Fish and Wildlife Harvesting

1.0 Summary of Activity

1.1 For all Fresh Waters excluding the Columbia River mainstem

No work is authorized under this programmatic biological evaluation in fresh waters.

1.2 For the Columbia River Mainstem including the Snake River and Baker Bay

Placement of crab or shrimp pots, non-commercial clam digging, and noncommercial oyster and mussel harvesting provided that:

1. Work only occurs in estuarine portions of the Columbia River (Baker Bay).

2. No clam digging or oyster and mussel harvesting activities occur over or adjacent to vegetated shallows or habitat for listed or proposed species. [from NWP 4]

1.3 For all Marine/Estuarine Waters excluding Baker Bay

Placement of crab or shrimp pots, non-commercial clam digging, and noncommercial oyster and mussel harvesting provided that:

1. No clam digging or oyster and mussel harvesting activities occur over or adjacent to vegetated shallows or habitat for listed or proposed species. [from NWP 4]

2.0 Programmatic Description

Individual permits (IPs), letters of permission (LOPs) and Nationwide Permit 4 (NWP 4) may authorize the placement of crab and shrimp pots or clam digging and oyster and mussel harvesting. This programmatic biological evaluation applies only to the placement of crab and shrimp pots (commercial and non-commercial), non-commercial clam digging and non-commercial oyster and mussel harvesting. Work that cannot be designed or constructed to fit under this biological evaluation must go through individual informal or formal ESA consultation.

3.0 Project Location

In all marine/estuarine waters only in the counties of Washington State where the National Marine Fisheries Service and U.S. Fish and Wildlife Service have concurred that the project is not likely to adversely affect listed species and designated critical habitat and will not jeopardize proposed species or destroy or adversely modify proposed critical habitat.

4.0 Project Description

This programmatic biological evaluation does not cover any interrelated and/or interdependent work activities in any of the designated critical habitat areas, except those activities distinctly specified.

Placement of crab pots (Non-commercial harvesting)

Non-commercial crab harvesting may be done with the use of “crab pots”, “ring nets”, “star traps”, by hand with “dip nets” or with scuba gear. Crab harvesting occurs at a depth of 10 to 60 feet at high water,

accessing the area by boat, or from an existing in-water structure such as a pier or float (sometimes by beach if at low water). Pots, nets, or traps are weighted down and placed on the substrate with a weighted rope and buoy marking the location. For most crab harvesters, the pot is placed in the morning and retrieved in the evening. For crab harvesters living on the shoreline, pots are more likely to be left out for 1 to 2 days. The pots are drawn in either by hand or by use of an electric wench (WDFW, 1999a).

Placement of shrimp pots (Non-commercial harvesting)

Non-commercial shrimp harvesting is done with the use of "shrimp pots". Depending on the target species, shrimp harvesting usually occurs at a depth of 250 to 400 feet. Coonstripe dock shrimp are harvested near existing in-water structures such as piers or floats. The pots are weighted down and placed on the substrate by boat with a weighted rope and buoy marking the location. Pots are typically placed out for one day only. The pots are drawn in either by hand or by use of an electric wench. (WDFW, 1999a.)

Placement of crab pots (Commercial Harvesting)

WDFW requires that each pot have its own buoy. The buoy design is regulated by WDFW – closed cell Styrofoam buoy averaging 2 feet in diameter. For larger vessels, the vessel is either rigged to drop the pot, feed the line and place the buoy. For smaller vessels, pots are usually tossed in the water by hand. Pots are partially submerged in the water before dropped to ensure better placement on the floor. At the beginning of the season when crab are more abundant, pots are usually left in only for one day – placing the pot in the morning and retrieving it at night. At the end of the season when abundance is less, pots are usually left in the water for 5 to 7 days.

Placement of shrimp pots (Commercial Harvesting)

WDFW allows up to 20 pots per 2 buoys, with one buoy placed on either end of the line of pots. The buoy design is regulated by WDFW – closed cell Styrofoam buoy averaging 2 feet in diameter. For larger vessels, the vessel is rigged to drop the pot, feed the line and place the buoy. For smaller vessels, pots are usually tossed in the water by hand. Pots are partially submerged in the water before dropped to ensure better placement on the floor. Shrimp harvesting is strictly regulated by WDFW with a very short shrimping season. Pots are placed left in only for one day – placing the pot in the morning and retrieving it at night. Trawling is often the method of commercial shrimp harvesting. However, trawling is not regulated by the Corps and not covered under this programmatic biological evaluation.

Clam digging (Non-commercial)

For non-commercial clamming, all digging is done by hand or with hand operated equipment. The harvester accesses the beach from an upland point or from a boat; determines the location of the clam by evidence of "clam show" – a dimple, doughnut or keyhole depression in the sand; then proceeds to dig around the depression 6 to 10 inches below the surface to uncover the clam. (WDFW, 1999b.)

Oyster and mussel harvesting (Non-commercial)

For non-commercial oyster and mussel harvesting, the oyster or mussel beach is accessed from an upland access point or from a boat. The work is done by hand, prying off the oysters or mussels from rock areas on the beach with a wedge or knife. On privately owned tidelands, the property owner is allowed to harvest a larger quantity than in public areas where a shellfish harvesting permit is required. In these areas, the property owner may use a "rake" to rake the beach.

5.0 Project Construction Description[1]

Placement of crab pots (Non-Commercial)

A. Equipment

For non-commercial harvesting, crab pots, ring nets or star traps. Crab pots are typically 3 feet in diameter and 8 inches high. The pots are collapsible and made of durable material, usually metal mesh coated with plastic. A buoy and rope and weight are used to anchor and mark the pot. The buoy must be constructed of durable material (close cell Styrofoam with plastic coating to ensure no water leakage). WDFW does not allow bleach, antifreeze, or detergent bottles, paint cans, etc. Pots must have escape holes for smaller crabs. The mesh and design of the traps allows both juvenile and adult fish to pass through the pot unhindered.

B. Methods

Access is by boat. Recreational boat size may vary but is an average length of 17 to 25 feet. Occasionally crab harvesting will be done by hand, accessing an area from an upland location and wading into the waters, catching the crab by hand, using scuba equipment or with dip nets. Hand harvesting with scuba equipment or dip nets is not a Corps regulated activity. Harvesting typically occurs in sandy substrates at deep water. However, harvesting may also occur at low tide in sandy or muddy bays near eelgrass beds. (Kozloff, 1993.)

C. Limits

Restricted by WDFW, a total of 2 crab pots (or 2 units of gear) are allowed per person. Catch limits vary by species and location. For Dungeness Crab, 12 males per day are allowed in the Columbia River with a minimum size of 5 ¾ inches, and 6 males per day allowed in the rest of Washington state with a minimum size of 6 inches (For Puget Sound excluding Hood Canal the minimum size is 6 ¼ inches). Six crabs (male or female) with a minimum size of 5 inches is allowed for Red Rock crab through out Washington State.

D. Retrieval and Cleanup

Restricted by WDFW, crab pots or other crab catchment devices are not allowed to be left in the water overnight from one hour after sunset to one hour before sunrise. Exception to this is when the crab harvester is a shoreline owner and crabbing directly waterward of their property. In this case, pots are often left for 1 to 2 days. Pots are retrieved either by hand or by electric wench from the boat. Any remaining bait (typically salmon carcasses or heads) is dumped back into the water.

E. Timing

The Columbia River and Pacific Ocean Dungeness Crab harvesting is allowed only from 1 December through 15 September. Puget Sound and Hood Canal Dungeness Crab harvesting is allowed only from 16 July through 15 April. Red Rock crab may be harvested anywhere in Washington State from 1 December through 15 September.

[1] Information on the operation of non-commercial and commercial shellfish harvesting was obtained by personal communication with Norm Lemberg, Crab Manager, WDFW, on February 23, 2000.

