Biological Evaluation

Manchester Naval Fuel Depot
Small Boat Ramp Repair

Kitsap County, Washington
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US Army Corps of Engineers®
Seattle District

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1. INTRODUCTION

The Navy is proposing to repair an existing small boat launch ramp at the Manchester Naval Fuel Depot (MNFD). This ramp is used to launch boats which deploy oil spill containment booms around vessels loading or discharging fuel at the MNFD fuel pier. The rough, uneven surface of the existing ramp has caused recent personnel injury and equipment damage and requires repairs. In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, this document examines the potential impacts of the proposed project on species protected by the Act.

1.1 Location

The Manchester Naval Fuel Depot (MNFD) is located on Orchard Point in southern Kitsap County, 7 miles west of Seattle and 11 miles east of Bremerton, Washington (Bremerton East Quadrangle, T24N, R02E, Section 15). The 214 acre site is bounded by Puget Sound and Rich Passage/Clam Bay to the east and north, respectively; National Marine Fisheries Service (NMFS) and Environmental Protection Agency (EPA) property to the northwest; rural lands to the west; and residential property and the town of Manchester to the south. See Figure 1 in Appendix A.

1.2 Site Information

The Manchester Naval Fuel Depot is owned and operated by the U.S. Navy for distribution of fuel oil for use in naval vessels/shore stations, Coast Guard tankers, and National Oceanographic and Atmospheric Administration units. The MNFD has been receiving, storing, and supplying various types of petroleum products to military fleet units and for shore activities in the Pacific Northwest since World War II. The MNFD is the largest U.S. military underground fuel-storage facility in the continental United States, with 50 concrete or steel tanks (34 underground and 16 above ground) and a storage capacity of 74 million gallons.

The 234 acre MNFD property is divided into two distinct areas by Little Clam Bay, a 26 acre freshwater impoundment. A tidegate between Little Clam Bay and Clam Bay was installed by the Washington Department of Fish and Wildlife in the mid-1950s to create a coho rearing pond. Most buildings on the MNFD property are located in the flat, lowland area in the eastern part of the site between the two piers. 42 acres of managed timber lands are located southwestern portion of the facility. Additional forested areas surround the buried tanks on the eastern portion of the facility, and are managed for the benefit of wildlife.

Small Boat Ramp

The small boat ramp is located on the Rich Passage side of Orchard Point (see Figures 1 and 2). The 123 foot long concrete structure is approximately 22’ wide at the top, tapering to 17.5’ wide at the bottom of the ramp. The ramp extends to a depth of -5.5’ mean lower low water (MLLW). One of the primary purposes of the ramp is to launch spill response boats, and other Navy vessels. Other users include NMFS and EPA (the EPA boat ramp in Clam Bay is not functional at lower tides). The existing ramp is tilted with an uneven surface making launching of spill response boats hazardous.

The portion of this ramp above mean higher high water was resurfaced in August 2000.

Large Fuel Pier

The Manchester Fuel Pier is located on Puget Sound at the south side of Orchard Point. The pier approach is 450’ long, and the main portion of the pier is 550’ long by 60’ wide. Under the pier, the depth of water below MLLW varies between 40’ at the north end to 60’ at the south end. The north portion of the pier is periodically dredged to meet the minimum depth requirement (40’). The reinforced concrete deck of the pier is 17.5 feet above mean lower low water (MLLW). This pier was reconstructed in 1993.

During all fueling operations, the pier and ship are surrounded by a floating boom to contain any spills on the water. An oil skimmer boat capable of recovering any oil spill is kept on the west side of the pier, in its own launching facility, for immediate deployment. A 5,000 gallon underground storage tank is available for any spilled oil.

Small Boat Pier

On the north side of Orchard point, adjacent to the small boat ramp, is a 8’ wide by 300’ long timber pier with an attached 50’ long by 15’ wide foam-filled concrete float. This structure was built in the 1940s to provide moorage for small work boats, including the Fire Department’s search and rescue boat. The small boat pier is currently in poor condition and may be replaced within the next five years, contingent upon funding.

Other Facilities

In addition to fueling, the MNFD’s Oily Waste Treatment Facility handles oily wastes, sludge, and bilge water received from ships and other Navy shore activities. The waste is separated into reclaimed fuel, clean water, sludge, and conglomerate oil. The reclaimed fuel is returned to storage, the clean water is discharged into Puget Sound, the conglomerate oil is sold, and the sludge residue is collected by a contract vendor who disposes of it in a hazardous waste storage and disposal facility licensed by the State of Washington. The MNFD also collects sanitary sewage from ships while they are loading or unloading at the pier. The sewage is pumped to a 50,000 gallon underground holding tank and then to the Kitsap County Sewage Treatment Facility during off-peak hours so as to minimize impacts on existing county facilities.

Several projects completed in recent years have reduced the potential for spills from any leakage or rupture of tanks or pipelines. Corroded, buried pipelines were replaced with above-ground pipelines. Dikes were built around above-ground tanks to contain spills. Some concrete storage tanks were relined to prevent oil from seepage through cracks in the wall. In addition, several oil/water separators are located around the site to catch stormwater and separate any oil before runoff enters Puget Sound.

1.3 Project Purpose and Need

The purpose of these repair activities is to assure that the boat ramp can be used in timely and safe manner. This will allow for rapid containment of any spills at the large fuel pier during low tides, thereby minimizing the risk of exposure of fish and benthic organisms to petrochemicals.

If no action is taken, hazards to human health and safety would continue to exist at the small boat ramp. In addition, there could be delays in response to fuel oil spills due to difficulty in accessing the ramp during certain tidal conditions.

2. DESCRIPTION OF THE PROPOSED ACTION

Construction will occur between August and October 30 in 2001 or 2002, dependant on when environmental approvals are obtained. Construction activities are expected to take no more than 10 days, and will be scheduled during a time when there are at least four consecutive days of minus tides. If necessitated by tide schedules, work will occur during the night. All work will occur within the footprint of the existing boat ramp. The new ramp surface elevation will be no higher than that of the existing structure.

Construction will occur in two phases. Phase 1 will coincide with the lowest tides, and will focus on the portion of the ramp between –5.5’ and +6’ MLLW. Work on the section of the ramp between +6’ and +11.5’ MLLW will occur during Phase 2 when the low tides are higher. Design drawings can be found in Appendix A.

Phase 1: –5.5’ to +6’ MLLW

- Construction will begin with demolition of the deteriorated portions of the existing small boat ramp, which consists of spalls and loose concrete. This material will be removed by a wheeled backhoe or bobcat and disposed offsite. Some in-water work will be necessary, as the toe of the ramp is at an elevation of –5.5’ MLLW. This work is expected to take approximately six hours to complete (this amount of time will be available during a –2’ tide). Work will be sequenced so as to minimize in-water work. Work on the lower portion of the ramp will occur at ebbing/low tides, then construction will proceed up the ramp as the tide rises.

- On the second day of construction, surface preparation work will occur. If necessary, the ramp surface will be graded and/or backfilled with 4” rock to maintain exiting elevations. Some 1’ to 2’ riprap present along the margins of the ramp may need to be temporarily moved at this stage. If existing riprap at the toe of the structure has deteriorated, it will be replaced. A wheeled backhoe or bobcat will be used to perform this work. Between 0’ and +6’ MLLW, temporary wood forms will be placed along the edges of the ramp to delineate the ramp footprint and rebar or metal wire fabric will be secured 16” on center with anchor bolts. This work will take approximately six hours.

