the Chinook salmon. The alternative would not impact bald eagle.
Public Access	Public access is currently not provided. Access would be increased for monitoring and stewardship purposes.	Similar to Alternative 1.	Public access is currently not provided. Port-owned property. No public stewardship or monitoring opportunities would be provided.	Public access is currently limited. Access would be increased for monitoring and stewardship purposes.	Similar to Alternative 1.
				Public access is currently limited. No public stewardship or monitoring opportunities would be provided.	Public access is currently limited. No public stewardship or monitoring opportunities would be provided.

ALTERNATIVES						
Significant Issues	Wasser/Winter Site			Nursery Site		
	Alternative 1	Alternative 2 (Preferred)	No Action	Alternative 1	Alternative 2 (Preferred)	
Cultural Resources	No known cultural resources on site. Village and fishing weir were located in project area. Site has been previously disturbed and covered with fill.	Impacts similar to Alternative 1. Slightly greater amounts of excavation could increase potential for disturbance to cultural resources.	No soil disturbance would occur. No potential for disturbance to cultural resources.	No known cultural resources on site. Village and fishing weir were located in project area.	No known cultural resources on site. Village and fishing weir were located in project area.	No Action No soil disturbance would occur. No potential for disturbance to cultural resources.
Off-Site Impacts from Soil Disposal	No contaminated soil identified or site during recent soil investigations. No off-site impacts would occur.		No soil disturbance would occur.	No known contaminated soil on site.	No known contaminated soil on site.	No soil disturbance would occur.



SOURCE: Printed from TOPO! © 1998 Wildflower Productions.


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Created by: ACT
 Last edited on: 10/15/99

COMMENCEMENT BAY NRDA
RESTORATION PROJECTS
 WASSER/WINTER AND NURSERY SITES
 ENVIRONMENTAL ASSESSMENT
COMMENCEMENT BAY, WASHINGTON

FIGURE 6

ADOLFSON

APPENDIX A

SEPA COMPLIANCE

The following table serves as a guide to the EA for the purposes of SEPA compliance. WAC 197-11-630 permits SEPA lead agencies to adopt NEPA documents for the purpose of complying with SEPA. Elements of the environment addressed by a SEPA checklist are listed on the right hand side of the table. The corresponding section of this EA that addresses each SEPA section is listed on the left.

SEPA Checklist Environmental Element	Corresponding EA Section
Earth	4.17
Air	4.2
Water	4.19
Plants	4.13
Animals	4.9
Energy and Natural Resources	4.8
Environmental Health	4.12 and 4.17
Land and Shoreline Use	4.11
Housing	4.11
Aesthetics	4.1
Light and Glare	4.1
Recreation	4.16
Historic and Cultural Preservation	4.10
Transportation	4.18
Public Services	4.15
Utilities	4.15

**APPENDIX B:
RESTORATION PLANT LIST**

Plant List for Commencement Bay Restoration Sites

ELEVATION

		ELEVATION		
		LOW	HIGH	
SALINITY	HIGH	MARINE	<i>Salicornia virginica</i> <i>Zostera marina</i> <i>Zostera japonica</i>	<i>Elymus mollis*</i> <i>Frageria chiloensis</i>
	ESTUARINE	<i>Atriplex patula</i> <i>Cuscuta salina</i> <i>Distichlis spicata</i> <i>Jaumea carnosa</i> <i>Lilaeopsis occidentalis</i> <i>Plantago maritima</i> <i>Salicornia virginica</i> <i>Triglochin maritimum</i>	<i>Aster subspicatus</i> <i>Atriplex patula</i> <i>Carex lyngbyei</i> <i>Cuscuta salina</i> <i>Deschampsia caespitosa</i> <i>Distichlis spicata</i> <i>Glaux maritima</i> <i>Grindelia integrifolia</i> <i>Hordeum brachyantherum</i> <i>Jaumea carnosa</i> <i>Juncus balticus</i> <i>Orthocarpus castillejoideus</i> <i>Plantago maritima</i> <i>Potentilla pacifica</i> <i>Scirpus acutus</i> <i>Scirpus maritimus</i> <i>Trifolium wormskjoldii</i>	
	BRACKISH	<i>Carex lyngbyei</i> <i>Lilaeopsis occidentalis</i> <i>Scirpus americanus</i> <i>Triglochin maritimum</i>	<i>Eleocharis palustris</i> <i>Juncus balticus</i> <i>Scirpus americanus</i> <i>Scirpus maritimus</i> <i>Trifolium wormskjoldii</i>	
	TIDAL FRESH	<i>Bidens cernua</i> <i>Carex obnupta</i>	<i>Agrostis alba</i> <i>Carex obnupta</i> <i>Physocarpus capitatus</i> <i>Rosa nutkana</i> <i>Scirpus acutus</i> <i>Typha latifolia</i>	

*Should not be widely planted.

Latin and Common Names for Commencement Bay Plant List

Latin Name	Common Name
<i>Agrostis alba</i>	Creeping bentgrass
<i>Aster subspicatus</i>	Douglas aster
<i>Atriplex patula</i>	Saltweed, orache, fat hen
<i>Bidens cernua</i>	Nodding beggar-tick
<i>Carex lyngbyei</i>	Lyngby's sedge
<i>Carex obnupta</i>	Slough sedge
<i>Cuscuta salina</i>	Saltmarsh dodder
<i>Deschampsia cespitosa</i>	Tufted hairgrass
<i>Distichlis spicata</i>	Seashore saltgrass
<i>Eleocharis palustris</i>	Creeping spikerush
<i>Elymus mollis</i>	American beachgrass
<i>Frageria chiloensis</i>	Beach strawberry
<i>Glaux maritima</i>	Sea milk-wort
<i>Grindelia integrifolia</i>	Fuget-Sound gumweed
<i>Hordeum brachyantherum</i>	Meadow barley
<i>Jaumea carnosa</i>	Fleshy jaumea
<i>Juncus balticus</i>	Baltic rush
<i>Lilaeopsis occidentalis</i>	Western lilaeopsis
<i>Orthocarpus castillejoides</i>	Paintbrush owl-clover
<i>Physocarpus capitatus</i>	Pacific ninebark
<i>Plantago maritima</i>	Seaside plantain
<i>Potentilla pacifica</i>	Pacific silverweed
<i>Rosa nutkana</i>	Nootka rose
<i>Salicornia virginica</i>	Pickleweed
<i>Scirpus acutus</i>	Hardstem bulrush
<i>Scirpus americanus</i>	Three-square bulrush
<i>Scirpus maritimus</i>	Seacoast bulrush
<i>Trifolium wormskjoldu</i>	Springbank clover
<i>Triglochin maritima</i>	Seaside arrowgrass
<i>Typha latifolia</i>	Common cattail
<i>Zostera japonica</i>	Eelgrass, Grass-Wrack
<i>Zostera marina</i>	Dwarf Eelgrass, Narrow-Bladed Eelgrass

APPENDIX C
ESA/EFH CONSULTATION LETTERS

MEMORANDUM FOR: Craig Johnson

JAN 10 2000

FROM: Russell Bellmer

Russell Bellmer

SUBJECT: Informal ESA Section 7 consultation and Concurrence with a Determination of Not Likely to Adversely Affect Listed Species for the Proposed Wasser/Winter and Nursery Site Restoration Projects.