Placement of shrimp pots (Non-Commercial)

A. Equipment

For non-commercial shrimp harvesting, the "shrimp pot" is the equipment used. Shrimp pots are restricted by WDFW to a size of 10 feet in perimeter with a maximum height of 18 inches, and a mesh no larger than 7/8 of an inch. The pots are made of durable material, usually metal mesh coated with plastic. A buoy and rope and weight are used to anchor and mark the pot. The buoy must be constructed of durable material (close cell Styrofoam with plastic coating to ensure no water leakage). WDFW does not allow bleach, antifreeze, or detergent bottles, paint cans, etc. The mesh and design of the traps allows both juvenile and adult fish to pass through the pot unhindered.

B. Methods

Access is by boat or from an existing in-water structure such as a pier or float. Recreational boat size may vary but is an average length of 17 to 25 feet. The substrate varies depending on the target species. Coonstripe dock shrimp prefer sand or gravel bottoms near existing structures. Humpback or spot shrimp prefer sandy or mud substrates with a rapid tidal current flow. Prawns prefer rocky crevices. (Fisheries and Oceans, Canada, 2000)

C. Limits

Restricted by WDFW, harvesting limits vary by location and species harvested. For Hood Canal, recreational harvesters are allowed only one shrimp pot per person. In the rest of Puget Sound, up to two shrimp pots per person are allowed. For all of Puget Sound, excluding Hood Canal, 10 pounds of shrimp (including heads and tails) are allowed. Hood Canal has the daily limit of 80 shrimp total.

D. Retrieval and Cleanup

Restricted by WDFW, shrimp pots are not allowed to be left in the water overnight from one hour after sunset to one hour before sunrise. Pots are retrieved either by hand or by electric wench from the boat. When shrimp are cleaned (de-headed), the heads are typically dumped back into the water along with any remaining bait (typically wet cat food).

E. Timing

Shrimping is allowed for 2 days a year through most of Washington. Hood Canal shrimping season varies based on estimated shrimp population, with the shortest season at one day per year and the longest at 6 days per year.

Placement of crab pots (Commercial Harvesting)

A. Equipment

The vessels used for commercial crab harvest range from 17 to 45 feet in length; crab pots are 2 ½ - to 3-feet in diameter and 1 foot in height; 100 to 300 pots per vessel; for each pot there is a weighted nylon rope and a buoy averaging 2 feet in diameter. Pots must have escape holes for smaller crabs. The mesh and design of the traps allows both juvenile and adult fish to pass through the pot unhindered.

B. Methods

The crab pots are placed at a depth of 20 to 300 feet depending on species and time of year. Harvesting typically occurs in sandy substrates at deep water. However, harvesting may also occur at low tide in sandy or muddy bays near eelgrass beds. (Kozloff, 1993.) The area is accessed by a 17- to 45- foot vessel. Non-tribal harvesters typically use the larger vessels whereas tribal harvesters typically use the smaller vessels.

C. Limits

Each license is limited to 100 pots. There is typically 3 licenses per vessel, especially for non-tribal harvesters, averaging 300 pots per vessel.

D. Retrieval and Clean-up:

Pots are retrieved by an electric wench. Left over bait (typically salmon carcasses or heads) is usually tossed over board after the pot is retrieved.

Placement of Shrimp Pots (Commercial)

A. Equipment

The vessel is usually 17- to 35- feet in length, the pots are 2 ½ to 3-feet in diameter and of collapsible construction. Each vessel carries 100 to 300 pots (100 pots per license). The pots are placed with a weighted nylon rope and average 2 buoys per 10 to 20 pots. Buoys average 2 feet in diameter. The mesh and design of the traps allows both juvenile and adult fish to pass through the pot unhindered. Often commercial shrimp harvesting is done by trawling. However, trawling is not regulated by the Corps and is therefore not covered under this programmatic biological evaluation.

B. Methods

The shrimp pots are placed at a depth of 250 to 400 feet depending on species and time of year. The area is accessed by a 17- to 35-foot vessel. Non-tribal harvesters typically use the larger vessels where as tribal harvesters typically use the smaller vessels. The substrate varies depending on the target species. Coonstripe dock shrimp prefer sand or gravel bottoms near existing structures. Humpback or spot shrimp prefer sandy or mud substrates with a rapid tidal current flow. Prawns prefer rocky crevices. (Fisheries and Oceans, Canada, 2000)

C. Limits

Each license is limited to 100 pots. There is typically 3 licenses per vessel, especially for non-tribal harvesters, averaging 300 pots per vessel.

D. Retrieval and Clean-up

Pots are retrieved by an electric wench. Left over bait (typically some sort of decaying bait, i.e. cat food, invertebrates or small fish) is usually tossed over board after the pot is retrieved.

Clam Digging (Non-Commercial)

A. Equipment

For non-commercial clam digging, harvesters use either a clam shovel (a shovel with 15 inch blade) or a clam tube (a 4-inch diameter circular can or tube or a 4-inch long, 3-inch wide elliptical can or tube). All work is done by hand. Non-commercial clammers may not use hydraulic or other machinery to harvest geoducks or other clams.

B. Methods

Depending on the location of the beach, the tidal area is accessed either from an upland beach access point or from a boat.

C. Limits

Restricted by WDFW, clam harvesting limits are set at daily levels. Depending on location and species, the clam harvesting limits may be anywhere from 3 (geoducks) to 15 (razor clams) a day. The harvesting

permits are limited so that the harvest must keep the first of the limit caught – i.e. the first 3 geoducks caught.

Oyster and Mussel Harvesting (Non-Commercial)

A. Equipment

For non-commercial oyster and mussel harvesting, usually a wedge or knife is used to pry the oyster or mussel off. If a rake is used on privately owned tidelands, the rake is a heavy squared garden rake (tongs averaging 4 inches long) or may be a squared rake with longer tongs (averaging 6 to 8 inches long). In some cases, mussels are harvested off of ropes or tree branches dangling in the waters. All work is done by hand.

B. Methods

Depending on the location of the beach, the tidal area is accessed either from an upland beach access point or from a boat.

Harvesting typically occurs in cobble mixed with sand substrates at low water, which may have a scattering of rocks. (Kozloff, 1993) If pried by hand with a wedge or knife, the work area is the area of the oyster or mussel being harvested. If raked, the work area is usually the length of the private tideland owner's property in the intertidal areas when exposed during low tide.

C. Limits

Restricted by WDFW, mussels are restricted to harvesting 10 lbs of shell per license per day. For mussels, year round harvesting is allowed in Puget Sound and harvesting is restricted to November 1 through March 31 for Pacific Ocean beaches. For oysters, harvesters are restricted to 18 oysters total. In Puget Sound, harvesting may occur year round. Oyster size is restricted to a minimum of 2 ½ inches. In Hood Canal, there is no size or time restriction but oyster shells must be shucked and left on the beach. There may be health restrictions of harvesting mussels and oysters on certain beaches during certain times of the year.

D. Clean-up

On non-privately owned tidelands where harvesting is controlled by WDFW, oysters, mussels and their shells are removed from the site, except for oysters in Hood Canal where the shells must remain on the beach. On privately owned tidelands, if the harvester rakes, the oysters or mussels are removed from the beach. Some tideland owners will rake the beach back, filling in disturbed areas but most leave the sediment turned over to be redistributed by the incoming tides.

6.0 Action Area Description

The action area is for activities in all marine/estuarine waters of Washington State. There is no interrelated and/or interdependent work in any upland or wetland areas designated as critical habitat.

Placement of crab or shrimp pots

The action area for non-commercial and commercial harvesting includes the vessel, the pot or pots placed and a radius of 25 feet[2] around the pots for potential temporary water quality impacts. All the pots placed by a single harvester in one day are included.

[2] The determination of impact area for potential water quality impacts is based on personal communication with John Malek, Sediment Management, Environmental Protection Agency, on May 10, 2000. Mr. Malek stated that typically turbidity impacts of a pile driving, anchor placement or the like would not exceed a 15-foot radius, a 25-foot radius is the maximum extent of impact, regardless of substrate type and currents at a project site.

Clam Digging (Non-Commercial)

The action area for the non-commercial clam digging is the 12-inch diameter hole dug to capture the clams. All the holes dug by a single clammer in one day (average of 25 holes) are included over the full extent of the beach being harvested (averaging a third of an acre of beach).