- On the third day of construction, actual resurfacing will begin. New, cast-in-place concrete will be placed between 0’ and +6’ MLLW. High-early-strength concrete formulated specifically for pouring directly into marine waters will be used. An anti-washout admixture (Sikament 100 SC or Eucon AWA) will be used to greatly reduce or eliminate concrete washout during curing. These additives produce concrete that becomes fluid when sheared or mechanically agitated, but reverts to a dense, high viscous consistency when at rest. The mixtures reduce or eliminate laitance (the accumulation of fine particles on the surface of curing concrete). This type of concrete will set almost immediately. A tremie (shoot) will be used so that the concrete truck will be able to pour as far as possible from the water’s edge.

Pouring will take approximately one hour. Pouring will begin shortly after the water recedes below the mean lower low water depth contour so that the maximum hardening time is available before inundation (approximately 2 hours during a –2.4' tide, assuming one hour for pouring). The cast-in-place concrete will be covered with plastic to minimize the area which comes into contact with tidal waters. While the plastic will not provide a complete seal, it will greatly reduce any water chemistry impacts associated with uncured concrete.

- On the fourth day of construction, new pre-cast concrete panels will be placed on the portion of the ramp between 0' and –5.5' MLLW. The panels will be anchored using a mechanized anchoring system driven to a depth of approximately 7 feet. The anchoring system will be installed using a bobcat, and panels will be placed using a backhoe. The seams between the panels will not be filled. Some in-water work will occur, but will be minimized by timing the work to coincide with low tide.

Phase 2: +6' to +11.5 MLLW

- The second phase of construction will follow the sequence of the Phase 1 work, and will be timed to avoid in-water work and maximize dry set time. The first step will be demolition, followed by form placement, followed by pouring. This work is expected to take between three or four days.

Prior to the low tide on the first day of construction, the portion of the ramp above +11.5' MLLW, which was replaced last year, will be pressure washed to remove algae and other sea life. No additives will be used in the washer water.

Tide windows currently under consideration for Phase 1 work include: August 17 to 20, 2001 (-2.2, -2.5, -2.4, -1.7) and August 7 to August 10, 2002 (-2, -2.4, -2.4, -1.9).

The Navy and the Corps (the Navy's construction agent) considered using pre-cast concrete panels along the entire length of the ramp. However, pre-cast panels are typically used in freshwater areas. The Navy and Corps are not aware of any anchoring systems developed specifically for marine waters with high tidal ranges. As a result, any settling would result in an uneven ramp surface, which would render the ramp unusable. In addition, if anchors are not developed specifically for use in tidal waters, panels could dislodge.

Vessels utilizing this boat ramp would be first-responders to any oil spill at the MNFD large fueling pier, as well as responders to any large oil spill in southern Puget Sound. The construction of structures subject to design uncertainty is not appropriate for emergency response facilities. The risks associated with using pre-cast panels along the entire length of the ramp were determined by the Navy and the Corps to be too high.

3. CONSERVATION MEASURES

Construction will likely occur between August 16 and October 30. This work window is outside of the USFWS closure period for bull trout in Puget Sound marine waters (February 16 - July 15), the NMFS closure period for chinook in Puget Sound marine waters (March 1 – July 1), the bald eagle nesting season (January 1 - August 15), and the bald eagle wintering season (October 31 – February 31). Construction will occur when chinook and bull trout are least likely to be present in the action area, and during a portion of the year when bald eagles are most tolerant of disturbance. If all environmental approvals are not obtained in time to complete work in the 2001, construction may begin during the end of the bald eagle nesting season as the only suitable tide window occurs between August 7 and 10.

In-water work will be minimized to the extent possible. Work will be sequenced so that work on the lowest sections of the ramp will occur during the lowest tides. As the tide comes up, work and equipment will move up the ramp.

Several construction best management practices (BMPs) will be implemented: (1) biodegradable hydraulic fluids will be used for machinery at the site; (2) the cement truck will not hose off in an area subject to surface water runoff, or less than 50 feet from a receiving water or storm drain; (3) a fuel spill kit with absorbent pads will be onsite at all times; (4) no equipment fueling or servicing will occur within 300 feet of the water; (5) no material will be stockpiled below mean higher high water (+11.5') during construction operations; (6) plastic will used to separate uncured concrete from tidal waters; and (7) disposal of construction debris will occur offsite at an approved facility.

At the suggestion of Doris Small (WDFW), the Navy is proposing to remove a deteriorated boat ramp on the NMFS property along the shore of Clam Bay (please see the Photos 7-9 in Appendix B). The NMFS boat ramp is located above the +6' MLLW depth contour on a gently graded beach of mud. Concrete blocks are present on the shore side of the structure, and quarry spalls are scattered throughout the area. This site is directly adjacent to the outfall of Lower Beaver pond.

Boat ramp removal will occur after the ramp resurfacing work is complete. A wheeled bobcat will be used. Demolition will occur during low tide, with no in-water work. During the demolition, plywood will be temporarily placed on the work area to prevent the heavy equipment from altering the beach contour. All debris will be disposed at an upland location. This work is expected be complete within one low tide.

4. DESCRIPTION OF THE PROJECT AREA AND ACTION AREA

Areas that may be affected directly or indirectly by the construction of the project are Puget Sound (Rich Passage/Clam Bay) waters adjacent to Orchard Point and the upland MNFD property. The noise of construction activities and minor, temporary alterations to water chemistry (primarily pH) during concrete setting are expected to be the most widespread effects of the action.

The shoreline of the small embayment in which the pier and boat ramp are located is characterized by bedrock outcroppings vegetated with Douglas fir (*Pseudotsuga menziesii*), Pacific madrone (*Arbutus menziessi*), and an understory consisting of Scotch broom (*Cytisus scoparius*), Himalayan blackberry (*Rubus discolor*), huckleberry(*Vaccinium spp.*), and oceanspray (*Holodiscus discolor*). Please refer to the photographs in Appendix B. At a 2/28/01 site visit, the substrate adjacent to the ramp and pier was primarily sand/gravel with patches of cobble. Rip rap is present in the area immediately adjacent to the small boat ramp.

The action area is bounded by Clam Bay to the north. A NMFS mariculture laboratory, the Manchester Environmental Laboratory (a chemistry laboratory operated jointly by EPA and Ecology), and the Manchester Annex Superfund Site are located along the shoreline of Clam Bay. A NMFS salmon net pen operation is present in the southern portion of the bay.

There are two freshwater outfalls in the action area: Beaver Creek and Little Clam Bay. Beaver Creek flows into and through several ponds on Navy property, then discharges through a tidegate/fish ladder near a NMFS laboratory on Clam Bay. The Little Clam Bay outfall also discharges to Clam Bay and is controlled by a tidegate. Salinity adjacent to the MNFD large fueling pier ranges from 26 to 30 ppt (Weitkamp, 1994).

The Washington State Ferry System runs both car and passenger ferries through Rich Passage several times a day. Navy and commercial ships, as well as private boats frequent the action area as well.

5. EXISTING ENVIRONMENTAL CONDITIONS

Rich Passage is characterized by swift, strong tidal currents. Flood currents are directed to the N-NW, and ebb currents are directed to the S-SE. In Clam Bay, currents are oriented parallel to shore but undergo as many as four reversals of direction during a single tidal cycle (Hart Crowser 1996). Net current drift in the vicinity of Orchard Point is oriented to the E-SE, with an estimated velocity of 3 cm/sec (Hart Crowser 1996). In the deeper waters of Rich Passage net drift is flood dominant (i.e., toward the NW). The maximum retention time for waters in the furthest interior regions of Clam Bay is approximately six hours (Hart Crowser 1996).

