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ENVIRONMENTAL ASSESSMENT FISCAL YEARS 2009 – 2014
QUILLAYUTE RIVER NAVIGATION CHANNEL
MAINTENANCE DREDGING

Clallam County, Washington

US Army Corps
of Engineers®
Seattle District

Quillayute Navigation Channel Maintenance Dredging
Environmental Assessment
Fiscal Years 2009 – 2014

Responsible Agency: The responsible agency for this navigation project is the U.S. Army Corps of Engineers, Seattle District.

Abstract:
This Environmental Assessment (EA) evaluates the environmental effects of the proposed maintenance of the federal navigation channel at the mouth of the Quillayute River and U.S. Coast Guard station at La Push, Washington. La Push is located on the northwest coast of the Olympic Peninsula, in Clallam County, Washington. Shoaling of the channel requires maintenance dredging approximately every two years to ensure safe navigation. Maintenance dredging last occurred in 2007 in the channel; however, the entrance reach over the bar has not been dredged since 2003. In 2009, 2011, and 2013, the channel will be hydraulically dredged to the authorized depth of -10 feet mean lower low water (MLLW) plus two feet of overdredge to -12 feet, MLLW, resulting in a total dredged volume of approximately 100,000 cubic yards per episode. The dredging will occur within the approved Washington Department of Fish and Wildlife in-water construction window from 16 September through 28 February; however, based on coordination with the Washington State Department of Fish and Wildlife, Quileute Tribe, the National Park Service and Environmental Protection Agency, an allowance has been made so that dredging may begin on September 1, 2009 due to safety concerns for the dredge vessel and personnel during the winter season on the Washington Coast. In order to dredge during this earlier time, the Corps has agreed to conduct surf smelt spawning monitoring to determine impacts, if any, of dredged material placement on surf smelt spawning habitat. Based on results of the surf smelt monitoring, dredging may begin earlier in subsequent dredging cycle years and will be coordinated in advance of obtaining a water quality certification from the Environmental Protection Agency. Dredging events are planned for 2009, 2011, and 2013 including the full duration of the fish work window that closes 1 March each year. This document is intended to expire on 1 March 2015 to allow for the possibility that dredging may be required throughout the fifth dredging year, beginning 1 September 2014, in the event the Corps may need the entire fish window to complete the work.

The official comment period for the Draft Environmental Assessment closed on July 11, 2009.

This document is available online at: http://www.nws.usace.army.mil/ers/envirdocs.html

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1. INTRODUCTION

The U.S. Army Corps of Engineers (Corps) is responsible for maintaining the Quillayute River Navigation Channel near a U.S. Coast Guard (USCG) station located in La Push, Washington. La Push is located near the northwest corner of the Olympic Peninsula, in Clallam County, Washington (Figure 1). This harbor is a dredged basin originally constructed in 1932. The basin provides a harbor of refuge, a USCG station, transient and permanent moorage in a marina, and a boat launch ramp. Shoaling of the channel requires dredging approximately every two years to ensure safe navigation. Maintenance dredging in most of the channel last occurred in 2007; however the entrance reach has not been dredged since 2003.

This Environmental Assessment (EA) evaluates the potential impacts of the next three routine maintenance-dredging events expected to occur at La Push in 2009, 2011, and 2013. In each of these years, the channel will be dredged to the authorized depth of -10 feet mean lower low water (MLLW) plus two feet of overdredge to a depth of -12-feet (MLLW). Approved work windows for protection of fish species limit dredging to 16 September through 28 February of any year; however, the Corps has coordinated with the Washington Department of Fish and Wildlife (WDFW) for their concurrence to begin dredging as early as 1 September provided the Corps conducts surf smelt monitoring in proposed disposal areas and determines potential disposal impacts, if any, on surf smelt in these locations (See Section 4.3.2). The Corps initiated this proposal based on a recommendation from the Environmental Protection Agency (EPA) to measure impacts to surf smelt to determine whether and to what extent dredged material disposal affects the population that spawns at Rialto Beach. The EPA has provided a water quality certification based on the Corps' proposal and subsequent approval of the National Park Service (NPS), Washington Department of Fish and Wildlife (WDFW), and Quileute Tribe. Results of the surf smelt monitoring will be distributed to all relevant agencies and interested parties. Further coordination on dredging start dates beyond 2009 will be based on the results of this study.

The Corps maintains three areas of the lower Quillayute estuary: the outer channel, the inner channel, and the boat basin (Figure 4). The inner channel begins upstream at station 6+00 and extends downstream to station 20+00. The outer channel is considered to be station 20+00 to 35+00. This reach of the river mouth includes the bar, a ridge that forms at the river and ocean interface.

Dredged sediments will be disposed of at four locations: Site A is a one-acre site on the Quileute Tribe's reservation; Site 2A is on the westward spit south of Rialto Beach, and the third site is the pocket beach at the intersection of the sea dike and James Island. A fourth site, Site 1 on the spit, may be used in the event that ocean conditions require the dredger to take safety precautions by reducing the length of pipeline deployed. This EA contains an alternatives analysis and addresses the potential environmental impacts of the no action alternative and the preferred alternative.