Oyster and mussel harvesting (Non-Commercial)

The action area for noncommercial oyster and mussel harvesting on public beaches is the location of where the oyster or mussel is pried from the rock. On privately owned beaches where the area is raked, the action area is the entire area of the beach harvested by a single harvester in one day plus extending 25 feet waterward from the furthest waterward extent of the harvesting for temporary water quality impacts.

7.0 Species and Habitat Information

7.1 Species Present

The plants, animals, insects, and fish present in the project area are provided in Table 1 through Table 4. Details on each species can be found in Appendix B. This programmatic biological evaluation addresses only actions that occur in the estuarine portions of the Columbia River, freshwater is not covered by this PBE.

Table 1. Sensitive Terrestrial Animals and Insects Potentially Occurring in Designated Project Areas

Species Name *Scientific Name*	**Status**	**Columbia River/Baker Bay**	**Marine/Estuarine Water Area (excluding Baker Bay)**
Brown Pelican *Pelecanus occidentalis*	E	X	X
Marbled Murrelet *Brachyramphus marmoratus*	T	X	X
Northern Spotted Owl *Strix occidentalis*	T		X
Short-Tailed Albatross *Phoebastria albatrus*	E	X	X
Western Snowy Plover *Charadrius alexandrinus*	T	X	X
Canada Lynx *Lynx canadensis*	T		
Columbia White-Tailed Deer *Odocoileus virginianus leucurus*	E	X	
Gray Wolf *Canis lupis*	E		
Grizzly Bear *Ursus arctos horribilis*	T		
Pygmy Rabbit *Barchylagus idahoensis*	E	X	
Woodland Caribou *Rangifer tarandus caribou*	E		
Oregon Silverspot Butterfly *Speyeria zerene hippolyta*	T	X	X

Table 2. Sensitive Marine Animals Potentially Occurring in Designated Project Areas

Species Name *Scientific Name*	**Status**	**Columbia River/Baker Bay**	**Marine/Estuarine Water Area (excluding Baker Bay)**
Blue Whale *Balaenoptera musculus*	E		X
Fin Whale *Balaenoptera physalus*	E		X
Humpback Whale *Megaptera novaeangliae*	E		X
Sei Whale *Balaenoptera borealis*	E		X
Sperm Whale *Physeter macrocephalus*	E		X
Killer Whale *Orcinus orca*	E		X
Steller Sea Lion *Eumetopias jubatus*	T	X	X
Green Sea Turtle *Chelonia mydas*	T		X
Leatherback Sea Turtle *Dermochelys coriacea*	E		X
Loggerhead Sea Turtle *Caretta caretta*	T		X

Table 3. Sensitive Plants Species Potentially Occurring in Designated Project Areas

Species Name *Scientific Name*	**Status**	**Columbia River/Baker Bay**	**Marine/Estuarine Water Area (excluding Baker Bay)**
Bradshaw's Desert Parsley *Lomatium bradshawii*	E	X	
Golden Paintbrush *Castilleja levisecta*	T	X	
Kincaid's Sulphur Lupine *Lupinus sulphureus ssp. Kincaidii*	T		
Marsh Sandwort *Arenaria paludicola*	E		
Nelson's Checker-Mallow *Sidalcea nelsoniana*	T	X	
Showy Stickseed *Hackelia venusta*	PE		
Spalding's Silene *Silene spaldingii*	PT		
Water Howellia *Howellia aquatilis*	T	X	
Wenatchee Mountain Checker-Mallow *Sidalcea oregana var. calva*	E		
Ute Ladies'-Tresses *Spiranthes diluvialis*	T	X	

Table 4. Sensitive Fish Species Potentially Occurring in Designated Project Areas

Species Name *Scientific Name* Evolutionary Significant Unit (ESU)/Distinct Population Segment (DPS)	**Status**	**Columbia River/Baker Bay**	**Marine/Estuarine Water Area (excluding Baker Bay)**
Bull Trout *Salvelinus confluentus*			
Coastal/Puget Sound DPS	T		X
Columbia River DPS	T	X	X
Chinook Salmon *Oncorhynchus tshawytscha*			
Puget Sound ESU	T		X
Snake River Fall Run ESU	T	X	X
Snake River Spring/Summer-run ESU	T	X	X
Lower Columbia River ESU	T	X	X
Upper Columbia River Spring-run ESU	E	X	X
Upper Willamette River ESU	T	X	X
Sockeye Salmon *Oncorhynchus nerka*			
Ozette Lake ESU	T		X
Snake River ESU	E	X	X
Coho Salmon *Oncorhynchus kisutch*			
Lower Columbia River/SW WA ESU	T	X	
Chum Salmon *Oncorhynchus keta*			
Hood Canal Summer-run ESU	T		X
Columbia River ESU	T	X	X
Steelhead Trout *Oncorhynchus mykiss*			
Puget Sound ESU	T	X	X
Upper Columbia River ESU	E	X	X
Middle Columbia River ESU	T	X	X
Lower Columbia River ESU	T	X	X
Snake River Basin ESU	T	X	X
Upper Willamette River ESU	T	X	X

8.0 Activity History and Status

Table 5 is a breakdown of the number of Nationwide Permit 4 (NWP 4 – Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities) verifications authorized by the Corps of Engineers. The breakdown is organized by year and waterbody. The waterbody includes all creeks, streams, and unnamed tributaries that flow into it unless otherwise noted. Each of the waterbodies is categorized as below:

8.1 Marine

All marine waters within Washington State (i.e., Pacific Ocean, Willapa Bay, Grays Harbor, Strait of Juan de Fuca, Strait of Georgia, Puget Sound, Hood Canal, Sammish Bay, Skagit Bay, Totten Inlet, Dabob Bay, Commencement Bay, etc.). Because of the design of the Corps database, it was not possible to separate out tidal areas from minor freshwater creeks, streams, and unnamed tributaries that flow into these waterbodies. However, because the type of activity only occurs in tidally influenced areas, the data should accurately reflect only fish harvesting in marine areas.

8.2 Columbia River

Mainstem Columbia River within Washington State, including Snake River, Baker Bay, and lakes and reservoirs (i.e. Lake Entiat, Lake Wallula, Franklin D. Roosevelt Lake, Priest Rapids Lake, etc). Data for all tributaries are included under "freshwater" areas. Crab and shrimp harvesting only occur in marine/estuarine reaches of the Columbia River. However, it is not possible to make that distinction within the constraints of the Corps database. To determine the number of authorized fish and wildlife harvesting activities, all finalized permit actions were queried against the key word "NWP 4" and cross-referenced with the work types "aquatic harvesting device" and "fisheries habitat enhancement." The cross-referencing ensures that the activity is properly categorized and each NWP 4 verification is only counted once. NWP 4 activities do not require "notification" to the Corps, therefore the data set below represents only those activities where the Corps was notified and a verification was actually issued. The following data also includes before- and, when applicable, after-the fact authorizations. In 1998, the Corps contacted WDFW to receive a record of all crab harvesting permits issued. Although this does not include shellfish harvesting or shrimp harvesting, the 1998 data is the most accurate data. In comparing the Corps database with one year of data from WDFW (1998), the Corps database outside of 1998 records represent less than 1 % of the actual number of fish and wildlife harvesting activities.

Table 5. Historical Record of Corps Authorization of Shellfish Harvesting

WATERBODY	1995	1996	1997	1998	1999
Marine	2	1	0	485	0
Columbia River	1	3	0	3	1
TOTAL	**3**	**4**	**0**	**488**	**1**

* The data set for the year 1998 includes 486 crab harvesting activities supplied to the Corps by the Washington Department of Fish and Wildlife.

As of August 2005, this programmatic has not been used.

9.0 Environmental Baseline

The environmental baseline is provided in Appendix C.