In Clam Bay and the small embayment in which the boat ramp is located, the bathymetry is gently sloping. The depth in the outer portions of the bays is approximately –18’ MLLW. From there depths off Orchard Point drop off dramatically, to –60’ MLLW only 500’ from shore and –300’ MLLW one mile offshore. Rich Passage is a shallow sill, less than 70 feet deep. Its waters are biologically productive due to this shallow depth and the tidal constriction provided by the narrow passage between Bainbridge Island and Orchard Point/Point Glover. The obstruction to tidal flows caused by the sill causes localized upwelling and enhanced vertical flux of nutrients, which results in elevated primary production (Kruckeberg 1991). The marine waters along the shorelines of the East Kitsap basin also provide a physical transition zone between the warmer, less saline waters of the shallow shelves, bays, and channels of the peninsula to the cool, dense saline ocean waters of Puget Sound’s main basin (Williams et al. 1975).

Shoreline conditions along Orchard Point are generally good, with only moderate development. Three piers are located along the action area’s shoreline, but much of the shoreline of the Federal property is forested with little bank stabilization/hardening present. The eelgrass bed nearest to the project site is located on the other side of Orchard Point, adjacent to the large fuel pier.

WDFW Marine Resources Database

Information on usage of the action area by forage fish and marine invertebrates was obtained from the WDFW Marine Resources Database. The location of documented forage fish spawning areas in the vicinity of the project is shown in Figure 6. Smelt and sand lance are known to spawn on beaches to the south of the project site. Herring holding occurs in Port Orchard Sound.

Weitkamp Study

Before, during, and after the replacement of the MNFD's large fuel pier in 1992-1993, the National Marine Fisheries Service monitored water quality, eelgrass distribution/density, juvenile salmonid migration patterns, and fish abundance near the pier (Weitkamp, 1994). Monitoring occurred in 1991, 1992, and 1993.

Water quality parameters near the construction site were unexceptional and fell within the expected norms for this part of Puget Sound. Localized, slight increases in turbidity were observed during dredging in 1992. The total area occupied by eelgrass within 140 meters of the new fuel pier was approximately 7,700 m^2 in 1991 (pre-construction), 5,800 m^2 in 1992 (during construction), and 7,600 m^2 in 1993 (post-construction).

Two types of nets were used to sample fishes: a 50 m variable-mesh beach seine and a shallow-water purse seine. The species captured in 1993 are presented in Table 1. A total of 40 fish species were observed, with 37 collected in the beach seine and 9 collected in the purse seine. Twelve species collected in 1993 were not recorded in either 1991 or 1992. Most fish identified were typical of Puget Sound intertidal beaches. The most abundant species caught by beach seines were Pacific sand lance (*Ammodytes hexapterus*), and juvenile chum salmon (*Oncorhynchus keta*). For the purse seines, the most abundant fishes were juvenile chum salmon and coho salmon (*O. kisutch*). Other salmonids captured include: chinook (*O. tshawytscha*) salmon, cutthroat trout (*O. clarki*), and steelhead trout (*O. mykiss*).

Water and Sediment Quality

The following information on water and sediment quality concerns in the action area was obtained in the Department of Ecology's final 1998 Section 303(d) list for WRIA 15-Kitsap Watershed (Ecology 2000).

In the "Port Orchard, Agate Passage, and Rich Passage" segment, the only parameter placed on the list was arsenic. This listing was based on 1992 fish tissue samples. Other parameters considered for listing were dissolved oxygen (DO), pH, temperature, and total PCBs. DO, pH, and temperature were under consideration for excursions beyond Ecology criteria between 1985 and 1987. However, it was determined that there were no significant human-cause sources which could affect these parameters in such well-mixed waters. The excursions were attributed to natural conditions, namely upwelled deepwater and solar heating of surface waters. Elevated PCB levels were found in the tissues of clams in Clam Bay during the remedial investigation for the Manchester Annex Superfund Site, which is located approximately one mile northwest of the project site.

No parameters were placed on the list in the "Puget Sound (N-Central) and Useless Bay" segment. DO (2 excursions), temperature (14 excursions), fecal coliform (1 excursion), and pH (5 excursions) were considered, however. Again, DO and temperature excursions were attributed to natural conditions.

Table 1. Fish Species Caught near the MNFD Large Fuel Pier (Weitkamp 1994)

Beach Seine (March 16–July 29, 1993)	**Purse Seine (March 16-June 14, 1993)**
Chinook salmon (*Oncorhynchus tshawytscha)*	Chinook salmon (*Oncorhynchus tshawytscha)*
Coho salmon (*Oncorhynchus kisutch)*	Coho salmon (*Oncorhynchus kisutch)*
Chum salmon (*Oncorhynchus keta)*	Chum salmon (*Oncorhynchus keta)*
Cutthroat trout (*Oncorhynchus clarki)*	Steelhead (*Oncorhynchus mykiss*)
Surf smelt (*Hypomesus pretiosus)*	Surf smelt (*Hypomesus pretiosus)*
Pacific herring (*Clupea pallasi)*	Pacific herring (*Clupea pallasi)*
Pacific sand lance (*Ammodytes hexapterus)*	Threespine stickleback (*Gasterosteus aculeatus)*
Big skate (*Raja binoculata)*	Kelp greenling (*Hexagrammos decagrammus)*
Pacific tomcod (*Microgadus proximus)*	Soft sculpin (*Gilbertidia siglutes*)
Tube-snout (*Aulorhynchus flavidus)*	
Threespine stickleback (*Gasterosteus aculeatus)*	
Bay pipefish (*Syngnathus griseolineatus)*	
Kelp greenling (*Hexagrammos decagrammus)*	
Padded sculpin (*Artedius fenestralis)*	
Buffalo sculpin (*Enophrys bison)*	
Red Irish lord (*Hemilepidotus hemilepidotus)*	
Pacific staghorn sculpin (*Leptocottus armatus)*	
Great sculpin (*Myoxocephalus polyacanthocephalu)*	
Sailfin sculpin (*Nautichthys oculofasciatus)*	
Tidepool sculpin (*Oligocottus maculosus)*	
Grunt sculpin (*Rhamphocottus richardsoni)*	
Puget Sound sculpin (*Ruscarius meanyi)*	
Sturgeon poacher (*Agonus acipenserinus)*	
Tidepool sailfish (*Liparis florae)*	
Shiner perch (*Cymatogaster aggregata)*	
Stripped seaperch (*Embiotoca lateralis)*	
Pile perch (*Rhacochilus vacca)*	
Snake prickleback (*Lumpenus sagitta)*	
Penpoint gunnel (*Apodichthys flavidus)*	
Crescent gunnel (*Pholis laeta)*	
Saddleback gunnel (*Pholis ornata)*	
Speckled sanddab (*Citharichthys stigmaeus)*	
Rock sole (*Lepidopsetta bilineata)*	
English sole (*Parophrys vetulus)*	
Starry flounder (*Platichthys stellatus*)	
Butter sole (*Pleuronectes isolepis)*	
C-O sole (*Pleuronichthys coenosus)*	
Sand sole (*Psettichthys melanostictus)*	

In the "Sinclair Inlet" segment, elevated contaminant concentrations were found in many sediment and tissue samples. PCBs, Aldrin, Dieldrin, and Arsenic were of concern in edible fish tissue samples. Heavy metals, along with numerous other chemical contaminants, were of concern in sediments. A 1995 sediment bioassay showed significant acute and chronic toxicity near the Port Orchard sewage treatment plant outfall.