Wasser/Winter Proposed Project Site. The Wasser/Winter site is located in the City of Tacoma between Marine View Drive and the upper turning basin of the Hylebos Waterway, on land owned by the Port of Tacoma. The site is adjacent to the tidally influenced, channelized, lower reach of Hylebos Creek where the creek drains into the Hylebos Waterway. Upland areas of the project site encompass a flat area vegetated with grasses and shrubs. The site itself extends northeast from the centerline of the creek to a fence that borders an asphalt cap/parking area, and seaward to the pierhead line in the turning basin. A log storage yard borders the site to the southwest across Hylebos Creek, and State Route (SR) 509 crosses Hylebos Creek immediately southeast of the site. The site dimensions are approximately 1,000 by 100 feet, totaling about 2.3 acres. Soils are characterized as sandy/silt dredge fill overlying pre-development tideflats.

Upstream of the SR-509 bridge is a two-acre Washington State Department of Transportation (WSDOT) compensatory mitigation site comprised of constructed intertidal marsh surrounded by riparian vegetation (WSDOT, 1994). Further upstream of the WSDOT site, Hylebos Creek contains riparian and riverine habitat for a variety of migratory and resident fish, birds, and small mammals.

Historically, Hylebos Creek has been a prolific salmon-spawning stream (King County and Federal Way, 1990). Salmon runs have declined in part due to urbanization of spawning areas. As of 1990, the watershed was approximately 50 percent developed, which has increased peak flows, degraded the riparian zone, and adversely affected water quality (King County and Federal Way, 1990). Localized areas of suitable spawning habitat exist, however, particularly on the West Branch of Hylebos Creek. In the 1970's and 1980's the Puyallup Tribe stocked Hylebos Creek with chinook, chum and coho (Ladley, personal communication, 1999). Although these

programs have been discontinued, vestigial populations enter the creek annually to spawn. The near-shore area and Hylebos Waterway are used extensively as rearing and feeding habitat by numerous marine species, and as a migratory pathway for salmonids.

Proposed Project Site. At the project site, Hylebos Creek is a straight channel with steep banks, and is tidally influenced. At low tide [below +1 feet above mean lower low water (MLLW)], freshwater flows in a pool and riffle configuration in the channel. Typically, however, the tide is high enough to give this portion of Hylebos Creek the appearance of a tidal slough (Figure 2).

The substrate of Hylebos Creek in the project reach is primarily soft mud with minor components of gravel and larger cobbles. The overlying mud/silt substrate was removed at several points and the underlying materials examined. This qualitative examination revealed apparent anaerobic conditions and no benthic (bottom-dwelling) or epibenthic organisms. There are no barriers to upstream fish migration at the project site. Log rafting activity in the Hylebos Creek proximity may disturb salmon migration.

Proposed Nursery Project Site. The Nursery site is located waterward of Marine View Drive near the Hylebos Waterway west end, on property held in Trust for the Puyallup Tribe. The site is approximately 360 by 80 feet, or 0.66 acres. The upland portion of the site was constructed from a gravelly sand fill material and slopes gently toward the south. Upland vegetation consists of trees, blackberry bushes, and grasses. A strip of intertidal marsh vegetation approximately three to four feet wide is located near the mean higher high water (MHHW) line. Low-gradient mudflats that provide habitat for benthic (bottom-dwelling) organisms of particular importance to shorebirds and juvenile salmonids are located below MHHW. The site contains several pilings, logs, and riprap indicative of previous log storage activities in the area.

The project site vicinity includes narrow intertidal and subtidal margins broken by commercial marinas and log storage areas. To the north, and across Marine View Drive, is a woody, steep sloped area. East and west of the site are additional intertidal and mudflats that have been designated as natural resource conservancy areas by the Puyallup Tribe. The project site is situated in a portion of Commencement Bay containing the largest area of undisturbed mudflats, and is an important migratory route for salmonids, waterfowl, and shorebirds.

Preferred Restoration Alternatives. The projects are to restore and enhance estuarine habitat, maximize residence time for juvenile salmonids and provide landscape connectivity with the WSDOT mitigation site immediately upstream. A salt marsh will be planted at an elevation near MHHW on gently sloping surfaces and will be similar in height to the historical tideflats to the extent feasible.

Wasser/Winter Preferred Alternative. The Wasser/Winter site will provide approximately 2.3 acres of intertidal habitat by removing 17,700 cubic yards (cy) of existing fill material, to create permanently flooded backwater pools and intertidal salt marshes. Proposed work consist of the following:

- Installation of a silt fence and bale dikes on or near the project boundary;

- Removal of 17,700 cy of existing fill;

- Grading the excavated surface to construct backwater pools;

- (Backwater pools will not be exposed to tidal inundation until just before project completion. Fill removal below MHHW will likely require dewatering to allow equipment access)

- Placing a growth media (top soil) to encourage plant growth, and

- Revegetating with native salt marsh and riparian plants and installing several pieces of large woody debris. Approximately 1.5 acres of the site will be graded and/or excavated to restore the habitat.

Heavy equipment used for construction will probably include backhoes, front-end loaders, bulldozers, and dump trucks. No pilings will be installed as part of the project. Neither drilling equipment nor blasting will be used during the project.

Nursery Site Preferred Alternative. The project goal is to create intertidal salt marsh habitat to replace the industrially filled upland areas. Approximately 0.66 acres of intertidal habitat will be restored by grading an area north of the existing vegetation line and by replanting an intertidal vegetation community (Figure 4). Runoff from the hillside on the north side of Marine View Drive will be intercepted and routed through the project site in a dendritic channel pattern. Topsoil will be placed in excavated areas to encourage plant growth. A berm will be constructed next to Marine View Drive and planted with riparian plants to discourage trespassers from entering the site. Proposed work consist of the following:

Installation of a silt fence and straw bale dikes on or near the project boundary;

Removal of 2,000 cy of fill from the existing upland areas;

Demolition of a portion of the stormwater system where it discharges to the mudflats;

Construction of small channels to redirect the stormwater through the site in dendritic channels;

Placing topsoil to support growth of intertidal and riparian vegetation; and

Replanting with native salt marsh and riparian plants. Approximately 0.66 acres will be graded and/or excavated to restore the habitat.

Heavy equipment used for construction will probably include backhoes, front-end loaders, bulldozers, and dump trucks. No pilings will be installed as part of the project. Neither drilling equipment nor blasting will be used during the project.

Timing/Chronology Of Specific Construction Actions A three-month window is anticipated for all construction at both the Wasser/Winter and Nursery sites, which is expected to include no more than 45 days of actual construction. The timing for in water work will be determined by the Hydraulic Project Approval (HPA) issued by the Washington Department of Fish and Wildlife (WDFW). The expected in-water work window for this project will be between June 15 and August 31 when low tides occur during daylight hours and the most opportunity exists to minimize in-water work. This timing is also consistent with the in-water construction season for Commencement Bay (June 15 through the winter to March 14).

Affected Species. Five species provided protection under the ESA are cited as possibly present in the vicinity of Commencement Bay: humpback whale (*Megaptera novaengliae*), leatherback sea turtle (*Dermochelys coriacea*), Steller sea lion (*Eumetopias jubatus*), bald eagle (*Haliaeetus leucocephalus*), and Puget Sound Evolutionarily Significant Unit (ESU) chinook salmon (*Oncorhynchus tshawytscha*). Additionally, the Puget Sound coastal bull trout (*Salvelinus confluentus*), and Puget Sound/Straight of Georgia ESU coho salmon, proposed and candidate species, respectively, under ESA provisions may occasionally be present in the proposed project area. Humpback whales, leatherback sea turtles and Steller sea lions do not inhabit the proposed projects vicinities, and will not be effected from the proposed

project.

Determinations of Effect. In-water construction schedules are based on times of the year when few salmon, if any, will be in the proposed project area. The construction will observe seasonal conditions established by the Washington Department of Fish and Wildlife in their Hydraulic Project Approval and supported by the National Marine Fisheries Service to avoid impacts. Therefore, potential short-term minor temporary impacts of turbidity, excavation releases, noise, and emissions from construction vehicles, if they occur, will not coincide with the presence of Coho (Candidate) and Chinook salmon at these sites. The proposed projects are not likely to adversely affect any endangered or threatened or candidate species or their habitats due to the methods and timing of all activities. These include the following measures.