10.0 Effects of the Action

10.1 Direct effects

Placement of crab or shrimp pots (Non-Commercial/Commercial)

Because the effects are relatively the same for all the listed or proposed species, the effects analysis does not distinguish between project area/waterbody. Shrimp pots placed in open water have the potential to affect species associated with open water such as fish, marine mammals, and birds. Commercial crabbing and shrimping typically occurs at deeper waters than non-commercial crabbing. For commercial operations, the action area generally encompasses adult migration corridors for listed or proposed fish and could potentially affect marine mammals and turtles. For non-commercial operations, the action area is typically in the nearshore, and may be in vegetated shallows. These nearshore areas are used by juvenile,

listed, and proposed fish for forage and refuge; and forage fish (i.e. Pacific herring) for spawning. In addition, these nearshore areas are can be utilized by birds. Effects to listed or proposed species associated with the placement of crab or shrimp in any of the marine/estuarine waters of Washington State including Baker Bay are outlined below:

1. Water quality (pot placement): Temporary water quality impacts may occur with the placement of the pots as the pot drops and a small amount of sediment is temporarily suspended in the water column. The pot drops at a speed of 10 feet per second in the water. Pots are placed throughout the day of authorized shrimping or crabbing, regardless of tide levels. The location of the pots is dependent upon the tide in that if the tide is coming in, the harvester wants to make sure there is adequate line to support the buoy and retrieve the pot. Because the pot drops in a matter of seconds and settles, sediment suspension is unlikely to exceed a radius of 25 feet from the pot and would settle out of the water column to background levels in no more than an hour, depending on sediment type and currents. A small amount of resuspension may occur when the pot is retrieved, but this too would settle down to background levels rather quickly. If the pot is placed by hand, wading out to the proposed pot location, resuspension of sediments due to wading in the shallow areas would be similar to the pot placement itself. When installed as described, all temporary water quality impacts associated with the pot placement are insignificant and/or discountable.

2. Water Quality (propwash): The boat placing the buoy is likely to cause some sediment suspension associated with propwash. The boat is stopped or moving extremely slowly during pot placement so the disturbance with the propwash is extremely small. Any turbidity associated with propwash would also settle out of the water column to background levels in no more than an hour, depending on sediment type and currents. For commercial operations, sediment suspension due to propwash is less likely to occur because crabbing and shrimping is in deeper waters (up to 300 feet). For non-commercial harvesting, propwash is more likely to occur (95% of the time) since harvesting is typically in shallower waters. When installed as described, all temporary water quality impacts are insignificant and/or discountable.

3. Habitat Health: Usually the pots are placed in open areas but there is a potential for the pot to be placed over or adjacent to vegetated shallows since that is prime habitat for crab. When pots are placed in vegetated shallows, the activity is typically non-commercial with smaller boats (a maximum of 25 feet in length) used or pots are placed by hand from a pier or wading out. (This is because the larger vessels used for commercial operations would have difficulty maneuvering in shallow waters and the vegetation may interfere is the boat prop.) When the pots are placed and retrieved, the boat is moving extremely slowly or at a standstill. The pots also remain in the vegetated shallows for a short period of time (approximately 1 day). Operating in this manner, vegetated shallows may be disturbed but destruction is unlikely. When installed as described, impacts to habitat health are insignificant and/or discountable.

Clam Digging and Oyster/Mussel Harvesting (Non-Commercial)

Because the effects are relatively the same for all the listed or proposed species, the effects analysis does not distinguish between species type. Effects to listed or proposed species associated with non-commercial clam digging in any of the marine/estuarine waters of Washington State including Baker Bay are outlined below:

1. Water quality (Turbidity): Oyster and mussel harvesting and clamming occur during low tide on sandy beaches (Kozloff, 1993), when the harvester can access the beach and identify the clam holes or access the rocks the oysters and mussels cling to. For clamming, after the hole is

excavated, the harvester refills it with the same material removed. The excavation of the hole and refilling all occurs during the low tide. Since the beach is predominantly sand, any loosened material that may be resuspended when the tide returns, will drop out relatively quickly, matching background levels. For oyster and mussel harvesting, the typical method of prying off the shells will not cause any disturbance to the sediment. However, raking may cause some disturbance as the tide returns and there is a potential for the loosened sediment to resuspend. The rake stirs up sediment at a depth averaging 4 to 6 inches. The beaches are usually a cobble mixed with sand. As with the clamming, the tide may cause resuspension but the sediment drops to background levels rather quickly. When harvesting occurs as described, the impacts to water quality from the clam digging or oyster and mussel harvesting are insignificant and/or discountable.

2. Water quality (propwash): If the clammer or oyster/mussel harvester accesses the beach by boat, propwash from the boat may cause the suspension of sediments in the water column. The boat is stopped or moving extremely slowly when the clammer or oyster/mussel harvester exits the boat to access the beach, so the disturbance with the propwash is extremely small. Any turbidity associated with propwash would also settle out of the water column to background levels in no more than an hour, depending on sediment type and currents. When access occurs as described, all temporary water quality impacts are insignificant and/or discountable.

3. Habitat Health: The clam hole is refilled with the same material removed before the area is inundated with tidal waters. With the raking method of oyster and/or mussel harvesting on private tidelands, the beach may not be re-raked before the next tidal inundation. However, within one tidal cycle, the substrate will return to its original contours. Foot traffic along the beach and digging for the clams will have insignificant impacts to benthic invertebrates. Raking for noncommercial harvesting may cause some impact to benthic invertebrates but is still at insignificant levels. Harvesting is likely to occur on beaches that are spawning habitat for surf smelt and sand lance, which are forage species for listed or proposed species (i.e., pacific salmon). Surf smelt and sand lance spawn in the upper reaches, between tidal elevations of +7.0 and the mean high-high water line. (WDFW, 1997b) Clams and oysters use the intertidal area between MHW and MLLW (Kozloff, 1993). Impacts to the spawning habitat would only be foot traffic on the beach. Car access to beaches is only allowed on the outer Washington Coast (i.e. Ocean Shores or Long Beach Peninsula). These beaches are not utilized by forage fish for spawning. All the harvesting activity would occur below the area actively used by surf smelt and sand lance for spawning. Disturbance to the spawning habitat is therefore insignificant and/or discountable. Boat activity near or adjacent to vegetated areas has been documented to damage and/or destroy the vegetated areas. (NOAA, 1998) The harvesting will not to occur over or adjacent to vegetated shallows so boat traffic, foot traffic and propwash will not be impacting vegetated shallows, essential habitat for forage fish species. With no work in or adjacent to vegetated shallows, the clamming and oyster and mussel harvesting will have insignificant and/or discountable impacts to habitat health.

10.2 Indirect effects

There are no effects resulting from the activity that are later in time.

10.3 Others

For all other pathways and indicators not specifically mentioned above, the activity will not alter the present environmental baseline.

10.4 Determination of Effect

Activities covered by this document may affect certain threatened and endangered species, species proposed for listing as threatened or endangered, and designated or proposed critical habitat for those species (summarized in Table 6 through Table 9). The determinations for each species assumes the following:

For the Columbia River Mainstem including the Snake River and Baker Bay:

- Work only occurs in tidal portions of the Columbia River (Baker Bay).
- No clam digging or oyster and mussel harvesting activities occur over or adjacent to vegetated shallows.

For all Marine/Estuarine Waters excluding Baker Bay:

- No clam digging or oyster and mussel harvesting activities occur over or adjacent to vegetated shallows.

Brown Pelican (*Pelecanus occidentalis*)

The proposed activity would have "no effect" on brown pelicans. In Washington, brown pelicans inhabit only coastal marine waters where activity will occur. However, visual and noise disturbance from harvesting activities is expected to be minimal and is considered insignificant and/or discountable. In general, harvesting is managed by WDFW to minimize potential impacts while still providing commercial and recreational opportunities. The proposed activity will not affect brown pelicans, their habitat, or their prey.

Marbled Murrelet (*Brachyramphus marmoratus*)

The proposed activity would have "no effect" marbled murrelets and their critical habitat. . Visual and noise disturbance from harvesting activities is expected to be minimal and is considered insignificant and/or discountable. In general, harvesting is managed by WDFW to minimize potential impacts while still providing commercial and recreational opportunities. The proposed activity will not affect marbled murrelets, their habitat, or their prey.