6. EFFECT ANALYSIS

Six species protected under the Endangered Species Act of 1973 (16 USC 1531-1544) potentially occur in the project vicinity. A list of species potentially affected by the proposed project was requested from the U.S. Fish and Wildlife Service (USFWS) in a letter dated March 13, 2001. A species list was received on May 1, 2001 (FWS Ref: 1-3-01-SP-1120). National Marine Fisheries Service (NMFS) Northwest Region web sites (*http://www.nwr.noaa.gov/ 1habcon/habweb/listnwr.htm* and *http://www.nwr.noaa.gov/1seals/marmamlist.html*) were consulted on March 13, 2001 to determine which species under NMFS's jurisdiction potentially occur in the project area. Table 2 summarizes the information received from USFWS and NMFS. The following sections briefly summarize relevant life history information on the protected species, synthesize current knowledge on the presence and utilization of the project and action areas by these species, and then evaluate how the proposed project may affect the species concluding with a determination of effect.

Table 2. Protected Species Potentially Occuring in the Project Vicinity

Species	Listing Status	Critical Habitat
Bald Eagle *Haliaeetus leucocephalus*	Threatened	—
Marbled Murrelet *Brachyramphus marmoratus*	Threatened	Designated
Coastal/Puget Sound Bull Trout *Salvelinus confluentus*	Threatened	—
Puget Sound Chinook Salmon *Oncorhynchus tshawytscha*	Threatened	Designated
Steller Sea Lion *Eumetopias jubatus*	Threatened	Designated
Humpback Whale *Megaptera novaeangliae*	Endangered	—
Leatherback Sea Turtle *Dermochelys coriacea*	Endangered	Designated
Puget Sound/Strait of Georgia Coho Salmon *Oncorhynchus kisutch*	Candidate	—

6.1 Bald Eagle

The Washington State bald eagle population was listed as threatened under the Endangered Species Act of 1973, as amended, in February 1978. Since DDT was banned in 1972, bald eagle populations have rebounded. The bald eagle was proposed for de-listing in July 1999.

The bald eagle wintering season extends from October 31 through March 31. Food is recognized as the essential habitat requirement affecting winter numbers and distribution of bald eagles. Other wintering habitat considerations are communal night roosts and perches. Generally large, tall, and decadent stands of trees on slopes with northerly exposures are used for roosting; eagles tend to roost in older trees with broken crowns and open branching (Watson and Pierce 1998). Bald eagles select perches on the basis of exposure, and proximity to food sources. Trees are preferred over other types of perches, which may include pilings, fence posts, powerline poles, the ground, rock outcrops, and logs (Steenhof 1978).

Bald eagles nest between early January and mid-August. The characteristic features of bald eagle breeding habitat are nest sites, perch trees, and available prey. Bald eagles primarily nest in uneven-aged, multi-storied stands with old-growth components. Factors such as tree height, diameter, tree species, position on the surrounding topography, distance from water, and distance from disturbance also influence nest selection. Snags, trees with exposed lateral branches, or trees with dead tops are often present in nesting territories and are critical to eagle perching, movement to and from the nest, and as points of defense of their territory.

Birds and fish are the primary food source for eagles in Puget Sound, but bald eagles will also take a variety of mammals and reptiles (both live and as carrion) when fish are not readily available (Knight et al. 1990). Eagles in tidally influenced habitats also scavenge and pirate more prey than do eagles at rivers or lakes, possibly resulting form expanded feeding opportunities provided by dead and stranded prey on tide flats (Watson and Pierce 1998).

Utilization of the Action Area

The MNFD is an important year-round hunting area for both adult and sub-adult bald eagles (Grassley and Grue 1999). Foraging bald eagles frequently perch in trees along the shoreline of the MNFD (Grassley and Grue 1999). USFWS has indicated that wintering bald eagles may occur in the vicinity of the project (FWS REF: 1-3-01-SP-1120).

Information on bald eagles in the WDFW Priority Habitats and Species Database indicates that eight bald eagle nests are located within 2.5 miles of the project site. The closest of these nests are located along the shoreline approximately 0.7 mile and 1.25 miles to the southwest of the site. Northeast of the site on Bainbridge Island there is a nest approximately 2.25 miles from the site. Approximately 2.5 miles southeast of the MNFD is Blake Island, a state park with five eagle nests.

Effects of the Proposed Action

No perching, nesting, or roosting habitat will be physically disturbed by ramp removal and resurfacing operations. Since nesting and wintering territories are located in the vicinity of the project, construction will likely occur outside of the bald eagle nesting season (January 1 - August 15) and wintering season (October 31 – February 31). If all environmental approvals are not obtained in time to construct in August 2001, the only available tide window in 2002 occurs during the end of the eagle nesting season, August 7 – 10 (low tides of -2, -2.4, -2.4, -1.9).

The noise associated with the shore-side operation of heavy equipment could cause eagles to temporarily avoid the area, or disrupt foraging activities. The effect of noise disturbance is expected to be insignificant for several reasons: (1) eagles tend to tolerate more disturbance at feeding sites than in roosting areas (Steenhof 1978); (2) construction will occur during a portion of the year when bald eagles are most tolerant of disturbance; and (3) the project area is characterized by substantial human activity on both the waterward and landward sides of the shoreline so any eagles in the area are likely acclimated to human presence. The availability of prey will not be significantly disrupted by project construction. If construction occurs in 2002 during the end of the nesting season, it is not expected to have a significant impact on fledgling eagles as the project site is 0.7 miles from the nearest nest, and equipment operation will not be much noisier than routine site operations.

Effect Determination

Since construction activities will not occur during the nesting and wintering seasons and only minor disruptions to foraging activities are expected, the proposed project **may affect, but is not likely to adversely affect** the bald eagle.

6.2 Marbled Murrelet

The marbled murrelet was listed as a threatened species under the Endangered Species Act of 1973, as amended, in October 1992. Primary causes of population decline include the loss of nesting habitat, and direct mortality from gillnet fisheries and oil spills.

The subspecies occurring in North America ranges from Alaska’s Aleutian Archipelago to central California. Marbled murrelets forage in the near-shore marine environment and nest in inland old-growth coniferous forests of at least seven acres in size. Marbled murrelets nest in low-elevation forests with multi-layered canopies; they select large trees with horizontal branches of at least seven inches in diameter and heavy moss growth. Of 95 murrelet nests in North America during 1995, nine were located in Washington. April 1 through September 15 is considered nesting season; however in Washington, marbled murrelets generally nest between May 26 and August 27 (USFWS 1999). Adults feeding young fly between terrestrial nest sites and ocean feeding areas primarily during the dawn and dusk hours.

Marbled murrelets spend most of their lives in the marine environment, where they forage in areas 0.3 to 2 km from shore. Murrelets often aggregate near localized food sources, resulting in a clumped distribution. Prey species include herring, sand lance, anchovy, osmerids, seaperch, sardines, rockfish, capelin, smelt, as well as euphasiids, mysids, and gammarid amphipods. Marbled murrelets also aggregate, loaf, preen, and exihibit wing-stretching behaviors on the water.

Although marine habitat is critical to marbled murrelet survival, USFWS’ primary concern with respect to declining marbled murrelet populations is loss of terrestrial nesting habitat. In the marine environment, USFWS is primarily concerned with direct mortality from gillnets and spills of oil and other pollutants (USFWS 1996).

Critical habitat was designated for the marbled murrelet on May 24, 1996 (USFWS 1996). The critical habitat units nearest to the project site are approximately 25 miles away, on the west side of Hood Canal in the Olympic National Forest.

Utilization of the Action Area

Marbled murrelets occur in Puget Sound marine habitats in relatively low numbers (Speich and Wahl 1995). The species moves about a great deal over several temporal scales: seasonally, daily, and hourly. Regional patterns of activity tend to be seasonal, and are tied to exposure to winter storm activity. There is generally a shift of birds from the Strait of Juan de Fuca and British Columbia during spring and summer to areas in the San Juan areas and eastern bays during the fall and winter (Speich and Wahl 1995). Murrelets are often found in specific areas (e.g., Hood Canal, Rosario Strait/San Juans), as foraging distribution is closely linked to tidal patterns. However, occurrences are highly variable as they move from one area to another often in short periods of time.

