

# Aids to Navigation

## 1.0 Summary of Activity

### 1.1 For all Fresh Waters excluding the Columbia River mainstem

Placement of navigation aids and regulatory markers, including placement of buoys for such purposes, provided that:

1. Work is done within the approved work windows.
2. Buoys and anchors are not located over or adjacent to vegetated shallows (except where such vegetation is limited to State-designated noxious weeds) or habitat for listed or proposed species.
3. No trenching occurs through any water of the U.S. (i.e., for electrical cables).
4. No new piling is placed.
5. If a barge is used, the barge does not ground out.
6. Flotation shall be completely contained to prevent breakup.
7. Buoys are anchored securely and anchors are installed so that anchor lines do not drag. [from NWP 1]

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

Placement of navigation aids and regulatory markers, including placement of buoys for such purposes, provided that:

1. Work is done within the approved work windows.
2. Buoys and anchors are not located over or adjacent to vegetated shallows (except where such vegetation is limited to State-designated noxious weeds) or habitat for listed or proposed species or prey/forage species (i.e. forage fish for pacific salmon).
3. No trenching occurs through any water of the U.S. (i.e., for electrical cables).
4. No new piling is placed.
5. If a barge is used, the barge does not ground out.
6. Flotation shall be completely contained to prevent breakup.
7. Buoys are anchored securely and anchors are installed so that anchor lines do not drag. [from NWP 1]

### 1.3 For all Marine/Estuarine Waters excluding Baker Bay

Placement of navigation aids and regulatory markers, including buoys and up to one new pile or one new dolphin (3 piles) for such purposes, provided that:

1. Work is done within the approved work windows.
2. Buoys and anchors are not located over or adjacent to vegetated shallows (except where such vegetation is limited to State-designated noxious weeds) or habitat for listed or proposed species or prey/forage species (i.e. forage fish for pacific salmon).
3. No trenching occurs through any water of the U.S. (i.e., for electrical cables).

4. A single pile or a single 3-pile dolphin is allowed.
5. If a barge is used, the barge does not ground out.
6. Flotation shall be completely contained to prevent breakup.
7. Buoys are anchored securely and anchors are installed so that anchor lines do not drag. [from NWP 1]

## 2.0 Programmatic Description

Individual permits (IPs), letters of permission (LOPs), and Nationwide Permit 1 (NWP 1) may authorize the placement of aids to navigation and regulatory markers into navigable waters of the U.S in the State of Washington. This programmatic biological evaluation applies only to such activities where the placement will be via **buoys, a single pile, or a single 3-pile dolphin**. 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 navigable fresh and 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.

### 4.1 In all Fresh Waters in Washington State excluding Columbia River mainstem

Placement of navigation aids and regulatory markers, including placement of buoys for such purposes. These may include lights, traffic signs (e.g. “slow wake”), and the like. However, **this informal consultation does not cover placing piling into freshwater.**

### 4.2 In the Columbia River mainstem in Washington State including the Snake River and Baker Bay

Placement of navigation aids and regulatory markers, including placement of buoys for such purposes. These may include lights, traffic signs (e.g. “slow wake”), and the like. However, **this informal consultation does not cover placing piling into the Columbia River mainstem, Snake River or Baker Bay.**

### 4.3 In Marine/Estuarine Waters in Washington State excluding Baker Bay

Placement of navigation aids and regulatory markers, including buoys and up to one new pile or one new dolphin (three piles) for such purposes. Including placement of buoys for such purposes. These may include lights, traffic signs (e.g. “slow wake”), and the like. However, **this informal consultation does**

**not cover any associated trenching or cable placement for lighting on the aid or regulatory marker.** A generator or battery attached to the pile or dolphin is allowable to provide necessary power.

## **5.0 Project Construction Description**

### **Placement of buoys as aids to navigation**

Buoy placement whether in freshwaters, the Columbia River, or marine waters is relatively the same.

### **Construction Equipment**

The equipment used is the vessel to place the buoy (discussed under methods).

### **Materials Used**

The buoy is made of either steel encased in close cell Styrofoam (plastic coating to ensure no water leakage), steel with a Styrofoam or other floatation material inside, or close cell Styrofoam only. The buoy is a maximum of 6-foot radius (some as small as 1 foot radius)

The anchor is made of fully cured concrete or steel, with a maximum weight of 1 ½ tons and a maximum size of 4 cubic yards, the line from anchor to buoy is either a combination of chain and nylon rope or chain and cable; for large buoys, the buoy is an average of 6-foot radius; the anchor is made of a fully cured concrete or steel (for steel sometime a regular boat anchor is used) up to 6 tons in weight and 10 cubic yards in size; the line from anchor to buoy is a large anchor chain or a combination of chain and cable. The length of line for small or large buoys varies based on the scope needed. The scope refers to the ratio of length to depth based on currents in the waterbody. The average scope is a ratio of 5:1 line length to depth.

The Coast Guard and Washington State Department of Transportation regulate the size, the material, and the scope used for the buoy, line and anchor. Each U.S. Coast Guard District regulates specific standards for design and placement. The U.S. Coast Guard 13th District regulates all navigable waters in Washington State. Channel buoy design requirements are described in the Boat Handling Guide from Boat/U.S. Foundation in Alexandria, Virginia.

### **Construction Methods**

Access to the buoy location is from a “Buoy Tender” or barge. A “Buoy Tender” is an open decked vessel with a mounted crane used for buoy placement. The buoy tender is at a minimum 65 feet in length. Barges may be as long as 500 feet. The length of barge used depends on the depth of buoy placement and size of buoy. For smaller buoys, a smaller vessel averaging 22 feet in length may be used.