Construction shall only occur within the work-window (Mid June to end of August) specified for the project and in the dry to the maximum extent possible. This will limit the sedimentation in the Hylebos Waterway to summer months, after the peak smolt migration, and before spawning, and intragravel development periods for chinook and coho in the fall.

The Temporary Erosion and Sedimentation Control Plan (TESCP) shall be implemented as shown in the contract documents and construction drawings. The TESCP shall be implemented before the start of any ground disturbing activities. The TESCP shall be based on the proponents current Best Management Practices and include measures such as silt fences, straw bale dikes, and dewatering to allow excavation to proceed in unsaturated conditions.

A responsible party shall inspect the site during construction to verify that the contractor is effectively implementing the TESCP. Work procedures that are out of compliance shall be terminated and an acceptable solution developed before work is allowed to continue.

No hazardous materials or toxic materials shall be transferred or stored within 50 feet of the MHHW of Hylebos Creek or Hylebos Waterway.

No equipment shall be refueled or maintained within 50 feet of the MHHW of Hylebos Creek or Hylebos Waterway. Equipment shall be serviced or maintained in designated areas where stormwater runoff can be prevented

from directly entering the water.

An emergency spill kit shall be stored at each work site and construction crews trained in their proper use.

All crewmembers and all onsite personnel shall be informed of any and all environmental precautions. These precautions shall include: clearly marking the work area, clearly marked clearing limits, specifically identifying riparian vegetation to be removed, and all applicable laws and permit conditions.

MEMORANDUM FOR THE RECORD

FROM: Russell Bellmer *Russell Bellmer*

JAN 1 2000

SUBJECT: EFH Concurrence with a Determination of no Adverse Affect for the Proposed Wasser/Winter and Nursery Site Restoration Projects in Tacoma, WA.

Wasser/Winter Proposed Project Site. The Wasser/Winter site is located in the City of Tacoma between Marine View Drive and the upper turning basin of the Hylebos Waterway, on land owned by the Port of Tacoma, WA. The site is adjacent to the tidally influenced, channelized, lower reach of Hylebos Creek where the creek drains into the Hylebos Waterway. Upland areas of the project site encompass a flat area vegetated with grasses and shrubs. The site itself extends northeast from the centerline of the creek to a fence that borders an asphalt cap/parking area, and seaward to the pierhead line in the turning basin. A log storage yard borders the site to the southwest across Hylebos Creek, and State Route (SR) 509 crosses Hylebos Creek immediately southeast of the site. The site dimensions are approximately 1,000 by 100 feet, totaling about 2.3 acres. Soils are characterized as sandy/silt dredge fill overlying pre-development tideflats.

Upstream of the SR-509 bridge is a two-acre Washington State Department of Transportation (WSDOT) compensatory mitigation site comprised of constructed intertidal marsh surrounded by riparian vegetation (WSDOT, 1994). Further upstream of the WSDOT site, Hylebos Creek contains riparian and riverine habitat for a variety of migratory and resident fish, birds, and small mammals.

Historically, Hylebos Creek has been a prolific salmon-spawning stream (King County and Federal Way, 1990) for chinook, chum, and coho. Salmon runs have declined in part due to urbanization of spawning areas. As of 1990, the watershed was approximately 50 percent developed, which has increased peak flows, degraded the riparian zone, and adversely affected water quality (King County and Federal Way, 1990). Localized areas of suitable spawning habitat exist, however, particularly on the West Branch of Hylebos Creek. In the 1970's and 1980's the Puyallup Tribe stocked Hylebos Creek with chinook, chum and coho (Ladley, personal communication, 1999). Although

these programs have been discontinued, vestigial populations enter the creek annually to spawn. The near-shore area and Hylebos Waterway are used extensively as rearing and feeding habitat by numerous marine species, and as a migratory pathway for salmonids.

Proposed Project Site. At the project site, Hylebos Creek is a straight channel with steep banks, and is tidally influenced. At low tide [below +1 feet above mean lower low water (MLLW)], freshwater flows in a pool and riffle configuration in the channel. Typically, however, the tide is high enough to give this portion of Hylebos Creek the appearance of a tidal slough.

The substrate of Hylebos Creek in the project reach is primarily soft mud with minor components of gravel and larger cobbles. The overlying mud/silt substrate was removed at several points and the underlying materials examined. This qualitative examination revealed apparent anaerobic conditions and no benthic (bottom-dwelling) or epibenthic organisms. There are no barriers to upstream fish migration at the project site. Log rafting activity in the Hylebos Creek proximity may disturb salmon migration.

Proposed Nursery Project Site. The Nursery site is located waterward of Marine View Drive near the Hylebos Waterway west end, on property held in Trust for the Puyallup Tribe. The site is approximately 360 by 80 feet, or 0.66 acres. The upland portion of the site was constructed from a gravelly sand fill material and slopes gently toward the south. Upland vegetation consists of trees, blackberry bushes, and grasses. A strip of intertidal marsh vegetation approximately three to four feet wide is located near the mean higher high water (MHHW) line. Low-gradient mudflats that provide habitat for benthic (bottom-dwelling) organisms of particular importance to shorebirds and juvenile salmonids are located below MHHW. The site contains several pilings, logs, and riprap indicative of previous log storage activities in the area.

The project vicinity includes narrow intertidal and subtidal margins broken by commercial marinas and log storage areas. To the north, and across Marine View Drive, is a woody, steep sloped area. East and west of the site are additional intertidal and mudflats that have been designated as natural resource conservancy areas by the Puyallup Tribe. The project site is situated in a portion of Commencement Bay containing the largest area of undisturbed mudflats, and is an important migratory route for salmonids, waterfowl, and shorebirds.

Preferred Restoration Alternatives. The projects are to restore and enhance estuarine habitat, maximize residence time for juvenile salmonids and provide landscape connectivity with the WSDOT mitigation site immediately upstream. A salt marsh will be planted at an elevation near MHHW on gently sloping surfaces and will be similar in height to the historical tideflats to the extent feasible.

Wasser/Winter Preferred Alternative. The Wasser/Winter site will provide approximately 2.3 acres of intertidal habitat by removing 17,700 cubic yards (cy) of existing fill material, to create permanently flooded backwater pools and intertidal salt marshes. Proposed work consist of the following:

- Installation of a silt fence and bale dikes on or near the project boundary;•

- Removal of 17,700 cy of existing fill;

- Grading the excavated surface to construct backwater pools;

- (Backwater pools will not be exposed to tidal inundation until just before project completion. Fill removal below MHHW will likely require dewatering to allow equipment access)

- Placing a growth media (top soil) to encourage plant growth, and

- Revegetating with native salt marsh and riparian plants and installing several pieces of large woody debris. Approximately 1.5 acres of the site will be graded and/or excavated to restore the habitat.

Heavy equipment used for construction will probably include backhoes, front-end loaders, bulldozers, and dump trucks. No pilings will be installed as part of the project. Neither drilling equipment nor blasting will be used during the project.