Effects of the Proposed Action

Construction activities would have no effect on murrelet nests or nesting habitat, as none occurs in the vicinity of the project. However, construction activities would occur in and adjacent to foraging habitat. The noise associated with the shore-side operation of heavy equipment could disrupt foraging activities and cause murrelets to temporarily avoid the area.

The effects of human disturbance on murrelets at sea are not well documented, but they apparently habituate to heavy levels of boat traffic (Strachan et al. 1995). USFWS guidance suggests that noise above ambient levels is considered to potentially disturb marbled murrelets when it occurs within 0.25 mile of suitable foraging habitat (USFWS 1996). Ramp resurfacing and removal operations will occur adjacent to suitable foraging habitat, but substantial human activity on both the waterward and landward sides of the shoreline is common and construction noise will be in highly localized with respect to this species' foraging range. Marbled murrelets are relatively opportunistic foragers; they have a flexibility in prey choice which likely enables them to respond to changes in prey abundance and location (USFWS 1996). This indicates that if murrelets are present in the immediate vicinity of construction activities and they are if disturbed while foraging, they would likely move without significant injury. Therefore, the effect of noise disturbance associated with the proposed project is expected to be insignificant.

Ramp resurfacing and removal operations are not expected to result in a long-term reduction in the abundance and distribution of murrelet prey items. Temporary, highly localized increases in turbidity associated with the proposed work could reduce visibility in the immediate vicinity of the project, thereby reducing foraging success for any murrelets that remain in the area. Any reduction in prey availability would subside rapidly upon completion of the construction work. The proposed project will not increase boat traffic in the action area.

Effect Determination

Since construction activities will have no effect on nesting habitat or the murrelet food base, and the effects of any noise disturbance during construction are expected to be insignificant, the proposed project **may affect, but is not likely to adversely affect** the marbled murrelet. The ramp repair work will have **no effect** on designated critical habitat for this species.

6.3 Coastal/Puget Sound Bull Trout

The Coastal/Puget Sound bull trout population segment was listed as a threatened species under the Endangered Species Act of 1973, as amended, in October 1999. Bull trout populations have declined throughout much of the species' range; some local populations are extinct, and many other stocks are isolated and may be at risk (Rieman and McIntyre 1993). A combination of factors including habitat degradation, expansion of exotic species, and exploitation have contributed to the decline and fragmentation of indigenous bull trout populations.

Bull trout are known to exhibit four types of life history strategies. The three freshwater forms include adfluvial, which migrate between lakes and streams; fluvial, which migrate within river systems; and resident, which are non-migratory. The fourth and least common strategy, anadromy, occurs when the fish spawn in fresh water after rearing for some portion of their life in the ocean.

Bull trout spawning usually takes place in the fall during September and October. Initiation of breeding appears to be related to declining water temperatures. In Washington, Wydoski and Whitney (1979) reported spawning activity was most intense at 5 to 6^{o}C. Spawning occurs primarily at night. Groundwater influence and proximity to cover are reported as important factors in spawning site selection. Bull trout characteristically occupy high quality habitat, often in less disturbed portions of a drainage. Necessary key habitat features include channel stability, clean spawning substrate, abundant and complex cover, cold temperatures, and lack of barriers which inhibit movement and habitat connectivity (Reiman and McIntyre, 1993).

Juvenile bull trout, particularly young of year (YOY), have very specific habitat requirements. Small bull trout are primarily bottom-dwellers, occupying positions above, on or below the stream bottom. Bull trout fry are found in shallow, slow backwater side channels or eddies. The adult bull trout, like its young, is a bottom dweller, showing preference for deep pools of cold water rivers, lakes and reservoirs (Moyle 1976).

Bull trout movement in response to developmental and seasonal habitat requirements make their movements difficult to predict both temporally and spatially. A recent WDFW (1999) summary paper on bull trout in Stillaguamish Basin provided some general information on bull trout distribution in Puget Sound river basins. Newly emergent fry tend to rear near spawning areas, while foraging juvenile and sub-adults may migrate through river basins looking for feeding opportunities. Post-spawn adults of the non-resident life form quickly vacate the spawning areas and move downstream to forage, some returning to their "home" pool for additional rearing. Anadromous sub-adults and non-spawning adults are thought migrate from marine waters to freshwater areas to spend the winter.

Based on research in the Skagit Basin (Kraemer 1994), anadromous bull trout juveniles migrate to the estuary in April-May, then re-enter the river from August through November. Most adult fish entered the estuary in February-March, and returned to the river in May-June. Sub-adults, fish that are not sexually mature but have entered marine waters, move between the estuary and lower river throughout the year.

Utilization of the Action Area

The 1998 WDFW Salmonid Stock Inventory recognized 14 bull trout subpopulations in eight Puget Sound river basins: Nooksack River (3 stocks), Skagit River (3 stocks), Stillaguamish River (1 stock), Snohomish River (1 stock), Cedar River (1 stock), Green River (1 stock), Puyallup River (3 stocks), and Nisqually River (1 stock). Three distinct stocks occur in Hood Canal drainages, all within the Skokomish River basin (WDFW 1998). No spawning streams are located in Kitsap County.

Anadromous sub-adults and adults utilize estuarine and nearshore marine habitats in Puget Sound for the feeding opportunities these areas present. Any bull trout occuring in the action area would not be resident fish, but individuals on foraging expeditions (Goetz 2001). Construction will occur outside of the February 16 - July 15 USFWS bull trout closure period for marine waters, likely between mid-August and the end of October. Since anadromous bull trout overwinter in freshwater areas, it is unlikely that sub-adults or non-spawning adults would be in the action area during construction activities.

Effects of the Proposed Action

Two types of water quality impacts may result from the proposed action: increased turbidity and pH changes associated with concrete placement. Although these changes are expected to be minor, temporary, and highly localized in scope, construction work will occur outside of the USFWS bull trout closure period for in-water work (February 15 through July 15, the portion of the year when bull trout are most likely to be present in marine/estuarine waters). This work window will greatly reduce the likelihood for harm to bull trout.

Increased turbidity will be associated with demolition and site preparation work, particularly on the section between about –2 and –5.5’ MLLW which will be worked while covered with water. Given the strong currents in the project area, the large grain size of sediments in the project area, and the small amount of in-water work required, turbidity is not expected to extend beyond a 150’ radius of the work area. It is unlikely that a bull trout would occur in the action area during construction activities, but if one was it would be a large fish mobile enough to avoid any turbid areas without injury. The life history stages requiring the lowest suspended sediment concentration—spawning, incubation, and fry rearing—do not occur in project action area. No eelgrass beds will be affected by a project-induced turbidity plume. Any sediment plume resulting from the proposed action is not expected to be large or persistent enough to appreciably affect benthic production or any forage fish in the action area.

The leaching of carbonates from setting/curing concrete can increase the pH of adjacent waters, particularly in freshwater environments. The magnitude of pH changes attributable to curing concrete are dependant on two factors: the amount of water-soluble "alkali" present in cement (as K_2SO_4), and volume/flow characteristics of the receiving water body. If construction is to be cost-effective, the loss of cement through washout must be minimized. This is accomplished by using admixtures to restrict the amount of cement leaching into the water to a few grams per hundred weight of cement used (or a few grams per cubic meter of water).