The buoy is placed at a minimum depth of 10 feet at low water (fresh or marine). The maximum depth could be as much as 2,000 feet or more, such as for federal navigation channel markers in the Straits or Puget Sound. For typical placement of larger buoys from a buoy tender, the anchor is connected to a “trip wire” or “chalk” (a tripping device) on the side of the boat, the chain/nylon rope is “faked” or folded back and forth along the deck of the vessel, and the buoy is tied off along the same side of the boat as the anchor. The vessel is brought to a stop or an extremely slow speed. The anchor is lowered to be partially suspended in the water before release, minimizing splash disturbance. The “trip wire” is released, dropping the anchor allowing the chain/nylon rope to thread into the water and finally untying and

releasing the buoy. If released with a crane versus a “trip wire”, the anchor is also partially suspended in the water before completely released.

## **Cleanup**

Any leftover materials associated with the placement of buoys will be collected and properly disposed.

## **Construction Timing**

The placement of the buoy occurs in a matter of minutes. The anchor drops at a rate of 10 feet per second, no matter the size.

## **Placement of a pile or dolphin as aids to navigation**

Pile or dolphin placement is proposed only in marine/estuarine waters, excluding for the mouth of the Columbia River (Baker Bay). **Pile and dolphin placement are only proposed as part of this programmatic biological evaluation for marine areas, not any freshwater areas or the Columbia River.**

## **Construction Equipment**

The equipment used includes a barge-mounted pneumatic pile driver, standard drop-hammer, or vibratory pile driver, barge averaging 50- by 100-feet (5,000 square feet), and a tug boat.

## **Materials Used**

One pile or one dolphin (three piles with  $\frac{3}{4}$ ” cable tie), either steel or wood treated (no creosote or pentachlorophenol) would be used for the pile and/or dolphin, signage (usually metal), shorelight, and a solar powered battery to be placed on the dolphin. In addition, large steel piles called “spuds” are dropped to anchor the barge at each corner. If steel piles are used, the size is limited to 12-inches in diameter or less and a 6-inch thick block of wood must be placed between the pile and the pile driver.

Design standards for the signage and lighting requirements are regulated by the U.S. Coast Guard. Description of the U.S. Coast Guard Lighting Standards may be found in the Inland Navigation Lighting Provisions [33 CFR Parts 84, 87, 88, and 90]. Each U.S. Coast Guard District regulates specific standards for design and placement. The U.S. Coast Guard 13th District regulates all navigable waters in Washington State.

## **Construction Methods**

The pile placement is accessed by a barge positioned by a tug boat. Barges may be as long as 500 feet. The length of barge used depends on the depth of pile or dolphin placement. The barge anchors into position by dropping “spuds” – large steel piles that act as anchors at each corner of the barge. The tug boat is a maximum of 60 feet in length with engine power equivalent to an 100-foot long pleasure vessel.

The pile driving would be performed with a barge mounted, pile driver. A crane on the pile driver lowers a pile into the water until it rests in place on the bottom of the waterbody. The pile is attached to a special rail system that allows precise placement of the pile. A heavy weight runs along a similar track system. The weight is then repeatedly dropped onto the upper end of the pile, driving the pile into the bottom of

the waterbody. For dolphins, three piles are driven in at an angle and tied together on top with a  $\frac{3}{4}$ " cable. The pile or dolphin is placed at a minimum depth of 8 feet high water and a maximum depth of 45 feet at high water (fresh or marine). After the pile or dolphin is driven, then the signage, shore light and battery are attached by hand using a welder, an hydraulic hammer or a drill (depending on material).

## **Cleanup**

Any leftover materials associated with the installation of pile or dolphin will be collected and properly disposed.

## **Construction Timing**

Total construction time is less than one day.

## **6.0 Action Area Description**

The action area includes all navigable fresh and marine/estuarine waters and adjacent terrestrial areas within 1 mile of the proposed project in Washington.

### **For all Fresh Waters in Washington State excluding the Columbia River mainstem**

The action area for placement of aids to navigation is the location of the navigation aid (the structure or buoy), the length of the line and placement of the anchor for buoys, the buoy swing around the anchor (an average radius of 5 feet), 25 feet radius<sup>1</sup> around the anchor for potential water quality impacts due to anchor placement, and a 1-mile above water radius for noise and visual impacts associated with construction activities. There is no interrelated and/or interdependent work in any upland or wetland areas that would be considered designated critical habitat.

### **For the Columbia River mainstem in Washington State, including Snake River and Baker Bay**

The action area for placement of aids to navigation is the location of the navigation aid (the structure or buoy), the length of the line and placement of the anchor for buoys, the buoy swing around the anchor (an average radius of 5 feet), 25 feet radius<sup>2</sup> around the anchor for potential water quality impacts due to anchor placement, and a 1-mile above water radius for noise and visual impacts associated with construction activities. There is no interrelated and/or interdependent work in any upland or wetland areas that would be considered designated critical habitat.

### **For all Marine/Estuarine Waters in Washington State excluding Baker Bay**

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<sup>1</sup> 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.

<sup>2</sup> 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.

The action area for placement of aids to navigation is the location of the navigation aid (the pile, dolphin, or buoy), the length of the line and placement of the anchor for buoys, the buoy swing around the anchor (an average radius of 5 feet), 25 feet radius<sup>3</sup> around the anchor, pile, dolphin or spuds from the barge for potential water quality impacts due to anchor placement or pile driving, 1,000 feet radius<sup>4</sup> around the pile or dolphin for underwater noise impacts associated with the pile driving, and a 1-mile above water radius for noise and visual impacts associated with construction activities. There is no interrelated and/or interdependent work in any upland or wetland areas that would be considered designated critical habitat.

## 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.

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

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

<sup>3</sup> 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.

<sup>4</sup> The determination of underwater impact area for noise impacts associated with pile driving of 1000-foot radius around the pile is based on information provided in Feist, 1991.