Northern Spotted Owl (*Strix occidentalis*)

The proposed activity would have "no effect" on the northern spotted owl and its critical habitat. Visual and noise disturbance from harvesting activities is expected to be minimal and is considered insignificant and/or discountable. In general, harvesting is managed by WDFW to minimize potential impacts while still providing commercial and recreational opportunities. In addition, harvesting would occur in marine/estuarine waters and/or beaches, not in old growth forests. The proposed activity will not affect spotted owls, their habitat, or their prey.

Short-Tailed Albatross (*Phoebastria albatrus*)

The proposed activity would have "no effect" on short-tailed albatross. In Washington, short-tailed albatross inhabit only coastal and offshore marine waters, areas where activity could occur. However, visual and noise disturbance from harvesting activities is expected to be minimal and is considered insignificant and/or discountable. In general, harvesting is managed by WDFW to minimize potential impacts while still providing commercial and recreational opportunities. The proposed activity will not affect albatross, their habitat, or their prey.

Western Snowy Plover (*Charadrius alexandrinus*)

The proposed activity would have "no effect" on western snowy plover and its critical habitat. Plovers inhabit only ocean beach areas in Pacific and Grays Harbor counties; southwest Washington is furthest known northern area for snowy plovers. Western snowy plover utilize open shoreline areas where little vegetation exists. Although activities occur near or along beaches where snowy plover could occur, visual and noise disturbance from harvesting activities is expected to be minimal and is considered insignificant and/or discountable. In general, harvesting is managed by WDFW to minimize potential impacts while still providing commercial and recreational opportunities. The proposed activity will not affect snowy plover, their habitat, or their prey.

Canada Lynx (*Lynx canadensis*)

The proposed activity would have "no effect" on Canada lynx. The proposed activity would occur in marine/estuarine waters and/or beaches and would not occur near remote areas of the Selkirk Mountains or the Cascade Range where lynx occur. Because there would be no overlap of the proposed activity action area and Canada lynx or their habitat, the proposed activity would have no potential to affect Canada lynx.

Columbia White-Tailed Deer (*Odocoileus virginianus leucurus*)

The proposed activity would have "no effect" on Columbia white-tailed deer. Columbia white-tailed deer may be present along the lower Columbia River from River Mile (RM) 50 to RM 52. However, harvesting only occurs in marine/estuarine waters and beaches. This PBE only covers fish and wildlife harvesting in marine/estuarine portions of the Columbia River (Baker Bay). Hence, harvesting will not occur near Columbia white-tailed deer habitat. Because there would be no overlap of the proposed activity action area and Columbia white-tailed deer or their habitat, the proposed activity would have no potential to affect Columbia white-tailed deer.

Gray Wolf (*Canis lupis*)

The proposed activity would have "no effect" on gray wolves. The proposed activity would occur in marine/estuarine waters and/or beaches and would not occur near remote areas of the Selkirk Mountains or the Cascade Range where gray wolves occur. Because there would be no overlap of the proposed activity action area and gray wolves or their habitat, the proposed activity would have no potential to affect gray wolves.

Grizzly Bear (*Ursus arctos horribilis*)

The proposed activity would have "no effect" on grizzly bears. The proposed activity would occur in marine/estuarine waters and/or beaches and would not occur near remote areas of the Selkirk Mountains or the Cascade Range where grizzly bears occur. Because there would be no overlap of the proposed activity action area and grizzly bear or their habitat, the proposed activity would have no potential to affect grizzly bears.

Pygmy Rabbit (*Barchylagus idahoensis*)

The proposed activity would have "no effect" on pygmy rabbits. The proposed activity would occur in marine/estuarine waters and/or beaches and would not occur near suitable shrub steppe habitat where pygmy rabbits occur. This PBE only covers harvesting in marine/estuarine portions of the Columbia River (Baker Bay). Because there would be no overlap of the proposed activity action area and pygmy rabbit or their habitat, the proposed activity would have no potential to affect pygmy rabbits.

Woodland Caribou (*Rangifer tarandus caribou*)

The proposed activity would have "no effect" on woodland caribou. The proposed activity would occur in marine/estuarine waters and/or beaches and would not occur in or near the Selkirk Mountains where

woodland caribou occur. Because there would be no overlap of the proposed activity action area and woodland caribou or their habitat, the proposed activity would have no potential to affect woodland caribou.

Oregon Silverspot Butterfly (*Speyeria zerene hippolyta*)

The proposed activity would have "no effect" on Oregon silverspot butterflies and their critical habitat. Oregon silverspot butterflies inhabit coastal salt spray marshes and open meadows. In Washington, Oregon silverspot butterflies may be extirpated, however, areas suitable for recolonization or reintroduction occur in southwest Washington. Disturbance from harvesting activities is expected to be minimal and is considered insignificant and/or discountable. In general, harvesting is managed by WDFW to minimize potential impacts while still providing commercial and recreational opportunities. In addition, harvesting occurs on tidally influenced beaches and or in marine/estuarine waters, which are not suitable habitat. Hence, the proposed activity will not alter or impact Oregon silverspot butterfly or their habitat.

Blue Whale (*Balaenoptera musculus*)

The proposed activity "may affect, but is not likely to adversely affect" whales. The blue whale occurs in marine areas where activities could occur. Any harvest activities in marine waters may result in temporary disturbance of blue whales due to the associated noise and visual disturbance. Activity and associated noise could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. In addition, entanglement in harvesting equipment has the potential to adversely affect blue whales.

Fin Whale (*Balaenoptera physalus*)

The proposed activity "may affect, but is not likely to adversely affect" fin whales. The fin whale occurs in marine areas where activities could occur. Any harvest activities in marine waters may result in temporary disturbance of fin whales due to the associated noise and visual disturbance. Activity and associated noise could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. In addition, entanglement in harvesting equipment has the potential to adversely affect fin whales.

Humpback Whale (*Megaptera novaeangliae*)

The proposed activity "may affect, but is not likely to adversely affect" humpback whales. The humpback whale occurs in marine areas where activities could occur. Any harvest activities in marine waters may result in temporary disturbance of humpback whales due to the associated noise and visual disturbance. Activity and associated noise could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. In addition, entanglement in harvesting equipment has the potential to adversely affect humpback whales.

Sei Whale (*Balaenoptera borealis*)

The proposed activity "may affect, but is not likely to adversely affect" sei whales. The sei whale occurs in marine areas where activities could occur. Any harvest activities in marine waters may result in temporary disturbance of sei whales due to the associated noise and visual disturbance. Activity and associated noise could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. In addition, entanglement in harvesting equipment has the potential to adversely affect sei whales.

Sperm Whale (*Physeter macrocephalus*)

The proposed activity "may affect, but is not likely to adversely affect" sperm whales. The sperm whale occurs in marine areas where activities could occur. Any harvest activities in marine waters may result in temporary disturbance of sperm whales due to the associated noise and visual disturbance. Activity and

associated noise could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. In addition, entanglement in harvesting equipment has the potential to adversely affect sperm whales.

Killer Whale (*Orcinus orca*) and Critical Habitat

The proposed activity "may affect, but is not likely to adversely affect" killer whales and their critical habitat. The killer whale occurs in marine areas where activities could occur. Any work in marine waters may result in temporary disturbance of killer whales during construction due to the associated noise and visual disturbance. Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. In addition, entanglement in harvesting equipment has the potential to adversely affect killer whales. Critical habitat is addressed in Appendix H.

Steller Sea Lion (*Eumetopias jubatus*)

The proposed activity "may affect, but is not likely to adversely affect" steller sea lions and their critical habitat. In Washington, Steller sea lions inhabit pelagic areas of marine waters and occasionally move up the lower Columbia River to feed during the fall. Any harvest activities in marine waters or the lower Columbia River may result in temporary disturbance of Steller sea lions due to the associated noise and visual disturbance. Activity and associated noise could result in confusion, disruption of social cohesion, separation, alteration of travel, and interference with feeding or breeding. In addition, entanglement in harvesting equipment has the potential to affect Steller sea lions. Work will be prohibited near or in critical habitat.