Nursery Site Preferred Alternative. The project goal is to create intertidal salt marsh habitat to replace the industrially filled upland areas. Approximately 0.66 acres of intertidal habitat will be restored by grading an area north of the existing vegetation line and by replanting an intertidal vegetation community (Figure 4). Runoff from the hillside on the north side of Marine View Drive will be intercepted and routed through the project site in a dendritic channel pattern. Topsoil will be placed in excavated areas to encourage plant growth. A berm will be constructed next to Marine View Drive and planted with riparian plants to discourage trespassers from entering the site. Proposed work consist of the following:

Installation of a silt fence and straw bale dikes on or near the project boundary;
Removal of 2,000 cy of fill from the existing upland areas;
Demolition of a portion of the stormwater system where it discharges to the mudflats;
Construction of small channels to redirect the stormwater through the site in dendritic channels;
Placing topsoil to support growth of intertidal and riparian vegetation;
and
Replanting with native salt marsh and riparian plants. Approximately 0.66 acres will be graded and/or excavated to restore the habitat.

Heavy equipment used for construction will probably include backhoes, front-end loaders, bulldozers, and dump trucks. No pilings will be installed as part of the project. Neither drilling equipment nor blasting will be used during the project.

Timing/Chronology Of Specific Construction Actions A three-month window is anticipated for all construction at both the Wasser/Winter and Nursery sites, which is expected to include no more than 45 days of actual construction. The timing for in water work will be determined by the Hydraulic Project Approval (HPA) issued by the Washington Department of Fish and Wildlife (WDFW). The expected in-water work window for this project will be between June 15 and August 31 when low tides occur during daylight hours and the most opportunity exists to minimize in-water work. This timing is also consistent with the in-water construction season for Commencement Bay (June 15 through the winter to March 14).

Determinations of Effect. In-water construction schedules are based on times of the year when few salmon, if any, will be in the proposed project area. The construction will observe seasonal conditions established by the Washington Department of Fish and Wildlife in their Hydraulic Project Approval and supported by the National Marine Fisheries Service to avoid impacts. Therefore, potential short-term minor temporary impacts of turbidity, excavation releases, noise, and emissions from construction vehicles, if they occur, will not coincide with the presence of managed species at these sites. The proposed projects will not adversely affect any managed species or EFHs due to the methods and timing of all activities. These include the following measures.

Construction shall only occur within the work-window (Mid June to end of August) specified for the project and in the dry to the maximum extent possible. This will limit the sedimentation in the Hylebos Waterway to summer months, after the peak smolt migration, and before spawning, and intragravel development periods for chinook and coho in the fall.

The Temporary Erosion and Sedimentation Control Plan (TESCP) shall be implemented as shown in the contract documents and construction drawings. The TESCP shall be implemented before the start of any ground disturbing activities. The TESCP shall be based on the proponents current Best Management Practices and include measures such as silt fences, straw bale dikes, and dewatering to allow excavation to proceed in unsaturated conditions.

A responsible party shall inspect the site during construction to verify that the contractor is effectively implementing the TESCP. Work procedures that are out of compliance shall be terminated and an acceptable solution developed before work is allowed to continue.

No hazardous materials or toxic materials shall be transferred or stored within 50 feet of the MHHW of Hylebos Creek or Hylebos Waterway.

No equipment shall be refueled or maintained within 50 feet of the MHHW of Hylebos Creek or Hylebos Waterway. Equipment shall be serviced or maintained in designated areas where stormwater runoff can be prevented from directly entering the water.

An emergency spill kit shall be stored at each work site and construction crews trained in their proper use.

All crewmembers and all onsite personnel shall be informed of any and all environmental precautions. These precautions shall include: clearly marking the work area, clearly marked clearing limits, specifically identifying riparian vegetation to be removed, and all applicable laws and permit conditions.

EFH Determination. The area in which the restoration projects are planned (grading and excavation of fill material, construction backwater pools, revegetating with native salt marsh and riparian plants, installing

several pieces of large woody debris) has been identified as EFH for species managed by the Pacific Fishery Management Council under the Amendment 11 to The Pacific Coast Groundfish Fishery Management Plan (October, 1998).

This Plan identifies twenty-four species and life stages within the estuarine composite EFH. These species include five species of Class Elasmobranchiomorphi and nineteen species of Class Osteichthyes. Eight species of Family Scorpaenidae (rockfish) and four species of Order Pleuronectiformes (flatfish) are identified within the Plan. Environmental conditions (i.e., temperature, salinity, water depth, substrate) greatly reduce the potential for the presence of these species in the project area for even short periods of time during extreme high tides. The species that may occasionally visit the project area include: *Squalus acanthias* (spiny dogfish), *Raja inornata* (California skate), *Pleuronectes vetulus* (English sole), *Errex zachirus* (rex sole), *Citharichthys sordidus* (Pacific sanddab), and *Platichthys stellatus* (starry flounder). The eggs, larval stages, and some juvenile fish may occasionally be present in the area of the activity. However, due to construction activities in the dry or at extreme low tide during periods of the year with minimum fish activities, no adverse impacts will occur to EFH. Therefore, no additional EFH conservation measures have been provided.

If the proposed project plans are substantially revised or if new information becomes available that affects the basis for no adverse effect determination, then EPII consultation will be undertaken.

APPENDIX D
BIOLOGICAL EVALUATION

**COMMENCEMENT BAY, WASHINGTON
WASSER/WINTER AND NURSERY
SITE HABITAT RESTORATION PROJECTS**

BIOLOGICAL ASSESSMENT

**FOR COORDINATION WITH THE
NATIONAL MARINE FISHERIES SERVICE
U.S. FISH AND WILDLIFE SERVICE**

**PREPARED FOR:
COMMENCEMENT BAY NATURAL RESOURCE TRUSTEES**

**PREPARED BY:
ADOLFSON ASSOCIATES, INC.**

EXECUTIVE SUMMARY

In compliance with the Section 7(c) of the Endangered Species Act (ESA), this Biological Assessment (BA) evaluates the potential impacts to listed species resulting from construction and rehabilitation of estuarine wetlands habitat at the Wasser/Winter and Nursery sites in Commencement Bay, Washington. The Commencement Bay Natural Resource Trustees (Trustees) propose to re-create previously lost intertidal habitat on Hylebos Waterway, near Tacoma, for a variety of plants and animals, providing particular benefit for juvenile salmonids. This BA will be used in informal consultation with the Trustees and US Fish and Wildlife Service and the National Marine Fisheries Service.

Project Site Description

The Wasser/Winter and Nursery sites are adjacent to the Hylebos Waterway where the original tidelands have been filled to accommodate industrial activities. Both sites are characterized as highly to moderately disturbed, and do not provide optimum habitat for aquatic or terrestrial species.

Project Description

The projects will provide approximately 2.41 acres of intertidal habitat by removing existing fill material to create permanently flooded backwater pools, salt water marshes and tideflats. Estuarine vegetation will be planted on gently sloping surfaces tied to the same elevation as the historical tideflats.

Affected Species

Five species provided protection under the ESA are cited as possibly present in the vicinity of Hylebos Creek and Hylebos Waterway: humpback whale (*Megaptera novaengliae*), leatherback sea turtle (*Dermochelys coriacea*), Steller sea lion (*Eumetopias jubatus*), bald eagle (*Haliaeetus leucocephalus*), and Puget Sound Evolutionarily Significant Unit (ESU) chinook salmon (*Oncorhynchus tshawytscha*). Additionally, this BA considers potential impacts to Puget Sound coastal bull trout (*Salvelinus confluentus*), and Puget Sound/Straight of Georgia ESU coho salmon, proposed and candidate species, respectively, under ESA provisions.

An analysis of the proposed habitat rehabilitation project, including construction sequences and habitat safeguards, concludes that these projects may affect, but are not likely to adversely affect, Puget Sound ESU chinook, bald eagles, coastal bull trout, and Puget Sound/Straight of Georgia coho salmon.

Humpback whales, leatherback sea turtles and Steller sea lions do not normally inhabit the project vicinity, and will realize no effect from the action.