Table 2. Sensitive Marine Animals Potentially Occurring in Designated Project

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

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

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

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

Species Name <i>Scientific Name</i> Evolutionary Significant Unit (ESU)/Distinct Population Segment (DPS)	Status	Fresh Water Areas (excluding the Columbia River mainstem)	Mainstem Columbia River Area (including Snake River and Baker Bay)	Marine/Estuarine Water Area (excluding Baker Bay)
Bull Trout <i>Salvelinus confluentus</i>				
Coastal/Puget Sound DPS	T	X		X
Columbia River DPS	T	X	X	X
Chinook Salmon <i>Oncorhynchus tshawytscha</i>				
Puget Sound ESU	T	X		X
Snake River Fall Run ESU	T	X	X	X
Snake River Spring/Summer-run ESU	T	X	X	X
Lower Columbia River ESU	T	X	X	X
Upper Columbia River Spring-run ESU	E	X	X	X
Upper Willamette River ESU	T		X	X
Sockeye Salmon <i>Oncorhynchus nerka</i>				
Ozette Lake ESU	T	X		X
Snake River ESU	E		X	X
Coho Salmon <i>Oncorhynchus kisutch</i>				
Lower Columbia River/SW WA ESU	T	X	X	X
Chum Salmon <i>Oncorhynchus keta</i>				
Hood Canal Summer-run ESU	T	X		X
Columbia River ESU	T	X	X	X
Steelhead Trout <i>Oncorhynchus mykiss</i>				
Puget Sound ESU	T	X	X	X
Upper Columbia River ESU	E	X	X	X
Middle Columbia River ESU	T	X	X	X
Lower Columbia River ESU	T	X	X	X
Snake River Basin ESU	T	X	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 1 (NWP 1 - Aids to Navigation) verifications authorized by the Corps of Engineers (Corps). The breakdown is organized by year and waterbody. The waterbody includes all creeks, streams, and unnamed tributaries that flow into it. 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.

## 8.2 All Freshwaters, excluding the Columbia River mainstem

All freshwaters within Washington State including all rivers, tributaries, lakes, and reservoirs (regardless of size) and excluding the mainstem Columbia River. (i.e., Snoqualmie River, Skagit River, Puyallup River, Nisqually River, Cowlitz River, Yakima River, Wenatchee River, Snake River, Pend Oreille River, Lake Washington, Lake Sammamish, Lake Chelan, Moses Lake, Baker Lake, Spanaway Lake, etc).

## 8.3 Columbia River mainstem, including Snake River and Baker Bay

Mainstem Columbia River within Washington State, including the Snake River, Baker Bay, and reservoirs/lakes (i.e. Lake Entiat, Lake Wallula, Franklin D. Roosevelt Lake, Priest Rapids Lake, etc). Data for all tributaries are included under “freshwater” areas.

To determine the number of authorized “aids to navigation” verifications, all finalized permit actions were queried against the key word “NWP 1.” NWP 1 activities do not require “notification” to the Corps so the data set below represents only those activities where the Corps was notified and a verification was actually issued. NWP 1 activities are for Rivers and Harbors Act Section 10 waters only, therefore the data set represents activities authorized within navigable waters. The following data includes before- and, when applicable, after-the-fact authorizations. In comparing the Corps database with one year of data from WDFW (1998) for other activities (WDFW information does not separate aids to navigation from other buoys, piling, piers, or floats), the Corps database represents less than 1 % of the actual number of aids to navigation.

Table 5. Historical Record of Corps Authorization of Aids to Navigation

Waterbody	1995	1996	1997	1998	1999
Marine	2	1	0	0	0
Fresh	0	1	0	0	0
Columbia River	0	0	0	0	0
<b>TOTAL</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>

As of August 2005, this programmatic has been used 3 times since its authorization (August 8, 2001).

## 9.0 Environmental Baseline

The environmental baseline is provided in Appendix C.

## 10.0 Effects of the Action

### 10.1 Direct effects

## Placement of buoys as aids to navigation

Because the effects, whether associated with marine or freshwater areas, are relatively the same for all the listed or proposed species, the effects analysis does not distinguish between project area region/waterbody. Buoys placed in open water have the potential to affect species associated with open water such as fish, marine mammals, and birds. Being placed at an average depth of 45 feet at high water (no shallower than 20 feet at high water), the area is generally used as an adult fish migratory corridor, with juveniles staying in the shallower waters. Effects to listed or proposed species associated with the placement of buoys for aids to navigation in any of the waters of the U.S. in Washington State are outlined below:

1. Water quality (anchor placement): Temporary water quality impacts may occur with the placement of buoys as aids to navigation when the anchor drops and a small amount of sediment is temporarily suspended in the water column. Buoys are usually placed during “slack tide” when the water is relatively still. Because the anchor drops in a matter of seconds and settles, sediment suspension is unlikely to exceed a radius of 25 feet from the anchor and would settle out of the water column to background levels in no more than an hour, depending on sediment type and currents. If the anchor is not installed properly or the weight is not sufficient, the anchor could drag along the substrate, causing additional sediment suspension. The Corps’ experience is that this is rare. Buoys will be anchored securely so that the anchor line does not drag. All temporary water quality impacts associated with the anchor 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 anchor placement so the disturbance with the propwash is extremely small. If a tug and barge are used, the placement is done very quickly (matter of minutes) and the work is done in the approved work window when listed or proposed species are less likely to be present. Any turbidity associated with propwash from the boat or tug and barge would settle out of the water column to background levels in no more than an hour, depending on depth, sediment type and currents. All temporary water quality impacts are insignificant and/or discountable.
3. Habitat Health (vegetated shallows): If a buoy is placed over or adjacent to vegetated shallows, the placement of the buoy and propwash from the vessel placing the buoy could destroy areas of the vegetated shallows. Vegetated shallows provide refuge for juvenile salmonids and support forage species that listed or proposed species are dependent upon. For example, herring spawn in eelgrass beds in marine areas. Boat activity near or adjacent to vegetated areas has been documented to damage and/or destroy the vegetated areas. (NOAA, 1998) To be covered by this informal consultation, the buoys will be placed so that the vessel and buoy are not over or adjacent to vegetated shallows. The substrate may support benthic invertebrates that juvenile listed or proposed fish species are dependent upon for forage. Buoy anchors will be weighted and installed so that the anchor line does not drag, disturbing the substrate and associated habitat. Using this method of installation, impacts to habitat health are insignificant and/or discountable.
4. Disturbance: The presence and operation of equipment (i.e., vessel) may have an effect on listed species. Construction activities could disrupt marine mammals, sea turtles, and murrelet nesting and foraging, causing animals to temporarily avoid the project area. However, construction activities would be short-term and potential impacts to listed species would be minimized by implementing timing restrictions (Appendix D and E) designed to avoid or minimize impacts.