Green Sea Turtle (*Chelonia mydas*)

The proposed activity "may affect, but is not likely to adversely affect" green sea turtles. The green sea turtle occurs in marine areas where activities could occur. Any harvest activities in marine waters may result in temporary disturbance of green sea turtles due to the associated noise and visual disturbance. Activity and associated noise could interfere with travel and foraging. In addition, entanglement in harvesting equipment has the potential to adversely affect green sea turtles.

Leatherback Sea Turtle (*Dermochelys coriacea*)

The proposed activity "may affect, but is not likely to adversely affect" leatherback sea turtles. The leatherback sea turtle occurs in marine areas where activities could occur. Any harvest activities in marine waters may result in temporary disturbance of leatherback sea turtles due to the associated noise and visual disturbance. Activity and associated noise could interfere with travel and foraging. In addition, entanglement in harvesting equipment has the potential to adversely affect leatherback sea turtles.

Loggerhead Sea Turtle (*Caretta caretta*)

The proposed activity "may affect, but is not likely to adversely affect" loggerhead sea turtles. The loggerhead sea occurs in marine areas where activities could occur. Any harvest activities in marine waters may result in temporary disturbance of loggerhead sea turtles due to the associated noise and visual disturbance. Activity and associated noise could interfere with travel and foraging. In addition, entanglement in harvesting equipment has the potential to adversely affect loggerhead sea turtles.

Bradshaw's Desert Parsley (*Lomatium bradshawii*)

The proposed activity would have "no effect" on Bradshaw's desert parsley. Bradshaw's desert parsley occurs in wet meadows. Populations of desert parsley have been identified near streams in Clark County, Washington. The proposed activity would be limited to marine/estuarine waters and associated beaches, where these plants do not occur. Hence, this species and its habitat would not be affected by the proposed activity.

Golden Paintbrush (*Castilleja levisecta*)

The proposed activity would have "no effect" on golden paintbrush. Golden paintbrush occurs in small populations in uplands in the Puget Trough, San Juan County, and Clark County. The proposed activity would only occur in or near marine/estuarine areas, activities would not occur near upland habitat. Hence, there would be no overlap of the proposed activity action area and Golden Paintbrush or their habitat, resulting in no potential for the proposed activity to affect species or habitat.

Kincaid's Sulphur Lupine (*Lupinus sulphureus ssp. Kincaidii*)

The proposed activity would have "no effect" on Kincaid's sulphur lupine. Kincaid's sulphur lupine occurs in upland prairie habitat in southwest Washington. The proposed activity would only occur in or near marine/estuarine areas, activities would not occur near upland prairie habitat. Hence, there would be no overlap of the proposed activity action area and Kincaid's Sulphur Lupine or their habitat, resulting in no potential for the proposed activity to affect species or habitat.

Marsh Sandwort (*Arenaria paludicola*)

The proposed activity would have "no effect" on the marsh sandwort. Marsh sandwort may be extirpated in Washington, but marsh sandwort historically occurred in freshwater wetlands. The proposed activity would only occur in or near marine/estuarine areas, activities would not occur near freshwater wetland habitat. Hence, there would be no overlap of the proposed activity action area and marsh sandwort or their habitat, resulting in no potential for the proposed activity to affect species or habitat.

Nelson's Checker-Mallow (*Sidalcea nelsoniana*)

The proposed activity would have "no effect" Nelson's checker mallow. Nelson's checker-mallow occurs in meadows and along streams in southwest Washington and the Olympic peninsula. The proposed activity would only occur in or near marine/estuarine areas, activities would not occur near stream habitat. Hence, there would be no overlap of the proposed activity action area and Nelson's checker-mallow or their habitat, resulting in no potential for the proposed activity to affect species or habitat.

Showy Stickseed (*Hackelia venusta*)

The proposed activity would have "no effect" on showy stickseed. Showy stickseed occurs in open mountain sites composed of loose sand or talus slopes. The proposed activity would only occur in or near marine/estuarine areas, activities would not occur near open mountain habitat. Hence, there would be no overlap of the proposed activity action area and showy stickseed or their habitat, resulting in no potential for the proposed activity to affect species or habitat.

Spalding's Silene (*Silene spaldingii*)

The proposed activity would have "no effect" on Spalding's silene. Spalding's silene occurs in upland grasslands in eastern Washington, areas where activities would not occur. The proposed activity would only occur in or near marine/estuarine areas, activities would not occur near upland grassland habitat in eastern Washington. Hence, there would be no overlap of the proposed activity action area and Spalding's silene or their habitat, resulting in no potential for the proposed activity to affect species or habitat.

Water Howellia (*Howellia aquatilis*)

The proposed activity would have "no effect" on water howellia. Water howellia occurs in seasonal wetlands in the Puget lowlands and the Columbia basin, primarily in small, vernal ponds, although some ponds may retain water throughout the year. The proposed activity would only occur in or near marine/estuarine areas, activities would not occur near suitable pond habitat. Hence, there would be no overlap of the proposed activity action area and water howellia or their habitat, resulting in no potential for the proposed activity to affect species or habitat.

Wenatchee Mountain Checker-Mallow (*Sidalcea oregana var. calva*)

The proposed activity would have "no effect" on the Wenatchee mountain checker-mallow and its critical habitat. Wenatchee mountain checker-mallow occurs in wet meadows within a small region southeast of Leavenworth, Washington. The proposed activity would only occur in or near marine/estuarine areas, activities would not occur in wet meadow habitat near Leavenworth. Hence, there would be no overlap of the proposed activity action area and Wenatchee mountain checker-mallow or their habitat, resulting in no potential for the proposed activity to affect species or habitat.

Ute Ladies'-Tresses (*Spiranthes diluvialis*)

The proposed activity would have "no effect" Ute ladies'-tresses. Ute ladies'-tresses can occur in wet meadows associated with meandering wetland complexes. The proposed activity would only occur in or near marine/estuarine areas, activities would not occur near suitable wet meadow habitat. Hence, there would be no overlap of the proposed activity action area and Ute ladies'-tresses or their habitat, resulting in no potential for the proposed activity to affect species or habitat.

Pacific Salmon and Bull Trout

Adult and juvenile salmonids utilize habitats within the action area as migratory corridors and rearing habitat and may be affected by the proposed activity. The proposed activity may result in temporary increases in suspended sediment due to harvesting activities disturbing sediments; however, turbidity is expected to be short-term. People accessing the beach could temporarily disturb forage fish spawning habitat, however this disturbance is considered insignificant and/or discountable. In addition, the harvesting activity occurs below the area actively used by surf smelt and sand lance for spawning. To minimize potential impacts, no clam digging or oyster and mussel harvesting activities will occur over or adjacent to vegetated shallows. In general, harvesting is managed by WDFW to minimize potential impacts while still providing commercial and recreational opportunities.

The proposed activity "may affect, but is not likely to adversely affect":

- Snake River sockeye and their critical habitat
- Snake River spring/summer chinook and their critical habitat
- Snake River fall chinook and their critical habitat
- Snake River steelhead and their critical habitat
- Columbia River chum
- Columbia River bull trout
- Lower Columbia River steelhead
- Lower Columbia River chinook
- Middle Columbia River steelhead
- Upper Columbia River steelhead
- Upper Columbia River spring chinook
- Upper Willamette River chinook
- Upper Willamette River steelhead

- Ozette Lake sockeye
- Hood Canal summer chum
- Puget Sound chinook and their critical habitat
- Puget Sound steelhead
- Coastal/Puget Sound bull trout/dolly varden and their critical habitat
- Lower Columbia River/SW Washington coho salmon