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1.0 INTRODUCTION

The Commencement Bay Natural Resource Trustees (Trustees) include Federal, State, and Tribal entities responsible for evaluating injury to the Commencement Bay environment, and restoring the environment with damage settlement funds. The Trustees are involved in a Commencement Bay Natural Resource Damage Assessment (CB/NRDA) program in Tacoma, Washington. National Oceanic and Atmospheric Administration (NOAA) serving as the lead agency for the Trustees, contracted with Ridolfi Engineers Inc (Ridolfi) to perform restoration design services.

Adolfson Associates Inc. (Adolfson) prepared this Biological Assessment (BA) under subcontract to Ridolfi, on behalf of the Trustees, for two habitat restoration projects on the Hylebos Waterway: The Wasser/Winter site and the Nursery site (Figure 1)¹. The projects would re-create previously lost intertidal habitat for a variety of plants and animals, providing particular benefit for juvenile salmonids including chinook salmon, which is listed as "threatened" under the Endangered Species Act (ESA). Section 7 of the ESA requires federal agencies to consult with the National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Service (USFWS) if they conduct, authorize, or fund an action that may impact a listed species or designated critical habitat.

1.1 STUDY PURPOSE

This BA was prepared to facilitate coordination between the action agency [U.S. Army Corps of Engineers (COE)], and NMFS and USFWS, jointly referred to as the Services. NMFS regulates federally-listed threatened and endangered marine wildlife and anadromous fish stocks. Threatened and endangered terrestrial wildlife, plants, and inland fish stocks are under the jurisdiction of the USFWS. The purpose of this BA is to determine the need for consultation or conference with the Services by providing information regarding the proposed habitat rehabilitation, site specific information, and a discussion of the effects on federally-listed, proposed, and candidate species

1.2 BACKGROUND INFORMATION

Project Name:	Wasser/Winter and Nursery Site Habitat Restoration Projects, Commencement Bay, Washington
Project Location:	Tacoma, Washington (Pierce County) Sections 26 and 36, Township 21 North, Range 3 East
Project Proponent:	National Oceanic and Atmospheric Administration NOAA Damage Assessment and Restoration Center NW 7600 Sand Point Way NE Seattle, WA 98115
Contact:	Jennifer Steger, NOAA Phone: (206) 526-4363

¹ A third site (Meeker) had been considered previously, but was found unsuitable for restoration due to high wave energy and the likelihood of only marginal habitat improvement. That site is not considered in this BA.

Proposed timing or schedule: Work will begin no earlier than Spring 2000. In-water work will occur no earlier than July 2000. All work will be completed in 45 days or less, inside a three-month period.

Project Engineer: Ridolfi Engineers, Inc.
1411 Fourth Ave., Suite 770
Seattle, Washington 98101

Contact: Colin Wagoner, P.E.
Phone: (206) 682-7294

Preparer: Adolfsen Associates, Inc.
5309 Shilshole Avenue NW, Suite 200
Seattle, Washington 98107

Contact: Dave Wortman/Brian Bigler
Phone: (206) 789-9658

2.0 DESCRIPTION OF THE PROJECT AREA AND HABITAT

This section identifies the project sites and describes current environmental conditions. The two sites are described separately because they are located approximately 2.3 miles apart. Both sites are on the Hylebos Waterway, an industrial waterway created by dredging operations beginning about 100 years ago. Dredging converted the delta of Hylebos Creek and the associated mudflats and salt marshes into a shipping channel. Dredge spoils were used to create upland industrial areas adjacent to the waterway.

2.1 WASSER/WINTER SITE

The Wasser/Winter site is located in the City of Tacoma between Marine View Drive and the upper turning basin of the Hylebos Waterway, on land owned by the Port of Tacoma (Figure 1). The site is adjacent to the tidally influenced, channelized, lower reach of Hylebos Creek where the creek drains into the Hylebos Waterway. Upland areas of the project site encompass a flat area vegetated with grasses and shrubs. The site itself extends northeast from the centerline of the creek to a fence that borders an asphalt cap/parking area, and seaward to the pierhead line in the turning basin. A log storage yard borders the site to the southwest across Hylebos Creek, and State Route (SR) 509 crosses Hylebos Creek immediately southeast of the site. The site dimensions are approximately 1,000 by 100 feet, totaling about 2.3 acres. Soils are characterized as sandy/silt dredge fill overlying pre-development tideflats.

Upstream of the SR-509 bridge is a two-acre Washington State Department of Transportation (WSDOT) compensatory mitigation site comprised of constructed intertidal marsh surrounded by riparian vegetation (WSDOT, 1994). Further upstream of the WSDOT site, Hylebos Creek contains riparian and riverine habitat for a variety of migratory and resident fish, birds, and small mammals.

Historically, Hylebos Creek has been a prolific salmon-spawning stream (King County and Federal Way, 1990). Salmon runs have declined in part due to urbanization of spawning areas. As of 1990, the watershed was approximately 50 percent developed, which has increased peak flows, degraded the riparian zone, and adversely affected water quality (King County and Federal Way, 1990). Localized areas of suitable spawning habitat exist, however, particularly on the West Branch of Hylebos Creek.

In the 1970's and 1980's the Puyallup Tribe stocked Hylebos Creek with chinook, chum and coho (Ladley, personal communication, 1999). Although these programs have been discontinued, vestigial populations enter the creek annually to spawn. The near-shore area and Hylebos Waterway are used extensively as rearing and feeding habitat by numerous marine species, and as a migratory pathway for salmonids.

At the project site, Hylebos Creek is a straight channel with steep banks, and is tidally influenced. At low tide [below +1 feet above mean lower low water (MLLW)], freshwater flows in a pool and riffle configuration in the channel. Typically, however, the tide is high enough to give this portion of Hylebos Creek the appearance of a tidal slough (Figure 2).

The substrate of Hylebos Creek in the project reach is primarily soft mud with minor components of gravel and larger cobbles. The overlying mud/silt substrate was removed at several points and the underlying materials examined. This qualitative examination revealed apparent anaerobic conditions and no benthic (bottom-dwelling) or epibenthic organisms.

There are no barriers to upstream fish migration at the project site. Log rafting activity in the Hylebos Creek proximity may disturb salmon migration.

Water Quality and Quantity in Hylebos Creek

Hylebos Creek is classified by the Washington Department of Ecology (Ecology) as a class A water body. Hylebos Creek streamflow data for the period of May 1995 through May 1999 were obtained from a U. S. Geological Survey (USGS) gauging station approximately 1.8 miles upstream from Hylebos Waterway. The entire Hylebos Creek Watershed drains an area of approximately 18 square miles, 16.8 square miles that are upstream of the USGS gauging station. Streamflow ranged from 3.5 cubic feet per second (cfs) to 367 cfs, averaging 29 cfs for the two-year period.

Quantitative measurements of turbidity are not available for Hylebos Creek near the project site. Qualitative turbidity observations were made during site inspections where Fife Ditch enters Hylebos Creek approximately 300 feet upstream from the project site. At that location, Fife Ditch is noticeably turbid and degrades Hylebos Creek water quality. A joint study by King County and the City of Federal Way found elevated levels of fecal coliform bacteria, phosphorous, nitrogen, suspended solids, copper, lead, mercury, and zinc in samples collected from Hylebos Creek (King County and Federal Way 1990).

2.2 NURSERY SITE

The Nursery site is located waterward of Marine View Drive near the Hylebos Waterway west end, on property held in Trust for the Puyallup Tribe (Figure 1). The site is approximately 360 by 80 feet, or 0.66 acres. The upland portion of the site was constructed from a gravelly sand fill material and slopes gently toward the south. Upland vegetation consists of trees, blackberry bushes, and grasses. A strip of intertidal marsh vegetation approximately three to four feet wide is located near the mean higher high water (MHHW) line. Low-gradient mudflats that provide habitat for benthic (bottom-dwelling) organisms of particular importance to shorebirds and juvenile salmonids are located below MHHW. The site contains several pilings, logs, and riprap indicative of previous log storage activities in the area (Figure 2).