## Placement of a pile or dolphin (new structures) as aids to navigation

The addition of one pile or one dolphin applies only to marine/estuarine waters excluding the mouth of the Columbia River (Baker Bay). A pile or dolphin placed in or adjacent to marine/estuarine waters will only have potential to affect marine animals (e.g., fish, marine mammals) and birds. The effects are relatively the same for all the listed or proposed fish species, the effects analysis does not distinguish between fish species type. Effects of the placement of one pile or dolphin when used as aids to navigation are outlined below:

1. Water Quality (pile driving, spud placement, and propwash): Pile driving and spud placement to anchor the barge will have a temporary impact on water quality. As each pile is driven or each spud is placed into the substrate, a turbidity plume is created. The plumes will be small, localized and will dissipate quickly. Based on discussions between the Corps, USFWS, and NMFS in Informal Consultation Batch Meeting for structures in Lake Washington, the “plume” is unlikely to exceed a radius of 25 feet from the pile or dolphin and would settle out of the water column to background levels in no more than an hour, depending on sediment type and currents. Propwash impacts would only occur when the tug is either situating the barge in place or removing the barge. The work is done in the approved work window when listed or proposed species are less likely to be present. Any turbidity associated with propwash from the tug and barge is relatively short-term and would settle out of the water column to background levels in no more than an hour, depending on depth, sediment type and currents. To ensure that sediment suspension impacts are discountable, the pile driving for the pile or dolphin and the anchoring of the barge will only occur during approved work windows (Appendix D and E) when listed or proposed species or forage fish species are least likely to be present. The impacts to water quality due to pile driving and spud placement are insignificant and/or discountable.
2. Water Quality (pile treatment and slag): No piles treated with creosote or pentachlorophenol will be used in marine/estuarine waters, in order to be covered under this informal consultation. Studies by NMFS have shown that the primary metal of concern in pile treatment is copper as it is the “most acutely toxic”. (NMFS, 1998.) Copper has been shown to be the most actively leaching metal with arsenic and chromium rating second. (Warner and Solomon, 1990.) About 300 compounds including polycyclic aromatic hydrocarbons (PAHs) – which are also known to be very toxic and bioconcentrate - are found in creosote. (NMFS, 1998) Exposure to these chemicals could result in the death or reduced survival of salmonids, forage fish, prey organisms, and marine animals (e.g., marine mammals, birds, turtles). (NMFS, 1998.) Dioxins are found in pentachlorophenol. When wood is treated with pentachlorophenol, the dioxins are likely to leach into the water column. Exposure of female fish species, including salmon and trout, to dioxins and dioxin-like contaminants cause increased larval mortality. (Hornung, et al, 1998). There is the potential for slag to enter the water column when signs are welded to the pile or dolphin. The amount of slag from welding one sign would be no more than 1 square inch. This amount is so small that any impact to water quality is insignificant and/or discountable. Using these methods of installation, adverse effects associated with pile treatment and/or slag are insignificant and/or discountable.
3. Habitat Health (shore habitat): If a pile or dolphin is installed along the shoreline, the construction could disturb terrestrial habitat for protected plant species associated with nearshore areas. In potentially suitable habitat areas or near such areas, surveys to determine the presence of sensitive plants can help avoid and minimize potential impacts. Work will be prohibited in sensitive areas (Appendix E).

4. **Habitat Health (underwater noise from pile driving):** Pile driving can cause a considerable amount of noise. The impact of the weight causes sound waves to radiate outward. Studies conducted in estuarine areas in Puget Sound indicate, though inconclusively, that the sound waves generated by pile driving frighten juvenile pink and chum salmonids in estuaries away from the pile driver (Feist, 1991). The effects of the pile driving were observed up to 1000 feet away. The juvenile salmonids fled, and remained away from the area during active pile driving, and for a short time after the pile driving stops (Feist, 1991). No conclusive evidence was found to show any long term effects on juvenile growth rates or feeding patterns from the sound waves created from pile driving (Feist, 1991). Tests showed the fish had been actively feeding during the pile driving (Feist, 1991). Juveniles apparently moved to other feeding areas and returned shortly after the pile driving ceased (Feist, 1991). Underwater noise impacts on whales can include confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding (IWC 2002). Noise impacts on sea turtles include interference with travel and foraging. In order to minimize impacts from pile driving noise, the pile driving for the pile or dolphin will only occur during approved work windows when listed or proposed species, or forage fish species, are least likely to be present and pile driving methods would implement noise reducing BMPs (Appendix D and E). Sound disturbance impacts related to construction activities would likely be short-term and result in temporary displacement of animals rather than injury. The duration of pile driving sound and the probability of impact to listed species would be minimized by implementing timing restrictions and BMPs (Appendix D and E) designed to avoid or minimize impacts.
5. **Habitat Health (Airborne Noise):** Noise from the operation of heavy equipment, especially pile drivers, may have an effect on listed species. The noise associated with construction equipment and activities could disrupt murrelet nesting and foraging activities and cause murrelets to temporarily avoid the project area. However, sound disturbance impacts related to construction activities would likely be short-term and result in temporary displacement of species rather than injury. Noise generated by pile driving and the operation of installation vessels is expected to have a minor impact on listed fish, marine species, and terrestrial species. The duration of pile driving sound and the probability of impact to listed species would be minimized by implementing timing restrictions and noise reducing BMPs (Appendix D and E) designed to avoid or minimize impacts.
6. **Habitat Health (pile driving impacts to vegetated shallows):** The pile driving and any propwash associated with the tug boat or pile driving barge could destroy vegetated shallows. The vegetated shallows support forage species that listed or proposed species are dependent upon, such as herring spawning in eelgrass beds in marine areas. Boat activity in or adjacent to vegetated shallows has been documented to damage and/or destroy vegetated shallows. (NOAA, 1998) To be covered by this informal consultation, the pile or dolphin will be placed so that the tug boat, barge, and pile/dolphin are not over or adjacent to vegetated shallows and the barge will not ground out. Using this method of installation, impacts to habitat health are insignificant and/or discountable.
7. **Disturbance:** The presence and operation of equipment (i.e., vessel) may have an effect on listed species. Construction activities could disrupt marine mammals, sea turtles, and murrelet nesting and foraging, causing animals to temporarily avoid the project area. However, construction activities would be short-term and potential impacts to listed species would be minimized by implementing timing restrictions (Appendix D and E) designed to avoid or minimize impacts.