With respect to this project, significant changes to the pH of waters in the action area are not anticipated for a couple of reasons. First, an admixture will be used to greatly reduce or eliminate concrete washout during curing. This type of concrete will set almost immediately. Pouring will begin shortly after the water recedes below the mean lower low water depth contour so that the maximum hardening time is available before inundation (approximately 2 hours during a –2.4' tide, assuming one hour for pouring). The cast-in-place concrete will then be covered with plastic to minimize the area which comes into contact with tidal waters. Second, the buffering capacity of saline waters is quite high. The buffering system of seawater involves carbonic acid (H_2CO_3), hydrogen bicarbonate (HCO_3^-), carbonate (CO_3^{2-}). These chemical species resist changes in pH when either a base or an acid is added by acting as a reservoir for hydrogen ions; they donate H^+ when the concentration falls and takes H^+ when the concentration rises. A third factor is dilution and tidal flushing. A very small amount of concrete will be poured relative to the volume of water in the embayment, and tidal currents will disperse any affected waters rapidly. The flushing time for waters in the furthest interior regions of Clam Bay is approximately six hours (Hart Crowser 1996). The small embayment where the boat ramp is located is adjacent to Clam Bay, but in a more exposed location. Considering these three factors, pH changes significant enough that water quality standards are violated or marine organisms suffer physiological harm are unlikely.

Since all work will occur in the footprint of the existing ramp, there will not be a reduction in intertidal habitat. No additional scour or wave deflection is anticipated since there will not be a net increase in hard structures. The elevation of the existing ramp surface will not be raised. Longshore sediment transport may improve slightly from current conditions, as the seams between the pre-cast panels (placed below 0' MLLW) will not be filled. The gaps between the panels may allow for better sand movement. The inflow of fresh water associated with the pressure washing of the upper portions of the ramp will be minor and temporary. Any effects associated with the removal of algae on the ramp are expected to be insignificant. No trees will be removed during construction.

The resurfacing will not increase usage of the ramp, but will increase accessibility during lower tides. The ramp is used about once a month, so minor human disturbance and sediment disruption from wakes and propwash will occur sporadically. These operational effects are expected to be insignificant. The potential for petrochemical pollution is low, as no refueling occurs on the ramp or adjacent shoreline.

One of the conservation measures proposed in section 3, removal of a derelict boat ramp on the NMFS property in Clam Bay, will result in a small increase in the extent and availability of intertidal habitat in the action area. Removal of the ramp will allow for an increase in epibenthic production in the ramp footprint and enable more natural longshore sediment transport. Removal of the structure will result in the temporary water quality impacts described above, although probably to a lesser extent as all work occur in the dry. Construction access would result in a temporary alteration of beach contours, but this effect will be minimized by placing plywood beneath equipment paths. This work will also occur during the approved bull trout work window.

Effect Determination

The proposed project **may affect, but is not likely to adversely affect** bull trout. This determination is based upon the highly localized geographic scope of the project, the low likelihood that bull trout would be present in the action area during construction activities, and the lack of changes to baseline habitat conditions at the project site.

6.4 Puget Sound Chinook Salmon

The Puget Sound Evolutionarily Significant Unit chinook salmon was listed as a threatened species under the Endangered Species Act of 1973, as amended, in March 1999.

Like all other Puget Sound chinook, those observed near Orchard Point are of the ocean-type race (NMFS 1998). Ocean-type chinook migrate to sea during their first year of life, normally within three months after emergence from spawning gravel. Growth and development to adulthood occurs primarily in estuarine and coastal waters (NMFS 1998). Ocean-type chinook return to their natal river in the fall, though actual adult run and spawning timing is in response to the local temperature and water flow regimes (Myers et al. 1998). After spawning, females remain on the redd from 4 to 26 days until they die or become too weak to hold in the current (Neilson and Green 1981, Neilson and Banford 1983). During this period, females will vigorously defend the redd against the spawning activity of newly arriving fish. Duration of incubation varies, depending on location of redds, but is generally completed by the end of February. Young chinook reside in stream gravels for 2 to 3 weeks after hatching (Wydoski and Whitney 1979) before moving to lateral stream habitats (e.g., sloughs, side channels, and pools) for refugia and food during their migration downstream and out to Puget Sound. Peak emigration occurs from March to June.

The amount of time juveniles spend in estuarine areas is dependent upon their size at downstream migration and rate of growth. Juveniles disperse to deeper marine areas when they reach approximately 65-75 mm in fork length (Simenstad et al. 1982). While residing in upper estuaries as fry, juvenile chinook have an affinity for benthic and epibenthic prey items such as amphipods, mysids, and cumaceans. As the juveniles grow and move to deeper waters with higher salinities, this preference changes to pelagic items such as decapod larvae, larval and juvenile fish, drift insects, and euphausiids (Simenstad et al. 1982).

Designated critical habitat for the Puget Sound ESU Chinook includes all marine, estuarine and river reaches accessible to the species in Puget Sound (NMFS 2000). Critical habitat consists of the water, substrate, and the adjacent riparian zone of accessible estuarine and riverine reaches. Both the project and action areas are designated critical habitat.

Utilization of the Action Area

Chinook utilize the larger East Kitsap drainages, including Coulter, Rocky, Minter, Burley, Gorst, Chico, and Dogfish creeks (Williams et al. 1975). Gorst Creek is the chinook-bearing stream nearest to the project site, and was included as a South Sound Chinook Stock in the 1992 Washington Salmon and Steelhead Inventory. This stock was characterized by extensive non-native transfers from other basins and considerable hatchery outplantings (WDFW and WWTIT 1994). Most nearby streams are characterized by small drainages and low gradients, which are not typically used by chinook (Williams et al. 1975).

Beach seining conducted during mid-March to late July in 1991, 1992, and 1993 indicate that juvenile chinook salmon utilize nearshore intertidal areas at the Manchester Fuel Depot (Weitkamp 1994). In 1993, 140 chinook were captured by beach seine and 4 were captured by purse seine. This ratio indicates that during late spring and early summer, juvenile chinook utilize shallow (-2' to +2' MLLW) nearshore areas more than deeper (-55' to -60' MLLW) waters. Four of the chinook salmon caught was missing adipose fins, indicating the presence of coded wire tags. WDFW determined these fish came from the Clearwater Hatchery (Nisqually River) and the Green River Hatchery.

The Weitkamp (1994) data indicate that during some years juvenile chinook utilize the action area during the NMFS closure period for Puget Sound ESU chinook in marine waters (March 1 – July 1). During beach seines in 1993, 62 subyearling and 1 yearling chinook were captured on July 14, and 16 were captured on July 29.

Effects of the Proposed Action

The effects of the proposed action on chinook will be similar to those described for bull trout. Construction work will occur outside of the NMFS closure period for in-water work, March 1 through July 1. This closure period corresponds to the portion of the year when chinook are most likely to be present in nearshore marine waters. As discussed above, data indicate that juvenile chinook may utilize the action area outside of the closure period. However, since bull trout and nesting bald eagles occur in the project area, construction will not begin until August. This gap allows for more time for chinook smolt to rear and move further offshore, thereby reducing the likelihood that smolts will be in the project area during construction activities.

Effect Determination

The proposed project **may affect, but is not likely to adversely affect** chinook salmon or designated critical habitat for this species. This determination is based upon the highly localized geographic scope of he project, the low likelihood that chinook would be present in the action area during construction activities, and the lack of changes to baseline habitat conditions at the project site.

6.5 Steller Sea Lion

The Steller sea lion was listed as a threatened species under the Endangered Species Act of 1973, as amended, in November 1990. In 1997, the North Pacific's population of Steller sea lions was separated into two distinct stocks, one of which was reclassified as endangered. The status of the eastern stock, which includes the population inhabiting the waters of the Washington coast, remains unchanged.