The project site vicinity includes narrow intertidal and subtidal margins broken by commercial marinas and log storage areas. To the north, and across Marine View Drive, is a woody, steep-sloped area. East and west of the site are additional intertidal and mudflats that have been designated as natural resource conservancy areas by the Puyallup Tribe. The project site is situated in a portion of Commencement Bay containing the largest area of undisturbed mudflats, and is an important migratory route for salmonids, waterfowl, and shorebirds.

Water Quality and Quantity at the Nursery Site

Hylebos Waterway is classified by Ecology as a Class B water body. There are no barriers to migrating fish at the Nursery site, and the mudflats drain on a daily basis with the tides.

Surface water enters the Nursery Site through two discrete outfalls. Both outfalls direct stormwater through the project area and discharge into the intertidal mudflats, one directly through a 12-inch concrete pipe, and the other through a 12-inch concrete pipe and into a short, narrow, incised channel flowing into the mudflats. The westernmost outfall discharges runoff from Marine View Drive and the steep, forested slopes north of the site. The eastern outfall discharges runoff from Marine View Drive, runoff from the slopes north of the site, and runoff from paved commercial areas east of the site along East 11th Street.

An analysis of the quantity and quality of water being discharged to the Nursery Site from the two outfalls is currently being conducted by the City of Tacoma (1999). Based on data from the first two sampling events, the estimated rate of flow from the western outfall is 15 gallons per minute (gpm) in May 1999 and 10 gpm in July 1999. The estimated rate of flow from the eastern outfall was 17 gpm in both May and July 1999.

Water quality, including turbidity, tests are not available for the Nursery site, though outfall waters appear clear at low flow conditions.

3.0 DESCRIPTION OF THE PROPOSED ACTIONS

This section reviews the relevant information regarding the habitat rehabilitation projects. Adolfson reviewed ninety-percent complete design drawings to obtain information on project

elements. Additionally, the project proponents and engineer were consulted to provide additional detail as required.

3.1 WASSER/WINTER SITE

The project goal is to restore and enhance estuarine habitat, maximize residence time for juvenile salmonids and provide landscape connectivity with the WSDOT mitigation site immediately upstream. A salt marsh will be planted at an elevation near MHHW on gently sloping surfaces and will be similar in height to the historical tideflats to the extent feasible.

The Wasser/Winter site will provide approximately 2.3 acres of intertidal habitat by removing 17,700 cubic yards (cy) of existing upland fill material, to create permanently flooded backwater pools and intertidal salt marshes (Figure 3). Specific construction techniques for this project will be developed by the contractor; however, based on past experience with these types of projects the work will progress in the following manner:

1. Installation of a silt fence and bale dikes on or near the project boundary;
2. Removal of 17,700 cy of existing upland fill;
3. Grading the excavated surface to construct backwater pools;
(Backwater pools will not be exposed to tidal inundation until just before project completion. Fill removal below MHHW will likely require dewatering to allow equipment access)
4. Placing a growth media (top soil) to encourage plant growth, and
5. Revegetating with native salt marsh and riparian plants and installing several pieces of large woody debris. Approximately 1.5 acres of the site will be graded and/or excavated to restore the habitat.

Heavy equipment used for construction will probably include backhoes, front-end loaders, bulldozers, and dump trucks. No pilings will be installed as part of the project. Neither drilling equipment nor blasting will be used during the project.

3.2 NURSERY SITE

The project goal is to create intertidal salt marsh habitat to replace the industrially filled upland areas. Approximately 0.66 acres of intertidal habitat will be restored by grading an upland area north of the existing vegetation line and by replanting an intertidal vegetation community (Figure 4). Runoff from the hillside on the north side of Marine View Drive will be intercepted and routed through the project site in a dendritic channel pattern. Topsoil will be placed in excavated areas to encourage plant growth. A berm will be constructed next to Marine View Drive and planted with riparian plants to discourage trespassers from entering the site.

Specific construction techniques for this project will be developed by the contractor; however, based on past experience with these types of projects, the project proponents and project engineer anticipate that work will progress in the following manner:

1. Installation of a silt fence and straw bale dikes on or near the project boundary;
2. Removal of 2,000 cy of upland fill from the existing upland areas;
3. Demolition of a portion of the stormwater system where it discharges to the mudflats;

4. Construction of small channels to redirect the stormwater through the site in dendritic channels;
5. Placing topsoil to support growth of intertidal and riparian vegetation; and
6. Replanting with native salt marsh and riparian plants. Approximately 0.66 acres will be graded and/or excavated to restore the habitat.

Heavy equipment used for construction will probably include backhoes, front-end loaders, bulldozers, and dump trucks. No pilings will be installed as part of the project. Neither drilling equipment nor blasting will be used during the project.

3.3 TIMING/CHRONOLOGY OF SPECIFIC CONSTRUCTION ACTIONS

A three-month window is anticipated for all construction at both the Wasser/Winter and Nursery sites, which is expected to include no more than 45 days of actual construction. The timing for in-water work will be determined by the Hydraulic Project Approval (HPA) issued by the Washington Department of Fish and Wildlife (WDFW). The expected in-water work window for this project will be between June 15 and August 31 when low tides occur during daylight hours and the most opportunity exists to minimize in-water work. This timing is also consistent with the in-water construction season for Commencement Bay (June 15 through the winter to March 14).

4.0 STATUS OF THE SPECIES AND CRITICAL HABITAT

Information provided by NMFS (1999a, 1999b) and USFWS (1999) indicates that the project will occur within the general range of the following species:

Common Name	Scientific Name	Regulatory Agency/Status*
Humpback whale	<i>Megaptera novaengliae</i>	NMFS/ Endangered
Leatherback sea turtle	<i>Dermochelys coriacea</i>	NMFS/ Endangered
Steller sea lion	<i>Eumetopias jubatus</i>	NMFS/ Threatened
Bald eagle	<i>Haliaeetus leucocephalus</i>	USFWS/ Threatened
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	NMFS/Threatened
Bull trout	<i>Salvelinus confluentus</i>	USFWS/ Proposed Threatened
Coho salmon	<i>Oncorhynchus kisutch</i>	NMFS/Candidate

There are no records of humpback whales, leatherback sea turtles, or steller sea lions occurring in the Hylebos Waterway.

* See Glossary for category definitions

4.1 HUMPBACK WHALE (*Megaptera novaengliae*)

The most recent documented sighting of humpback whales in Puget Sound occurred in 1999 near Seattle (Calambokidis, personal communication, 1999). Such sightings are rare, however, occurring about every one to two years. The occurrence of humpback whales in Commencement Bay is more rare: about once every three to four years.

Due to the proximity of industrial activity, lack of prey and insufficient water depth, the possibility of humpback whales entering the Hylebos Waterway is effectively zero.

4.2 LEATHERBACK SEA TURTLE (*Dermochelys coriacea*)

Leatherback sea turtles are seen infrequently on the outer coast of the Olympic Peninsula. The closest documented observation to Commencement Bay occurred at Port Angeles, more than 100 miles north (McAllister, personal communication, 1999).

Due to the lack of documented sightings of leatherback sea turtles in southern Puget Sound, the possibility of an encounter in Hylebos Waterway during the proposed habitat restoration projects is effectively zero.