## 10.2 Indirect effects

There are no effects that would result from this activity that are later in time if conditions describe above and measures described in Appendix D, E, F, and G are abided.

### 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 ). The determinations for each species assumes the following:

For all areas:

- Work is done within the approved work windows for listed species and/or forage fish.
- No trenching occurs through any water of the U.S. (i.e., for electrical cables).
- No new piling is placed.
- Flotation shall be completely contained to prevent breakup.
- Buoys are anchored securely and anchors are installed so that anchor lines do not drag.
- If a barge is used, the barge does not ground out.

For all Fresh Waters excluding the Columbia River mainstem:

- Buoys and anchors are not located over or adjacent to vegetated shallows (except where such vegetation is limited to State-designated noxious weeds) or spawning habitat for listed or proposed fish species.
- If a barge is used, the barge does not ground out and the barge is not over or adjacent to vegetated shallows (except where such vegetation is limited to State-designated noxious weeds) or spawning habitat for listed or proposed fish species.

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

- Buoys and anchors are not located over or adjacent to vegetated shallows (except where such vegetation is limited to State-designated noxious weeds) or spawning habitat for listed or proposed fish species, or forage fish species.
- If a barge is used, the barge does not ground out and the barge is not over or adjacent to vegetated shallows (except where such vegetation is limited to State-designated noxious weeds) or spawning habitat for listed or proposed fish species, or forage fish species.

For all Marine/Estuarine Waters excluding Baker Bay:

- Structures are not located over or adjacent to vegetated shallows.
- Structures are not located in or adjacent to sensitive plant sites.
- The pile is not treated with creosote or pentachlorophenol.
- All piling or dolphins are capped with a device to preclude perching by piscivorous birds.

- If a barge is used, the barge does not ground out and the barge is not over or adjacent to vegetated shallows (except where such vegetation is limited to State-designated noxious weeds) or spawning habitat for listed or proposed fish species, or forage fish species.

### **Brown Pelican (*Pelecanus occidentalis*)**

The proposed activity “may affect, but is not likely to adversely affect” brown pelicans. In Washington, brown pelicans inhabit only coastal marine waters. The proposed activity could affect current brown pelican habitat because navigational aids are necessary near offshore rocks, islands, breakwaters, jetties, and sandbars to prevent vessel accidents. Any work near coastal marine waters and associated with the proposed activity may result in temporary displacement of brown pelicans during construction due to the associated noise and visual disturbance. Direct mortality or sub-lethal effects are unlikely. To minimize impacts, noise attenuation BMPs would be implemented and work would be limited in Pacific and Grays Harbor Counties by the work window specified in Appendix E.

### **Marbled Murrelet (*Brachyramphus marmoratus*)**

The proposed activity “may affect, but is not likely to adversely affect” marbled murrelets and their critical habitat. The proposed activity may result in temporary displacement of marbled murrelets during construction due to the associated noise and visual disturbance. Direct mortality or sub-lethal effects are unlikely. The proposed activity will not alter or impact critical habitat because activity would occur offshore or at the shoreline, away from old growth habitat. In addition, noise attenuation BMPs would be implemented and work would be prohibited in or near critical habitat areas and during sensitive nesting or foraging periods as described in Appendix E.

### **Northern Spotted Owl (*Strix occidentalis*)**

The proposed activity “may affect, but is not likely to adversely affect” the northern spotted owl and its critical habitat. The proposed activity may result in temporary displacement of spotted owls during construction due to the associated noise and visual disturbance. Direct mortality or sub-lethal effects are unlikely. The proposed activity will not alter or impact current spotted owl prey and habitat because activity would occur offshore or at the shoreline, away from old growth habitat. In addition, noise attenuation BMPs would be implemented and work would be prohibited in or near critical habitat areas and during sensitive nesting periods as described in Appendix E.

### **Short-Tailed Albatross (*Phoebastria albatrus*)**

The proposed activity “may affect, but is not likely to adversely affect” short-tailed albatross. In Washington, short-tailed albatross inhabit only coastal and offshore marine waters. The proposed activity could occur in or near coastal and offshore marine waters and could result in temporary displacement of short-tailed albatross during construction due to the associated noise and visual disturbance. Noise attenuation BMPs (Appendix E) would be implemented to minimize disturbance. Direct mortality or sub-lethal effects are unlikely.

### **Western Snowy Plover (*Charadrius alexandrinus*)**

The proposed activity “may affect, but is not likely to adversely affect” western snowy plover and its proposed 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. The proposed activity could occur near or along ocean beaches and may result in temporary displacement of western snowy plover during construction due to the associated noise and visual disturbance. Direct mortality or sub-lethal effects are unlikely. To

minimize impacts, noise attenuation BMPs would be implemented and work would be limited by the work window and distance to nesting areas specified in Appendix E.