The present range of the Steller sea lion extends from northern Japan, through the Bering Sea and Aleutian Islands, along Alaska's southern coast, and south to California. The centers of abundance and distribution lie in the Gulf and Alaska and Aleutian Islands. Steller sea lions are not known to migrate, but they do disperse widely during portions of the year other than the breeding season. Most information on the distribution of Steller sea lions has been collected during summer months, so their distribution during late fall and winter is poorly known (Steller Sea Lion Recovery Team 1992).

Two types of terrestrial habitats are utilized by Stellar sea lions: rookeries are areas where adults congregate for breeding and pupping, and haul-outs are areas used for rest and socializing. Sites used as rookeries during the breeding season may be used as haul-outs during the remainder of the year. Steller sea lions haul-out on offshore islands, reefs, and rocks, while rookeries generally occur on beaches. Preferred rookeries and haul-out areas are located in relatively remote areas where access by humans and mammalian predators is difficult; locations are specific and change little from year to year (Steller Sea Lion Recovery Team 1992).

When not on land Steller sea lions are generally seen inshore, less than 5 miles from the coast. Steller sea lion foraging patterns vary depending upon age, season, and reproductive status, as well as the distribution and availability of prey. Foraging patterns of females during the winter months vary considerably; individuals travel an average of 133 km and dive an average of 5.3 hours per day. The vast majority of feeding dives occur to a depth of 100 m. The diet of Washington's Steller sea lions is not well known; primary prey items may include cod, pollock, rockfishes, herring, and smelt (Gearin and Jeffries 1996). They appear to be largely opportunistic feeders.

During the past 30 years, Steller sea lion populations have suffered a dramatic decline. Numbers in the rookeries of central/southern California, the central Bering Sea, and in the core Alaskan ranges have all decreased substantially. A number of natural and anthropogenic factors have been hypothesized as contributing to these declines, but a primary cause has not been definitively identified. It is generally thought that a nutritional deficiency resulting from a lack of abundance or availability of suitable prey is involved (Steller Sea Lion Recovery Team 1992). Major shifts in the abundance of fish in the Bering Sea over the past several decades are well documented (WDFW 1993). The Alaska pollock and Atka mackerel fisheries have specifically been implicated in decreasing the availability of prey. A similar decline has not been documented in the region from southeast Alaska through Oregon, where Steller sea lion numbers appeared to have remained stable (Steller Sea Lion Recovery Team 1992).

On August 27, 1993, NMFS designated critical habitat for Steller sea lions. All rookeries within U.S. borders, major haulouts in Alaska, aquatic areas associated with these terrestrial habitats, and aquatic foraging habitats in waters off Alaska were designated at this time (58 FR 53138). No critical habitat occurs in Washington.

Utilization of the Action Area

Steller sea lions may be observed in Puget Sound year round, but they are most abundant during the fall and winter months (Jeffries et al. 2000). No breeding rookeries have been identified in Washington waters; however, in 1992 a single pup was born on Carroll Island (WDFW 1993).

The most frequented haul-out areas in Puget Sound are located north of Admiralty Inlet. However, the species is occasionally seen on navigation buoys in Puget Sound (Jeffries et al. 2000). Two navigation buoys less than one mile from the project site, Restoration Point Buoy and Rich Passage Buoy, are known California sea lion haul-out sites (Jeffries et al. 2000).

Effects of the Proposed Action

Given the lack of rookery and major haul-out areas in southern Puget Sound, when in the action area Steller sea lions are likely on foraging expeditions. Construction activities will have no effect on breeding habitat or behavior, and are unlikely to affect the Steller sea lion prey base. Construction activities would occur in an area with substantial human activity on both the waterward and landward sides of the shoreline. Additional noise from the shore-side operation of heavy equipment may have an effect on foraging opportunities. No boat operations will be a part of construction activities. Short-term impacts of any sound disturbance related to construction activities would likely result in displacement of animals rather than injury. The potential for long-term or indirect impacts of the proposed project to Stellar sea lions is minimal. The proposed work will not increase vessel traffic in the area, and construction activities are not anticipated to degrade water quality significantly.

Effect Determination

This project is **not likely to adversely affect** the Steller sea lion since the potential for significant sound disturbance or impacts to water quality and prey abundance are highly unlikely. The project will have **no effect** on designated critical habitat for this species.

6.6 Humpback Whale

In 1970 the humpback whale was listed as a endangered species under Endangered Species Conservation Act of 1969. The humpback is currently listed as endangered under the Endangered Species Act of 1973.

Humpbacks are a highly migratory species. Two types of migrations are distinguished: within-season movements through a portion of the summer range, presumably to find or follow concentrations of prey, and long-distance migrations between summering and wintering areas (NMFS 1991). The summer range of humpbacks extends from subtropical waters to the arctic and the species winters in tropical waters, where mating and calving occur. During the summer, North Pacific humpbacks feed in coastal areas; greatest numbers generally occur off the Aleutian Islands and California coast. The primary prey item of humpback whales is euphausiids, but they also feed on schooling fish such as anchovies, herring, sand lance, capelin, sardines, cod, and juvenile salmonids (Nitta and Naughton 1989). When not migrating, they occur very close to shore. Humpbacks visit coastal and inside waters more often than other large whale species, with the exception of the gray whale. At one time humpbacks were one of the most frequently sighted whales in Washington’s inside waters.

Barlow (1994) identified four relatively separate migratory populations in the North Pacific: the coastal California/Oregon/Washington-Mexico stock, the Mexico offshore island stock, the central North Pacific stock (Hawaii/Alaska), and the western North Pacific (Japan) stock. The coastal California/Oregon/Washington-Mexico stock ranges from Costa Rica to southern British Columbia, but is most common in coastal waters off California in the summer/fall and Mexico in the winter/spring (Barlow et al. 1997). In 1996, the minimum population estimate for this population was 563; the coastal California/Oregon/Washington-Mexico stock appears to be increasing in abundance (Barlow et al. 1997).

In 1965, the International Whaling Commission banned the commercial harvest of humpback whales in the North Pacific. Current threats to humpback populations include entanglement in offshore drift gillnets and ship strikes. It is thought that increasing levels of anthropogenic noise in the world's oceans may also impact whales, particularly baleen whales like the humpback that may communicate using low-frequency sound (Barlow et al. 1997).

Based on whaling statistics, the pre-1905 humpback population in the North Pacific can be estimated at 15,000. By 1966, this population was reduced to approximately 1,200. The North Pacific population is now thought to exceed 3,000 (Barlow 1994).

Utilization of the Action Area

Humpback whales are intermittently sighted in Puget Sound, but those observed do not remain for long periods and are considered stragglers. The likelihood that a humpback whale would be in the action area during construction is low.

Effects of the Proposed Action

No boat operations will be a part of construction operations, but resurfacing will produce noise above ambient levels. Since any humpback that happened to be in the action area during the ten day construction period would likely be offshore and not in the shallow embayment where the ramp is located, this noise is not expected to have any effects. Ramp resurfacing will not increase vessel traffic in the area, and construction activities are not anticipated to degrade water quality or decrease prey availability except perhaps in an extremely localized area directly adjacent to the project site.

Effect Determination

The proposed project will have **no effect** on the humpback whale. The likelihood that a humpback whale would be in the action area during construction is low, and if one did happen into the action area during construction it would be far enough offshore that sound disturbance would not be an issue.