4.3 STELLER SEA LION (*Eumetopias jubatus*)

The Steller sea lion ranges from the Channel Islands of southern California, north to the Bering Sea. There are no regular patterns of occurrence or migration corridors within Puget Sound, but individual animals have been sighted within groups of California sea lions in the Straits of Juan de Fuca and on navigation buoys south of Commencement Bay (Norberg, personal communication, 1999).

There is no habitat suitable to Steller sea lions within the Hylebos Waterway. While the opportunity to feed on salmon migrating through the project area is not zero, the likelihood that Steller sea lions would occur in the project vicinity is discountable.

Based on the low likelihood of occurrence, and the absence of potential impact mechanisms, the habitat rehabilitation projects at the Wasser/Winter and Nursery sites are expected to have no effect on humpback whales, leatherback sea turtles, or Steller sea lions, or their critical habitat. Therefore, these species are not addressed further in this BA.

4.4 PUGET SOUND ESU CHINOOK SALMON (*Oncorhynchus tshawytscha*)

Chinook salmon have a historic range from the Ventura River in California to Point Hope, Alaska in North America, and from Hokkaido, Japan to Anadyr River in Russia. The Puget Sound Evolutionarily Significant Unit (ESU) chinook salmon was listed as a threatened species on March 16, 1999. The ESU includes "all naturally spawned populations of chinook salmon from rivers and streams flowing into Puget Sound including the Straits of Juan De Fuca from the Elwha River, eastward, including rivers and streams flowing into Hood Canal, South Sound, North Sound and the Strait of Georgia in Washington" (NMFS, 1999a).

Spring and fall run chinook spawn in the Puyallup River above river mile (RM) 10.5, and in the White River and its tributaries (WDFW, 1994). Puget Sound ESU Chinook are listed as threatened under the ESA in Washington State, and have been identified as inhabiting the project areas (NMFS, 1999).

Hylebos Creek Salmon

Although chinook salmon do not occur naturally in Hylebos Creek, the Puyallup Tribe has attempted to introduce fall run chinook, and have augmented the creek with chum and coho salmon (Ladley, personal communication, 1999). This program was discontinued in recent years, and no attempt has been made to quantify the vestigial populations. Hylebos Creek salmon migrate through the Hylebos Waterway as both adults and juveniles, though are not afforded specific protection under the ESA.

Impacts to these populations are expected to be minimal as the work window occurs outside the known adult (October - December) and juvenile (spring) migration periods (Ladley, personal communication, 1999).

Critical Habitat

There is no critical habitat designated for Puget Sound ESU Chinook Salmon. Critical habitat is currently proposed by NMFS, though not yet granted specific protection. Proposed critical habitat includes all marine, estuarine and river reaches accessible to chinook salmon in Puget Sound, including Commencement Bay.

Life History

Chinook require varied habitats during different phases of their life cycle. Spawning habitat typically consists of riffles and the tailouts of pools with clean substrates dominated by gravel located in the mainstem of rivers and large tributaries. Adult summer and fall chinook salmon in the Puyallup Basin spawn in freshwater streams in the late summer and fall, and fry emerge in the late winter and early spring. Juvenile chinook rear from three months to two years in the lower mainstem of rivers before entering the estuary and salt marshes. Chinook generally migrate to salt water as smolt in the spring and summer, and thereafter spend from two to four years feeding in the North Pacific Ocean before returning to spawn (WDFW, 1994).

Environmental Baseline

Wasser/Winter Site

The mouth of the Hylebos Creek is tidally influenced and does not provide chinook salmon spawning habitat. Additionally, the substrate in the Hylebos Creek is primarily silt and mud underlain with black-stained substrates that appears anoxic and unsuitable for chinook salmon spawning. There is little cover or other habitat suitable for foraging juvenile chinook salmon.

Nursery Site

There is no habitat in the Nursery Site vicinity considered suitable to adult chinook salmon. The proposed habitat rehabilitation work will occur above MHHW, in habitat where juvenile chinook

salmon would not likely occur. Nevertheless, the many stranded logs and other materials on the mudflats would likely provide cover for feeding and migrating juveniles while the area is inundated by high tide, and the mudflats provide a source of benthic prey.

4.5 COASTAL BULL TROUT (*Salvelinus confluentus*)

The historical distribution of bull trout extends from northern California to Alaska. In Washington, bull trout are found throughout coastal and inland streams and lakes (WDFW, 1998), and are proposed for listing by the USFWS as threatened. Bull trout in the Puyallup Basin are considered coastal bull trout.

Critical Habitat

The USFWS has not established or identified critical habitat for coastal bull trout.

Life History

Bull trout have a complex life history with two primary life history types: a resident form and a migratory form. Bull trout considered migratory may be stream dwelling (fluvial), lake-dwelling (adfluvial), or ocean- or estuarine-dwelling (anadromous) (USFWS, 1998). Individuals of each form may be represented in a single population, though, migratory populations may dominate where migration corridors and subadult rearing habitats are in good condition (USFWS, 1998). Most inland populations of bull trout are either fluvial or adfluvial, migrating from larger rivers and lakes to spawn in smaller tributary streams in August through October (Wydoski and Whitney, 1979). Bull trout spawn in streams with clean gravel substrates and cold (<9°C) water temperatures (USFWS, 1998). Spawn timing is relatively short, occurring from late October through early November. Redds are dug by females in water eight to 24 inches deep, in substrate gravel 0.2 to 2 inches in diameter (Wydoski and Whitney, 1979), and emergence generally occurs in the spring. Bull trout are opportunistic feeders, consuming fish in the water column and insects on the bottom (WDFW, 1998).

Bull trout have been found in the Puyallup River, though in low numbers and only in the upper reaches (above river mile 43). Little is known of this species occurrence in Commencement Bay, though it is conceivable that the anadromous form could migrate through, or rear within, Hylebos Waterway.

Environmental Baseline

Low stream temperatures and clean substrates are essential features of bull trout habitat. This species is most commonly associated with pristine or only slightly disturbed basins (USFWS, 1998), conditions that do not exist in Hylebos Waterway and Hylebos Creek.

4.6 BALD EAGLE (*Haliaeetus leucocephalus*)

The occurrence of bald eagles in Puget Sound and the Tacoma area has been documented since pre-settlement times (Stalmaster, 1987). Eagle populations have decreased within the region because of hunting and the widespread use of DDT, but their numbers have been increasing since the early 1970's. The species is currently under consideration for de-listing.

Critical Habitat

No critical habitat has been established or identified for bald eagles.

Life History

Bald eagles generally perch, roost, and build nests in mature trees near water bodies where they spot prey while soaring or from perches (Ehrlich et al., 1988). Stalmaster (1987) reports that over 50 percent of an eagle's diet comes from fish, 25 percent from other birds, and 15 percent from mammals, although they will also feed on carrion (Stokes and Stokes, 1989).

Bald eagles are both residents in, and migrants through, Pierce County where populations are usually highest in January, as birds that had moved north to feed in late summer return to the region. Bald eagles breed in mid- to late-winter, usually returning to one of several nests located within an established nesting territory (Stalmaster, 1987). As bald eagles are primarily fish eaters, they usually nest within one mile of open water, where their home range can extend up to eight miles. Eggs laid in March or April will hatch within one and a half months, and the young eagles fledge in mid-summer (August).

Environmental Baseline

Hylebos Waterway and Hylebos Creek provide foraging habitat for both nesting and wintering bald eagles, though sightings are uncommon. There are no large trees at the Wasser/ Winter site, though there are several large cottonwood trees in and around the Nursery site (Figure 2). Nonetheless, there are no eagle nest sites, perches or roosts known to occur within one mile of the project (WDFW, 1999). A transient bald eagle may occur within the vicinity of the Hylebos Waterway during project construction, but eagle use in the project area is unlikely due to the high level of ambient industrial-based noise.