Table 6. Effect Determinations for Listed Terrestrial Animals and Insects

Species Name *Scientific Name*	**Status**	**Determination**	**Rational for Determination**
Brown Pelican *Pelecanus occidentalis*	E	No effect	Visual and noise disturbance from harvesting activities is expected to be minimal and is considered insignificant and/or discountable. The proposed activity will not affect brown pelicans, their habitat, or their prey.
Marbled Murrelet *Brachyramphus marmoratus*	T	No effect	Visual and noise disturbance from harvesting activities is expected to be minimal and is considered insignificant and/or discountable. The proposed activity will not affect marbled murrelets, their habitat, or their prey.
Northern Spotted Owl *Strix occidentalis*	T	No effect	Visual and noise disturbance from harvesting activities is expected to be minimal and is considered insignificant and/or discountable. In addition, harvesting would occur in marine/estuarine waters and/or beaches, not in old growth forests. The proposed activity will not affect spotted owls, their habitat, or their prey.
Short-Tailed Albatross *Phoebastria albatrus*	E	No effect	Visual and noise disturbance from harvesting activities is expected to be minimal and is considered insignificant and/or discountable. The proposed activity will not affect albatross, their habitat, or their prey.
Western Snowy Plover *Charadrius alexandrinus*	T	No effect	Visual and noise disturbance from harvesting activities is expected to be minimal and is considered insignificant and/or discountable. The proposed activity will not affect snowy plover, their habitat, or their prey.
Canada Lynx *Lynx Canadensis*	T	No effect	The proposed activity would occur in marine/estuarine waters and/or beaches and would not occur near remote areas of the Selkirk Mountains or the Cascade Range where lynx occur. Hence, the proposed activity would have no potential to affect Canada lynx.
Columbia White-Tailed Deer *Odocoileus virginianus leucurus*	E	No effect	Columbia white-tailed deer may be present along the lower Columbia River from River Mile (RM) 50 to RM 52. However, this PBE only covers fish and wildlife harvesting in marine/estuarine portions of the Columbia River (Baker Bay). Hence, harvesting will not occur near Columbia white-tailed deer habitat and would have no potential to affect Columbia white-tailed deer.
Gray Wolf *Canis lupis*	E	No effect	The proposed activity would occur in marine/estuarine waters and/or beaches and would not occur near remote areas of the Selkirk Mountains or the Cascade Range where gray wolves occur. Hence, the proposed activity would have no potential to affect gray wolves.
Grizzly Bear *Ursus arctos horribilis*	T	No effect	The proposed activity would occur in marine/estuarine waters and/or beaches and would not occur near remote areas of the Selkirk Mountains or the Cascade Range where grizzly bears occur. Hence, the proposed activity would have no potential to affect grizzly bears.
Pygmy Rabbit *Barchylagus idahoensis*	E	No effect	The proposed activity would occur in marine/estuarine waters and/or beaches and would not occur near suitable shrub steppe habitat where pygmy rabbits occur. Hence, the proposed activity would have no potential to affect pygmy rabbits.
Woodland Caribou *Rangifer tarandus caribou*	E	No effect	The proposed activity would occur in marine/estuarine waters and/or beaches and would not occur near remote areas of the Selkirk Mountains or the Cascade Range where woodland caribou occur. Hence, the proposed activity would have no potential to affect woodland caribou.
Oregon Silverspot Butterfly *Speyeria zerene hippolyta*	T	No effect	The proposed activity occurs on tidally influenced beaches and in marine/estuarine waters which are not suitable habitat (coastal salt spray marshes and open meadows) and disturbance from harvesting activities is expected to be minimal and is considered insignificant and/or discountable. Hence, the proposed activity will not alter or impact Oregon silverspot butterfly or their habitat.

Table 7. Effect Determinations for Listed Marine Animals

Species Name *Scientific Name*	**Status**	**Determination**	**Rational for Determination**
Blue Whale *Balaenoptera musculus*	E	May affect, but not likely to adversely affect	Proposed activity and associated noise could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. In addition, entanglement in harvesting equipment could occur.
Fin Whale *Balaenoptera physalus*	E	May affect, but not likely to adversely affect	Proposed activity and associated noise could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. In addition, entanglement in harvesting equipment could occur.
Humpback Whale *Megaptera novaeangliae*	E	May affect, but not likely to adversely affect	Proposed activity and associated noise could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. In addition, entanglement in harvesting equipment could occur.
Sei Whale *Balaenoptera borealis*	E	May affect, but not likely to adversely affect	Proposed activity and associated noise could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. In addition, entanglement in harvesting equipment could occur.
Sperm Whale *Physeter macrocephalus*	E	May affect, but not likely to adversely affect	Proposed activity and associated noise could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. In addition, entanglement in harvesting equipment could occur.
Killer Whale *Orcinus orca*	E	May affect, but not likely to adversely affect	Proposed activity and associated noise could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. In addition, entanglement in harvesting equipment could occur.
Steller Sea Lion *Eumetopias jubatus*	T	May affect, but not likely to adversely affect	Proposed activity and associated noise could result in confusion, disruption of social cohesion, separation, alteration of travel, and interference with feeding or breeding. In addition, entanglement in harvesting equipment could occur.
Green Sea Turtle *Chelonia mydas*	T	May affect, but not likely to adversely affect	Proposed activity and associated noise could interfere with travel and foraging. In addition, entanglement in harvesting equipment could occur.
Leatherback Sea Turtle *Dermochelys coriacea*	E	May affect, but not likely to adversely affect	Proposed activity and associated noise could interfere with travel and foraging. In addition, entanglement in harvesting equipment could occur.
Loggerhead Sea Turtle *Caretta caretta*	T	May affect, but not likely to adversely affect	Proposed activity and associated noise could interfere with travel and foraging. In addition, entanglement in harvesting equipment could occur.

Table 8. Determinations for Listed and Proposed Plant Species

Species Name *Scientific Name*	**Status**	**Determination**	**Rational for Determination**
Bradshaw's Desert Parsley *Lomatium bradshawii*	E	No effect	The proposed activity would be limited to marine/estuarine waters and associated beaches, where these plants do not occur. Hence, this species and its habitat would not be affected by the proposed activity.
Golden Paintbrush *Castilleja levisecta*	T	No effect	The proposed activity would be limited to marine/estuarine waters and associated beaches, where these plants do not occur. Hence, this species and its habitat (upland areas) would not be affected by the proposed activity.
Kincaid's Sulphur Lupine *Lupinus sulphureus ssp. Kincaidii*	T	No effect	The proposed activity would be limited to marine/estuarine waters and associated beaches, where these plants do not occur. Hence, this species and its habitat (upland prairie habitat) would not be affected by the proposed activity.
Marsh Sandwort *Arenaria paludicola*	E	No effect	The proposed activity would be limited to marine/estuarine waters and associated beaches, where these plants do not occur. Hence, this species and its habitat (freshwater wetland habitat) would not be affected by the proposed activity.
Nelson's Checker-Mallow *Sidalcea nelsoniana*	T	No effect	The proposed activity would be limited to marine/estuarine waters and associated beaches, where these plants do not occur. Hence, this species and its habitat would not be affected by the proposed activity.
Showy Stickseed *Hackelia venusta*	PE	No effect	The proposed activity would be limited to marine/estuarine waters and associated beaches, where these plants do not occur. Hence, this species and its habitat (loose sand or talus slopes in open mountain sites) would not be affected by the proposed activity.
Spalding's Silene *Silene spaldingii*	PT	No effect	The proposed activity would be limited to marine/estuarine waters and associated beaches, where these plants do not occur. Hence, this species and its habitat (upland grasslands) would not be affected by the proposed activity.
Water Howellia *Howellia aquatilis*	T	No effect	The proposed activity would be limited to marine/estuarine waters and associated beaches, where these plants do not occur. Hence, this species and its habitat would not be affected by the proposed activity.
Wenatchee Mountain Checker-Mallow *Sidalcea oregana var. calva*	E	No effect	The proposed activity would be limited to marine/estuarine waters and associated beaches, where these plants do not occur. Hence, this species and its habitat (wet meadows) would not be affected by the proposed activity.
Ute Ladies'-Tresses *Spiranthes diluvialis*	T	No effect	The proposed activity would be limited to marine/estuarine waters and associated beaches, where these plants do not occur. Hence, this species and its habitat (wet meadows) would not be affected by the proposed activity.