6.7 Leatherback Sea Turtle

The leatherback turtle was listed as endangered throughout its range in June 1970. Leatherbacks nest in tropical and subtropical areas, but unlike other sea turtles they can survive in cold waters. The largest nesting colonies in the eastern Pacific are located in Mexico and Costa Rica (Plotkin 1995). The leatherback is the most pelagic of the sea turtles, most often found near the edge of the continental shelf. However, in northern waters they are reported to sometimes enter shallow estuarine bays. The primary food item of leatherbacks is jellyfish, but they will also eat fish, mollusks, squid, and sea urchins.

Habitat destruction, incidental catch in commercial fisheries, the harvest of eggs and flesh are the greatest threats to the survival of the leatherback. Critical habitat for the leatherback had been designated in the U.S. Virgin Islands.

Utilization of the Action Area

Leatherback sea turtle nesting grounds occur between 40°N and 35°S (Plotkin 1995), so no nesting areas are located in Washington. While this species may use oceanic areas off the coast of Washington as foraging grounds during the summer and fall months, aerial surveys indicate that when off the U.S. Pacific coast leatherbacks usually occur in continental slope waters (NMFS and USFWS 1998).

Effects of the Proposed Action

No boat operations will be a part of construction operations, but resurfacing will produce noise above ambient levels. Since any turtle that happened to be in the action area during the ten day construction period would likely be offshore and not in the shallow embayment where the ramp is located, this noise is not expected to have any effects. Ramp resurfacing will not increase vessel traffic in the area, and construction activities are not anticipated to degrade water quality or decrease prey availability except perhaps in an extremely localized area directly adjacent to the project site.

Effect Determination

Given the distribution and mobility of the leatherback sea turtle, the proposed project will have **no effect** on the species or its designated critical habitat.

6.8 Puget Sound/Strait of Georgia Coho Salmo

In July 1995, NMFS determined that listing was not warranted for the Puget Sound/Strait of Georgia ESU coho salmon. However, the ESU is designated as a candidate for listing due to concerns over specific risk factors.

Coho salmon have one of the more predictable life histories of the Pacific salmon. After 1 or 2 years in ocean waters, adult coho return to Grays Harbor from mid- to late September through mid-December, enter their parent rivers in beginning in October, and begin to spawn in November (WDFW and Washington Treaty Tribes 1994). Coho larvae spend 2 to 3 weeks absorbing the yolk sac in the gravels of the redd before they emerge. Juvenile coho salmon then rear in freshwater for approximately 15 to 18 months prior to migrating downstream to the ocean. Newly emergent fry usually congregate in schools in pools of their natal stream. As juveniles grow they move into riffle habitat and aggressively defend their territory, resulting in the displacement of excess juveniles downstream to less favorable habitat (Wydoski and Whitney 1979). This aggressive behavior may be an important factor maintaining the numbers of juveniles within the carrying capacity of the stream, and distributing juveniles more widely downstream. As territories are established, individuals rear in selected areas of the stream and feed on drifting benthic organisms and terrestrial insects. Territories expand as juveniles grow. Feeding and growth slow considerably in the fall and winter, as food production and fish metabolisms slow. Coho seek off-channel sloughs and ponds in which to spend the winter.

Coho salmon within this ESU are abundant and, with some exceptions, run sizes and natural spawning escapements have been generally stable. However, artificial propagation of coho salmon appears to have had a substantial impact on native, natural coho salmon populations, to the point that it is difficult to identify self-sustaining, native stocks within this region (Weitkamp et al. 1995). In addition, continuing loss of habitat, extremely high harvest rates, and a severe recent decline in average size of spawners indicate that there are substantial risks to whatever native production remains. There is concern that if present trends continue, this ESU is likely to become endangered in the foreseeable future (Weitkamp et al. 1995).

Utilization of the Action Area

The 1992 WDFW Salmon and Steelhead Stock Inventory notes that coho utilize, to some degree, almost all of the accessible streams in the East Kitsap basin. The East Kitsap basin was defined to include all tributaries to the west side of Puget Sound, north of the Tacoma Narrows to the north end of the Kitsap Peninsula (WDFW and WWTIT 1994). Coho returning to these streams typically enter fresh water from early September to mid-November and spawn from late October through December, with some variation observed between streams and between years (WDFW and WWTIT 1994). There have been substantial releases of hatchery-origin coho within this basin.

Given the presence of sea-run cutthroat trout (*Oncorhynchus clarki clarki*) in Beaver Creek during recent sampling efforts (Grassley and Grue 1999), it is possible that coho also spawn in Beaver creek.

Effects of the Proposed Action

The effects of the proposed action on chinook will be similar to those described for bull trout.

Effect Determination

Effect determinations are not made for candidate species.

7. INTERRELATED AND INTERDEPENDENT EFFECTS

There are no interrelated or interdependent action associated with the proposed action.

8. CUMULATIVE EFFECTS

The Navy knows of no other non-Federal actions that are reasonably certain to occur that may adversely affect a listed, proposed, or candidate species within the action area.

9. CONCLUSION

Table 3. summarizes the effect determinations made for each of the species potentially occuring in the project vicinity.

Table 3. Determination Summary Table

Species	Effect Determination	Critical Habitat Determination
Bald Eagle	Not likely to adversely affect	—
Marbled Murrelet	Not likely to adversely affect	No effect
Bull Trout	Not likely to adversely affect	—
Chinook	Not likely to adversely affect	Will not adversely modify or destroy
Steller Sea Lion	Not likely to adversely affect	No effect
Humpback Whale	No effect	—
Leatherback Sea Turtle	No effect	No effect

10. ESSENTIAL FISH HABITAT

The project area has been designated as Essential Fish Habitat (EFH) for various life stages of 17 species of groundfish, 5 coastal pelagic species, and three species of Pacific salmon.

Essential Fish Habitat (EFH) for the Pacific coast salmon fishery is those waters and substrate necessary for salmon production needed to support a long-term sustainable fishery and salmon contributions to a healthy ecosystem. Salmon EFH and potential adverse impacts to EFH have been identified by the Pacific Fishery Management Council (PFMC). Important features of marine EFH for salmon are: (1) adequate water quality, (2) adequate temperature, (3) adequate prey species and forage base, (4) adequate depth, cover, marine vegetation, and algae in estuarine and near-shore habitats (PFMC 1999).

As described in the effects analysis for chinook, the proposed action will not result in excessive levels of organic materials, inorganic nutrients, or heat. The action will not result in physical alterations which could affect water temperature, depth, or beach contours. The action will not remove large woody debris or other natural beach complexity features, nor will it affect any vegetated shallows. Prey species will not be impacted. Likewise, impacts to coastal pelagic and groundfish EFH are not anticipated. Resurfacing work will occur entirely in the footprint of an existing structure. Water quality will be impacted during construction, but no long-term degradation will occur.

The Corps has determined that the proposed action will not reduce the quality and/or quantity of EFH. No adverse effects to EFH are expected to result from this highly localized action.

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APPENDIX B
Photographs of the Project Site

Photo 1 Aerial photo of the project area (5/92).

Photo 2 View of the small boat ramp to be resurfaced (2/01).

Photo 3 A landward view of the Navy boat ramp, taken from the small boat pier. The upper portion of the ramp, above +11.5' MLLW (the mean higher high water datum at this location), was resurfaced last year. This photograph was taken at an approximately +8' MLLW tide (~10:00 on 2/28/01).

Photo 4 Riprap surrounding the upper portion of the ramp, with the small boat pier in the background (2/01).

Photo 5 The MNFD small boat pier (2/01).

Photo 6 The shoreline adjacent to the small boat ramp. Photo taken from the end of the small boat pier (2/01).

Photo 7 The NMFS boat ramp to be removed as a conservation measure.
This photograph was taken at an approximately +6' MLLW tide (~11:00 on 2/28/01).

Photo 8 The beach above the NMFS boat ramp (2/01).