4.7 PUGET SOUND/STRAIGHT OF GEORGIA ESU COHO SALMON (*Oncorhynchus kisutch*)

On July 25, 1995, NMFS determined that listing was not warranted for Puget Sound/Straight of Georgia ESU coho salmon. The ESU, however, is designated as a candidate for listing due to concerns over specific risk factors. The ESU includes all naturally spawned populations of coho salmon from drainages of Puget Sound and Hood Canal, the eastern Olympic Peninsula (east of Salt Creek), and the Strait of Georgia from the eastern side of Vancouver Island and the British

Columbia mainland (north to and including the Campbell and Powell Rivers), excluding the upper Fraser River above Hope (NMFS, 1999).

As a candidate species, no specific protections are afforded under the ESA, and section 7 consultation or conference with NMFS is not required for anticipated impacts to these species. Summary information for this candidate species is included herein in the event these candidate species become "listed" or "proposed" before project completion.

Critical Habitat

No critical habitat has been proposed for Puget Sound/Straight of Georgia ESU coho salmon.

Life History

Coho salmon occur in most major river basins around the Pacific Rim from central California to Korea and northern Hokkaido, Japan. Adult coho salmon spawn in freshwater streams in the late fall and early winter. Coho typically spawn in low gradient riffles with clean substrates ranging from pea-sized gravel to orange-sized cobbles. Rearing juveniles prefer off-channel pools with complex cover including both large and small woody debris. Juvenile coho rear in freshwater for a year to 18 months, and smolts migrate to the ocean in the spring of their second year. Most male coho, and all female coho, spend from 16 to 20 months rearing in the ocean and return to spawn in fresh water as three-year old adults. The spawner distribution of the Puyallup coho salmon stock includes Hylebos Creek (WDFW, 1994).

Environmental Baseline

Natural coho populations in the Puget Sound/Strait of Georgia ESU have been influenced by hatchery introductions and harvests focused on exploiting hatchery augmented stocks. Coho escapement data are the most comprehensive in Puget Sound, and indicate that the Puyallup Basin coho salmon stock in the Puget Sound/Strait of Georgia ESU is depressed (WDFW, 1994).

Wasser/Winter Site

Hylebos Creek upstream of the SR 509 bridge provides coho salmon rearing habitat, though the project site and the vicinity of the Hylebos Waterway near the creek mouth provides little cover or other suitable habitat. The substrate in Hylebos Creek downstream of the SR 509 bridge is primarily sandy silt with some smaller gravel, unsuitable for coho salmon spawning. A qualitative survey found the mud/silt substrate underlain by anaerobic conditions, and no benthic prey items in the project reach of Hylebos Creek and Hylebos Waterway. Additionally, this portion of the creek is brackish and not suitable spawning habitat for Coho.

Nursery Site

There is no habitat in the Nursery Site vicinity considered suitable to adult coho salmon. The many stranded logs and other materials on the mudflats would likely provide cover, and mudflats

provide benthic prey items for feeding and migrating juveniles while the area is inundated by high tide.

5.0 EFFECTS OF THE ACTION

5.1 DIRECT EFFECTS

Wasser/Winter Site

Habitat at the Wasser/Winter site has been extensively modified and simplified due to past industrial and commercial activity. The stream channel has been straightened; fill material has raised the ground surface and the site largely overtaken by non-native plant species. Work on Wasser/Winter site rehabilitation will include three main project elements that will result in direct effects to the project area:

- 1) Removal of the existing upland fill materials from an area of approximately 2.0 acres;
- 2) Grading the site to tie into the upstream rehabilitated projects, constructing a number of backwater pools; and
- 3) Revegetating with native salt marsh and riparian plants to improve habitat.

Clearing vegetation from the existing fill materials will temporarily eliminate riparian vegetation adjacent to Hylebos Creek. Grading and soil movement will be necessary to construct the improved habitat, including several permanently flooded backwater pools and tideflats. Work will not require the diversion or dewatering of Hylebos Creek. Clearing, fill removal, grading, and the preparation of the backwater areas will require the use of heavy machinery above and below the MHHW, and may require dewatering. To avoid excessive siltation, backwater pools will not be connected to Hylebos Creek until just before project completion. The connections will be made at low tide when the site is physically inaccessible to fish. Additionally, conservation measures including limiting work to the summer months and erosion control best management practices, as outlined in Section 8.0, will be used to reduce impacts. National Marine Fisheries Service Habitat Pathways for Hylebos Creek will be restored, enhanced, or unchanged (Table 1).

Nursery Site

Upland portions of the Nursery site contain fill materials that were used to raise the ground surface. Additionally, remnants of a structure built from pilings and riprap are present below MHHW. Work on the Nursery site habitat rehabilitation will include three main project elements that will result in direct effects to the project area:

- 1) Removal of upland fill materials from approximately 0.66 acres of the existing upland area;
- 2) grading to construct a dendritic channel system to distribute fresh water on the site; and
- 3) replanting with salt marsh and riparian vegetation.

Construction will temporarily eliminate riparian vegetation adjacent to MHHW. Grading and soil movement will be necessary to construct the improved habitat. Clearing, grading, and the

APPENDIX E

FINDING OF NO SIGNIFICANT IMPACT

FINDING OF NO SIGNIFICANT IMPACT
FOR THE WASSER/WINTER, PUYALLUP NURSERY,
AND MEEKER RESTORATION PROJECTS
TACOMA, WASHINGTON

The National Oceanic and Atmospheric Administration (NOAA) is the lead federal agency for National Environmental Policy Act (NEPA) compliance for the proposed Wasser/Winter, Puyallup Nursery, and Meeker Restoration Projects, Tacoma, Washington. The cooperating agencies and tribes include the other Commencement Bay Natural Resource Trustees -- the Puyallup Tribe of Indians, the Muckleshoot Indian Tribe, the Washington Department of Ecology (as lead state Trustee), the Washington Department of Fish and Wildlife, the Washington Department of Natural Resources, and the U.S. Department of the Interior (U.S. Fish and Wildlife Service and the Bureau of Indian Affairs). These parties are participating in damage assessment and restoration planning activities in the Commencement Bay environment.

NOAA prepared an Environmental Assessment (EA) for these projects to evaluate environmental project alternatives at three separate but functionally similar sites. The restoration projects will recreate lost intertidal habitat for a variety of plants and animals and provide benefits for juvenile salmonids, including chinook salmon. The preferred alternative at the Wasser/Winter site emphasizes resting and feeding habitat for juvenile salmonids in backwater pools. The Nursery site's preferred alternative creates a dendritic channel pattern in place of ponds. For the third project, the Meeker parcel, the Trustees selected the No Action Alternative as the preferred alternative. All three sites will be monitored and evaluated for their ability to enhance estuarine habitat and provide landscape connectivity with nearby mitigation and restoration sites. The preferred alternatives are based upon the best available technologies and best meet the goals and objectives of the natural resource trustees by maximizing ecological benefits and minimizing any potential for adverse environmental impacts to the environment. The public and other interested parties have participated through public meetings and workshops in the evaluation of these sites and the selection of the preferred alternatives.

DETERMINATION:

Based upon an environmental review and evaluation of the Environmental Assessment for the Wasser/Winter, Puyallup Nursery, and Meeker Restoration Projects, I have determined that the proposed actions do not constitute major Federal actions significantly affecting the quality of the human environment within the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969, as amended. Accordingly, environmental impact statements are not required for these projects.



Penelope D. Dalton

Assistant Administrator for Fisheries
National Marine Fisheries Service

National Oceanic and Atmospheric Administration

Date: 1/12/00