Table 9. Effect Determinations for Listed, Proposed, and Candidate Fish Species

Species Name *Scientific Name* Evolutionary Significant Unit (ESU)/Distinct Population Segment (DPS)	**Status**	**Determination**	**Rational for Determination**
Bull Trout *Salvelinus confluentus* Coastal/Puget Sound DPS Columbia River DPS	 T T	May affect, but not likely to adversely affect	Proposed activity occurs in areas where fish may occur and potential impacts from turbidity associated with activity could affect fish.
Chinook Salmon *Oncorhynchus tshawytscha* Puget Sound ESU Snake River Fall Run ESU Snake River Spring/Summer-run ESU Lower Columbia River ESU Upper Columbia River Spring-run ESU Upper Willamette River ESU	 T T T T E T	May affect, but not likely to adversely affect	Proposed activity occurs in areas where fish may occur and potential impacts from turbidity associated with activity could affect fish.
Sockeye Salmon *Oncorhynchus nerka* Ozette Lake ESU Snake River ESU	 T E	May affect, but not likely to adversely affect	Proposed activity occurs in areas where fish may occur and potential impacts from turbidity associated with activity could affect fish.
Coho Salmon *Oncorhynchus kisutch* Lower Columbia River/SW WA ESU	 T	May affect, but not likely to adversely affect	Proposed activity occurs in areas where fish may occur and potential impacts from turbidity associated with activity could affect fish.
Chum Salmon *Oncorhynchus keta* Hood Canal Summer-run ESU Columbia River ESU	 T T	May affect, but not likely to adversely affect	Proposed activity occurs in areas where fish may occur and potential impacts from turbidity associated with activity could affect fish.
Steelhead Trout *Oncorhynchus mykiss* Upper Columbia River ESU Middle Columbia River ESU Lower Columbia River ESU Snake River Basin ESU Upper Willamette River ESU Puget Sound ESU	 E T T T T T	May affect, but not likely to adversely affect	Proposed activity occurs in areas where fish may occur and potential impacts from turbidity associated with activity could affect fish.

11.0 Essential Fish Habitat

Overview

Public Law 104-297, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act to establish new requirements for Essential Fish Habitat (EFH) descriptions in Federal fishery management plans and to require federal agencies to consult with NMFS on activities that may adversely affect EFH.

The Magnuson-Stevens Act requires all fishery management councils to amend their fishery management plans to describe and identify EFH for each managed fishery. The Pacific Fishery Management Council (1999) has issued such an amendment in the form of Amendment 14 to the Pacific Coast Salmon Plan, and this amendment covers EFH for all fisheries under NMFS jurisdiction that would potentially be affected by the proposed action. Specifically, these are the chinook, coho and pink salmon fisheries. EFH includes all streams, lakes, ponds, wetlands, and other currently viable water bodies and most of the habitat historically accessible to salmon. Activities occurring above impassable barriers that are likely to adversely affect EFH below impassable barriers are subject to the consultation provisions of the Magnuson-Stevens Act.

The Magnuson-Stevens Act requires consultation for all federal agency actions that may adversely affect EFH. EFH consultation with NMFS is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of its location. Under Section 305(b)(4) of the Magnuson-Stevens Act, NMFS is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. Wherever possible, NMFS utilizes existing interagency coordination processes to fulfill EFH consultations with federal agencies. For the proposed action, this goal is being met by incorporating EFH consultation to the Endangered Species Act Section 7 consultation, as represented by this biological evaluation.

Location

The location of the activity covered by this assessment has been described in detail earlier in this document (see Section 3).

Description of Proposed Activity

The activity covered by this assessment has been described earlier in this document (see Section 4).

Potential Adverse Effects of the Proposed Activity

Projects would occur in or along the edges of marine, estuarine, and freshwater waters. EFH for ground fish (Table 10), coastal pelagic species (Table 11) and Pacific salmon (Table 12) could be affected by proposed activity.

Ground Fish EFH

Effects to the environmental baseline that would impact groundfish species are discussed in detail in Section 10.

Coastal Pelagic EFH

Effects to the environmental baseline that would impact coastal pelagic species are discussed in detail in Section 10.

Salmon EFH

Effects to the environmental baseline that would impact Pacific salmon species are discussed in detail in Section 10.

EFH Conservation Measures

Conservation measures designed to protect listed species and those proposed as threatened or endangered will also help avoid and minimize impacts of the proposed activities on salmonid and groundfish EFH (see Appendix D, E, F, and G).

Conclusion

In accordance with EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act, the Corps has determined that the proposed activity would not adversely impact EFH utilized by Pacific salmon, coastal pelagic species, and groundfish. It has been determined that the proposed action will not adversely affect EFH for federally managed fisheries in Washington waters.

Table 10. Ground Fish Species with Designated EFH and the Life History Stages that May Occur in the Action Area (PFMC, 1998a).

GROUND FISH SPECIES	Adults	Spawning/ Mating	Large Juvenile	Small Juvenile	Larvae	Eggs/ Parturition
Leopard Shark	X	X	N/A	X	N/A	X
Soupfin Shark	X	X	N/A	X	N/A	X
Spiny Dogfish	X		X	X	N/A	X
California Skate	X	X	N/A	X	N/A	X
Ratfish	X	X	N/A	X	N/A	
Lingcod	X	X	X	X	X	X
Cabezon	X	X	X	X	X	X
Kelp Greenling	X	X	X	X	X	X
Pacific Cod	X	X	N/A	X	X	X
Pacific Whiting (Hake)	X	X	N/A	X	X	X
Sablefish				X		
Jack Mackerel	X		N/A		X	
Black Rockfish	X			X		
Bocaccio				X	X	
Brown Rockfish	X	X	N/A	X		X
Calico Rockfish	X		N/A	X		
California Scorpionfish						X
Copper Rockfish	X		X	X		X
Kelp Rockfish				X		
Quillback Rockfish	X		X	X	X	X
English Sole	X	X	N/A	X	X	X
Pacific Sanddab			N/A	X	X	X
Rex Sole	X		N/A			
Starry Flounder	X	X	N/A	X	X	X

N/A - Not Applicable. Either the species does not have a particular life stage in its life history, or when EFH of juveniles is not identified separately for small juvenile and large juvenile stages. For many species, habitats occupied by juveniles differ substantially, depending on the size (or age) of the fish. Frequently, small juveniles are pelagic and large juveniles live on or near the bottom; these life stages are identified separately in the table when sufficient information is available to do so. When juvenile habitats do not differ so substantially or when information is insufficient to identify differences, EFH is identified only for the juvenile stage (small and large juveniles combined), and N/A is listed in the column for the large juvenile stage in the table (PFMC, 1998a).

Table 11. Coastal Pelagic Species with Designated EFH and the Life History Stages that May Occur in the Action Area (PFMC, 1998a).

COASTAL PELAGIC SPECIES	Adults	Spawning/ Mating	Large Juvenile	Small Juvenile	Larvae	Eggs/ Parturition
Northern Anchovy	X		X		X	X
Pacific Sardine	X		X		X	X
Pacfici Mackerel	X		X		X	X
Jack Mackerel	X					
Market Squid	X	N/A		N/A	N/A	N/A

N/A - Not Applicable. Either the species does not have a particular life stage in its life history, or when EFH of juveniles is not identified separately for small juvenile and large juvenile stages. For many species, habitats occupied by juveniles differ substantially, depending on the size (or age) of the fish. Frequently, small juveniles are pelagic and large juveniles live on or near the bottom; these life stages are identified separately in the table when sufficient information is available to do so. When juvenile habitats do not differ so substantially or when information is insufficient to identify differences, EFH is identified only for the juvenile stage (small and large juveniles combined), and N/A is listed in the column for the large juvenile stage in the table (PFMC, 1998a).

Table 12. Salmonid Species with Designated EFH and the Life History Stages that May Occur in the Action Area (PFMC, 1998a).

PACIFIC SALMON	Egg	Larvae	Young Juvenile	Juvenile	Adult	Spawning
Chinook salmon	X	X	X	X	X	X
Coho salmon	X	X	X	X	X	X
Pink salmon	X	X	X	X	X	X