### **Canada Lynx (*Lynx canadensis*)**

The proposed activity would have “no effect” on Canada lynx. The proposed activity would occur in navigable waters 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 “may affect, but is not likely to adversely affect” Columbia white-tailed deer. Any construction noise or activities along the lower Columbia River from River Mile (RM) 50 to RM 52 may result in temporary displacement of Columbia white-tailed deer due to the associated noise and visual disturbance. Direct mortality or sub-lethal effects are unlikely. To minimize impacts, noise attenuation BMPs would be implemented and work will be prohibited in or near sensitive habitat areas as specified in Appendix E.

### **Gray Wolf (*Canis lupis*)**

The proposed activity would have “no effect” on gray wolves. The proposed activity would occur in navigable waters 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 navigable waters 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. Pygmy rabbits occur in the shrub steppe habitat of Douglas County, Washington. Such habitat occurs along the Columbia River mainstem. Activities, such as placing a navigational buoy, would occur offshore and would not affect habitats that support the pygmy rabbit. This PBE does not cover placing piling or dolphin into the Columbia River mainstem, Snake River or Baker Bay. All activities will avoid suitable habitat and known populations of pygmy rabbit.

### **Woodland Caribou (*Rangifer tarandus caribou*)**

The proposed activity would have “no effect” on woodland caribou. The proposed activity would occur in navigable waters 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 “may affect, but is not likely to adversely affect” 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. Activities near sand dune, salt-spray meadows or open field habitat in the Pacific coastal and Willapa Bay areas of Pacific County could impact the butterfly or their habitat. The early blue violet is a host species for the butterfly larvae, and no activity would be allowed where blue violet is detected by a plant survey conducted at the appropriate time of year. To minimize potential impacts work will be prohibited in or near sensitive habitat areas as specified in Appendix E.

### **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 work in marine waters may result in temporary disturbance of blue 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. To minimize impacts, noise attenuation BMPs would be implemented.

### **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 work in marine waters may result in temporary disturbance of fin 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.

### **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 work in marine waters may result in temporary disturbance of humpback 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. To minimize impacts, noise attenuation BMPs would be implemented.

### **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 work in marine waters may result in temporary disturbance of sei 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. To minimize impacts, noise attenuation BMPs would be implemented.

### **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 work in marine waters may result in temporary disturbance of sperm 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. To minimize impacts, noise attenuation BMPs would be implemented.

### **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. To minimize impacts, noise attenuation BMPs would be implemented. 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 work in marine waters or the lower Columbia River may result in temporary disturbance of Steller sea lions during construction due to the associated noise and visual disturbance. Activities could result in confusion, disruption of social cohesion, separation, alteration of travel, and interference with feeding or breeding. To minimize impacts, noise attenuation BMPs would be implemented and 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 work in marine waters may result in temporary disturbance of green sea turtles during construction due to the associated noise and visual disturbance. Construction noise and activity could interfere with travel and foraging. To minimize impacts, noise attenuation BMPs would be implemented.

### **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 work in marine waters may result in temporary disturbance of leatherback sea turtles during construction due to the associated noise and visual disturbance. Construction noise and activity could interfere with travel and foraging. To minimize impacts, noise attenuation BMPs would be implemented.

### **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 work in marine waters may result in temporary disturbance of loggerhead sea turtles during construction due to the associated noise and visual disturbance. Construction noise and activity could interfere with travel and foraging. To minimize impacts, noise attenuation BMPs would be implemented.

### **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. Surveys to determine the presence of desert parsley can help avoid and minimize potential

impacts. Species or habitat would not be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline, in the case of marine/estuarine waters, where plants are not expected to occur.

### **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. It is unlikely that species or habitat would be affected by the proposed activity because the proposed activity is associated with navigable waters, away from upland areas, and work would be prohibited in or near sensitive areas as specified in Appendix E.

### **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. It is unlikely that species or habitat would be affected by the proposed activity because the proposed activity is associated with navigable waters, away from upland areas, and work would be prohibited in or near sensitive areas as specified in Appendix E.

### **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. Surveys to determine the presence of marsh sandwort can help avoid and minimize potential impacts. Because it may be extirpated and the activity would be limited to offshore areas or at the shoreline, in the case of marine/estuarine waters, where plants are not expected to occur, there is an insignificant and discountable chance that activities would affect marsh sandwort habitat.

### **Nelson’s Checker-Mallow (*Sidalcea nelsoniana*)**

The proposed activity would have “no effect” on Nelson’s checker mallow. Nelson's checker-mallow occurs in meadows and along streams in southwest Washington and the Olympic peninsula. Surveys to determine the presence of Nelson's checker-mallow can help avoid and minimize potential impacts. It is unlikely that species or habitat would be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline, in the case of marine/estuarine waters, where plants are not expected to occur and work would be prohibited in or near sensitive areas as specified in Appendix E.

### **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, areas where activities would not occur. Therefore, it is unlikely that species or habitat would be affected by the proposed activity because the proposed activity is associated with navigable waters.

### **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. Surveys to determine the presence of Spalding's silene can help avoid and minimize potential impacts. In addition, it is unlikely

that species or habitat would be affected by the proposed activity because the proposed activity is associated with navigable waters, away from upland grasslands.

### **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. Ponds would not be influenced or affected by proposed activity which occurs in navigable waters. Surveys to determine the presence of water howellia can help avoid and minimize potential impacts. It is unlikely that species or habitat would be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline, in the case of marine/estuarine waters, where plants are not expected to occur and work would be prohibited in or near sensitive areas as specified in Appendix E.

### **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, areas that are not expected to be affected by the proposed activity which occurs in navigable waters. Surveys to determine the presence of Wenatchee mountain checker-mallow can help avoid and minimize potential impacts. It is unlikely that species or habitat would be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline, in the case of marine/estuarine waters, where plants are not expected to occur and work would be prohibited in or near sensitive areas as specified in Appendix E.

### **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. Impacts to Ute ladies'-tresses are unlikely to occur as a result of the proposed activity since the activity is associated with navigable waters. Surveys to determine the presence of Utes ladies'-tresses can help avoid and minimize potential impacts. It is unlikely that species or habitat would be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline, in the case of marine/estuarine waters, where plants are not expected to occur and work would be prohibited in or near sensitive areas as specified in Appendix E.

### **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 construction activities. The proposed activity may result in temporary increases in suspended sediment during construction; however, turbidity is expected to be short-term. Proposed activity will not occur in or near vegetated shallows where listed salmonids or forage fish may occur and buoys will be anchored securely so that the anchor line does not drag. No creosote or pentachlorophenol treated piling may be installed under this PBE. In marine or estuarine waters only one new pile or one new dolphin (3 piles) is allowed under this activity, no piles are authorized in freshwater. Any piles to be replaced must be fully extracted, if possible, and the holes capped with appropriate material to ensure that the chemicals from the existing pile do not leach into adjacent sediments or waters (see Appendix E). Pile installation and removal BMPs will be implemented to minimize potential impacts associated with turbidity, contaminants, construction noise, and high decibel noise associated with pile driving through adherence of work windows and the monitoring of noise levels to avoid

exceeding 180 dB (re: 1  $\mu$ Pa) (see Appendix D and E). The in-water work windows (see Appendix D) will minimize the chance that adult and juvenile salmonids are present during project construction, and forage fish spawning will be protected.

The proposed activity “may affect, but is not likely to adversely affect” the following:

- 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

<b>Species Name</b> <i>Scientific Name</i>	<b>Status</b>	<b>Determination</b>	<b>Rational for Determination</b>
Brown Pelican <i>Pelecanus occidentalis</i>	E	May affect, but not likely to adversely affect	Any work near coastal marine waters and associated with the proposed activity may result in temporary displacement during construction due to noise and visual disturbance. To minimize impacts work would be limited in Pacific and Grays Harbor Counties by a work window and noise attenuation BMPs would be implemented (Appendix E).
Marbled Murrelet <i>Brachyramphus marmoratus</i>	T	May affect, but not likely to adversely affect	The proposed activity may result in temporary displacement during construction due to noise and visual disturbance. Noise attenuation BMPs would be implemented and work will be prohibited in or near critical habitat areas and during sensitive nesting or foraging periods (Appendix E).
Northern Spotted Owl <i>Strix occidentalis</i>	T	May affect, but not likely to adversely affect	The proposed activity may result in temporary displacement during construction due to noise and visual disturbance. Noise attenuation BMPs would be implemented and work will be prohibited in or near critical habitat areas and during sensitive nesting or foraging periods (Appendix E).
Short-Tailed Albatross <i>Phoebastria albatrus</i>	E	May affect, but not likely to adversely affect	In Washington, short-tailed albatross inhabit only coastal and offshore marine waters where temporary displacement due to noise and visual disturbance during construction has the potential to affect short-tailed albatross.
Western Snowy Plover <i>Charadrius alexandrinus</i>	T	May affect, but not likely to adversely affect	Plovers inhabit only ocean beach areas in Pacific and Grays Harbor counties where temporary displacement due to noise and visual disturbance during construction has the potential to affect western snowy plover. Noise attenuation BMPs would be implemented and work will be prohibited in or near critical habitat and sensitive nesting areas (Appendix E).
Canada Lynx <i>Lynx Canadensis</i>	T	No effect	The proposed activity would not occur near remote areas of the Selkirk Mountains or the Cascade Range where lynx occur.
Columbia White-Tailed Deer <i>Odocoileus virginianus leucurus</i>	E	May affect, but not likely to adversely affect	Construction noise and activities along the lower Columbia River from River Mile (RM) 50 to RM 52 may temporarily displace Columbia white-tailed deer. This PBE does not cover placing piling or dolphin into the Columbia River mainstem. Work will be prohibited in or near sensitive habitat areas as specified in Appendix E.
Gray Wolf <i>Canis lupis</i>	E	No effect	The proposed activity would not occur near remote areas of the Selkirk Mountains or the Cascade Range where grey wolves occur.
Grizzly Bear <i>Ursus arctos horribilis</i>	T	No effect	The proposed activity would not occur near remote areas of the Selkirk Mountains or the Cascade Range where grizzly bear occur
Pygmy Rabbit <i>Barchylagus idahoensis</i>	E	No effect	Pygmy rabbits occur in the shrub steppe habitat. Such habitat occurs along the Columbia River mainstem. This PBE does not cover placing piling or dolphin into the Columbia River mainstem, Snake River or Baker Bay, therefore activity would not affect pygmy rabbit..
Woodland Caribou <i>Rangifer tarandus caribou</i>	E	No effect	The proposed activity would not occur in or near the Selkirk Mountains where woodland caribou occur.
Oregon Silverspot Butterfly <i>Speyeria zerene hippolyta</i>	T	May affect, but not likely to adversely affect	Activities near sand dune, salt-spray meadows or open field habitat in the Pacific coastal and Willapa Bay areas of Pacific County could impact the butterfly or their habitat. Work will be prohibited in or near sensitive habitat areas as specified in Appendix E

Table 7. Effect Determinations for Listed Marine Animals

<b>Species Name</b> <i>Scientific Name</i>	<b>Status</b>	<b>Determination</b>	<b>Rational for Determination</b>
Blue Whale <i>Balaenoptera musculus</i>	E	May affect, but not likely to adversely affect	Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding.
Fin Whale <i>Balaenoptera physalus</i>	E	May affect, but not likely to adversely affect	Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding.
Humpback Whale <i>Megaptera novaeangliae</i>	E	May affect, but not likely to adversely affect	Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding.
Sei Whale <i>Balaenoptera borealis</i>	E	May affect, but not likely to adversely affect	Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding.
Sperm Whale <i>Physeter macrocephalus</i>	E	May affect, but not likely to adversely affect	Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding.
Killer Whale <i>Orcinus orca</i>	E	May affect, but not likely to adversely affect	Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding.
Steller Sea Lion <i>Eumetopias jubatus</i>	T	May affect, but not likely to adversely affect	Activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and interference with feeding or breeding. Work will be prohibited in or near critical habitat.
Green Sea Turtle <i>Chelonia mydas</i>	T	May affect, but not likely to adversely affect	Construction noise and activity could interfere with travel and foraging.
Leatherback Sea Turtle <i>Dermochelys coriacea</i>	E	May affect, but not likely to adversely affect	Construction noise and activity could interfere with travel and foraging.
Loggerhead Sea Turtle <i>Caretta caretta</i>	T	May affect, but not likely to adversely affect	Construction noise and activity could interfere with travel and foraging.

Table 8. Effect Determinations for Listed Plants

<b>Species Name</b> <i>Scientific Name</i>	<b>Status</b>	<b>Determination</b>	<b>Rational for Determination</b>
Bradshaw's Desert Parsley <i>Lomatium bradshawii</i>	E	No effect	Species or habitat would not be affected by the proposed activity because construction would be limited to offshore areas or the shoreline, where plants are not expected to occur. Surveys to determine the presence of desert parsley can help avoid and minimize potential impacts.
Golden Paintbrush <i>Castilleja levisecta</i>	T	No effect	Species or habitat would not be affected by the proposed activity because the proposed activity is associated with navigable waters, away from upland habitat, and work would be prohibited in or near sensitive areas as specified in Appendix E.
Kincaid's Sulphur Lupine <i>Lupinus sulphureus ssp. Kincaidii</i>	T	No effect	Species or habitat would not be affected by the proposed activity because the proposed activity is associated with navigable waters, away from upland prairie habitat, and work would be prohibited in or near sensitive areas as specified in Appendix E.
Marsh Sandwort <i>Arenaria paludicola</i>	E	No effect	There is an insignificant and discountable chance that activities would affect marsh sandwort habitat since it may be extirpated and the activity would be limited to offshore areas or at the shoreline where plants are not expected to occur.

<b>Species Name</b> <i>Scientific Name</i>	<b>Status</b>	<b>Determination</b>	<b>Rational for Determination</b>
Nelson's Checker-Mallow <i>Sidalcea nelsoniana</i>	T	No effect	Species or habitat would not be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline, where plants are not expected to occur. Work would be prohibited in or near sensitive areas as specified in Appendix E.
Showy Stickseed <i>Hackelia venusta</i>	PE	No effect	Proposed activity would not occur in open mountain sites composed of loose sand or talus slopes. Activities would be limited to offshore areas or at the shoreline.
Spalding's Silene <i>Silene spaldingii</i>	PT	No effect	Species or habitat would not be affected by the proposed activity because the proposed activity is associated with navigable waters, away from upland grasslands. Surveys to determine the presence of Spalding's silene can help avoid and minimize potential impacts.
Water Howellia <i>Howellia aquatilis</i>	T	No effect	Species or habitat would not be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline, where plants are not expected to occur. Work would be prohibited in or near sensitive areas as specified in Appendix E.
Wenatchee Mountain Checker-Mallow <i>Sidalcea oregana var. calva</i>	E	No effect	Species or habitat would not be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline where plants are not expected to occur. Work would be prohibited in or near sensitive areas as specified in Appendix E.
Ute Ladies'-Tresses <i>Spiranthes diluvialis</i>	T	No effect	Species or habitat would not be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline where plants are not expected to occur. Work would be prohibited in or near sensitive areas as specified in Appendix E.

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

<b>Species Name</b> <i>Scientific Name</i> Evolutionary Significant Unit (ESU)/Distinct Population Segment (DPS)	<b>Status</b>	<b>Determination</b>	<b>Rational for Determination</b>
Bull Trout <i>Salvelinus confluentus</i> 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, contaminants, and noise associated with construction could affect fish.
Chinook Salmon <i>Oncorhynchus tshawytscha</i> 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, contaminants, and noise associated with construction could affect fish.
Sockeye Salmon <i>Oncorhynchus nerka</i> 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, contaminants, and noise associated with construction could affect fish.
Coho Salmon <i>Oncorhynchus kisutch</i> 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, contaminants, and noise associated with construction could affect fish.
Chum Salmon <i>Oncorhynchus keta</i> 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, contaminants, and noise associated with construction could affect fish.
Steelhead Trout <i>Oncorhynchus mykiss</i> Puget Sound steelhead Upper Columbia River ESU Middle Columbia River ESU Lower Columbia River ESU Snake River Basin ESU Upper Willamette River ESU	T E 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, contaminants, and noise associated with construction 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 have 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 8), coastal pelagics (Table 9) and salmonids (Table 10) 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 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 and groundfish. It has been determined that the proposed action will not adversely affect EFH for federally managed fisheries in Washington waters.

Table 8. Ground Fish Species with Designated EFH and the Life History Stages that May Occur in the Action Area (PFMC, 1998a).

<b>GROUND FISH SPECIES</b>	<b>Adults</b>	<b>Spawning/ Mating</b>	<b>Large Juvenile</b>	<b>Small Juvenile</b>	<b>Larvae</b>	<b>Eggs/ Parturition</b>
Leopard Shark	X	X	N/A	X	N/A	X
Southern 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 9. Coastal Pelagic Species with Designated EFH and the Life History Stages that May Occur in the Action Area (PFMC, 1998a).

<b>COASTAL PELAGIC SPECIES</b>	<b>Adults</b>	<b>Spawning/ Mating</b>	<b>Large Juvenile</b>	<b>Small Juvenile</b>	<b>Larvae</b>	<b>Eggs/ Parturition</b>
Northern Anchovy	X		X		X	X
Pacific Sardine	X		X		X	X
Pacific 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 10. Salmonid Species with Designated EFH and the Life History Stages that May Occur in the Action Area (PFMC, 1998a).

<b>PACIFIC SALMON</b>	<b>Egg</b>	<b>Larvae</b>	<b>Young Juvenile</b>	<b>Juvenile</b>	<b>Adult</b>	<b>Spawning</b>
Chinook salmon	X	X	X	X	X	X
Coho salmon	X	X	X	X	X	X
Pink salmon	X	X	X	X	X	X