The grain size distribution of accumulated sediments varies by area of deposition. The inner channel and boat basin accumulate finer sediments up to gravel size; the outer channel accumulates larger cobbles as large as six inches in diameter. The preferred disposal location varies according to grain size. The 2009-10 Water Quality Certification states that the majority of dredged material should be placed at Site 2A as this assists with stabilizing the spit to avoid breaching, and keeps the sediments within the natural system of the estuary and ocean beach. However, the cobble-sized material that accumulates in the outer channel is larger than what is typically found in the surf smelt spawning habitat known to exist near Site 2A. Additionally, the size of hydraulic dredge that is appropriate for this project is too small to be able to tow safely the very long length of pipeline that is required to reach the 3,000 feet from the bar to the disposal site. For these reasons, outer channel sediment is typically disposed at upland Site A during past maintenance dredging, and may be disposed at the intersection of the sea dike and James Island in

upcoming maintenance dredging. These two sites are closer to the outer channel and require a shorter length of pipeline connected to the dredge. Since Site A is upland and the sea dike has no known surf smelt spawning, EPA has allowed material to be deposited at these locations earlier than at Site 1 and Site 2A. For this reason, the Corps has proposed the staggered start dates of 1 September for the outer channel and 1 October for the inner channel and boat basin.

1.1. Location

The Quillayute River Navigation Channel project is located on the northwest coast of the Olympic Peninsula in Clallam County, Washington (T28N, R15W, Section 28). The navigation channel provides access to the Quileute Tribe's marina, and for the USCG vessels to reach the Pacific Ocean for rescue missions (Figures 1 and 2).

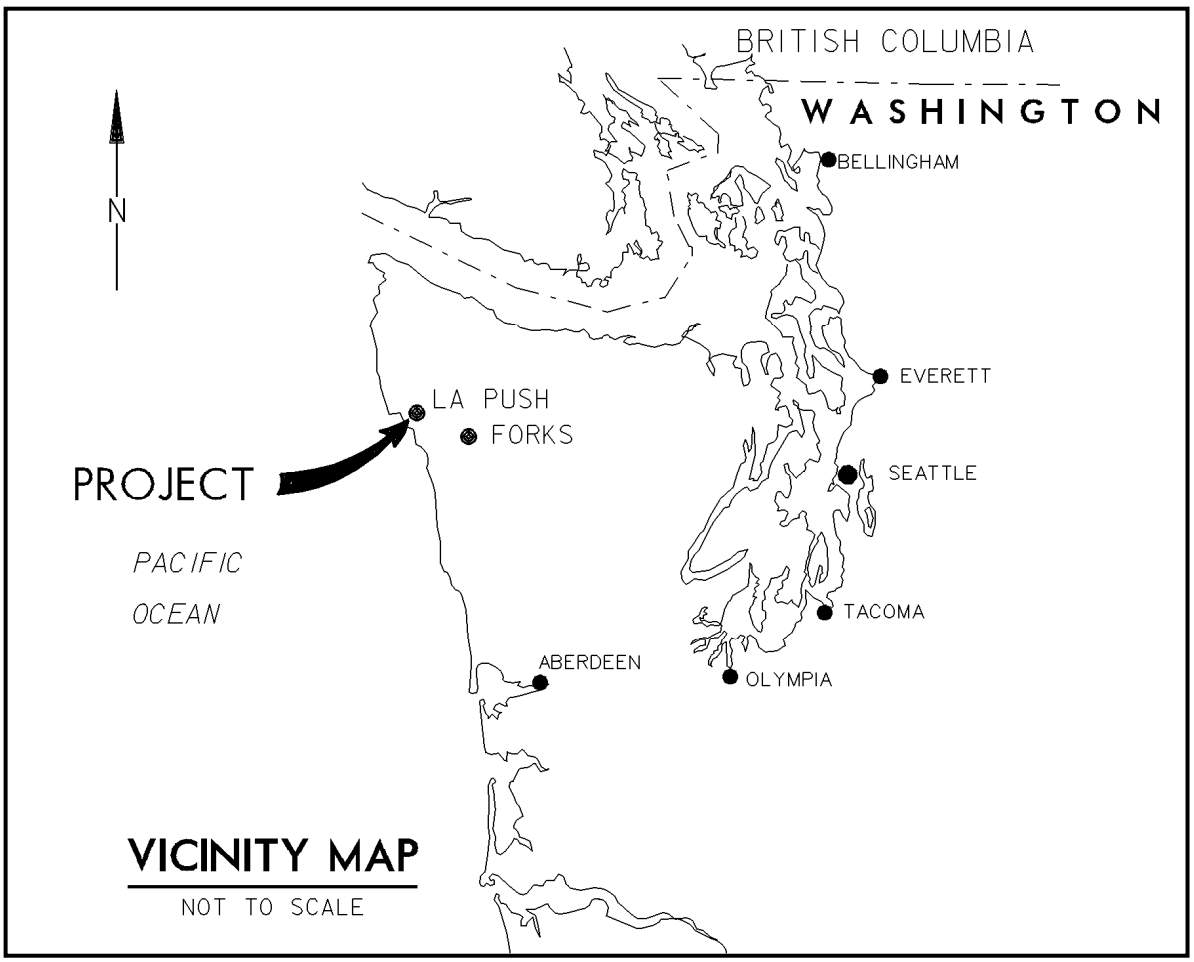

Figure 1. Location of La Push and the Quillayute River in Washington State.

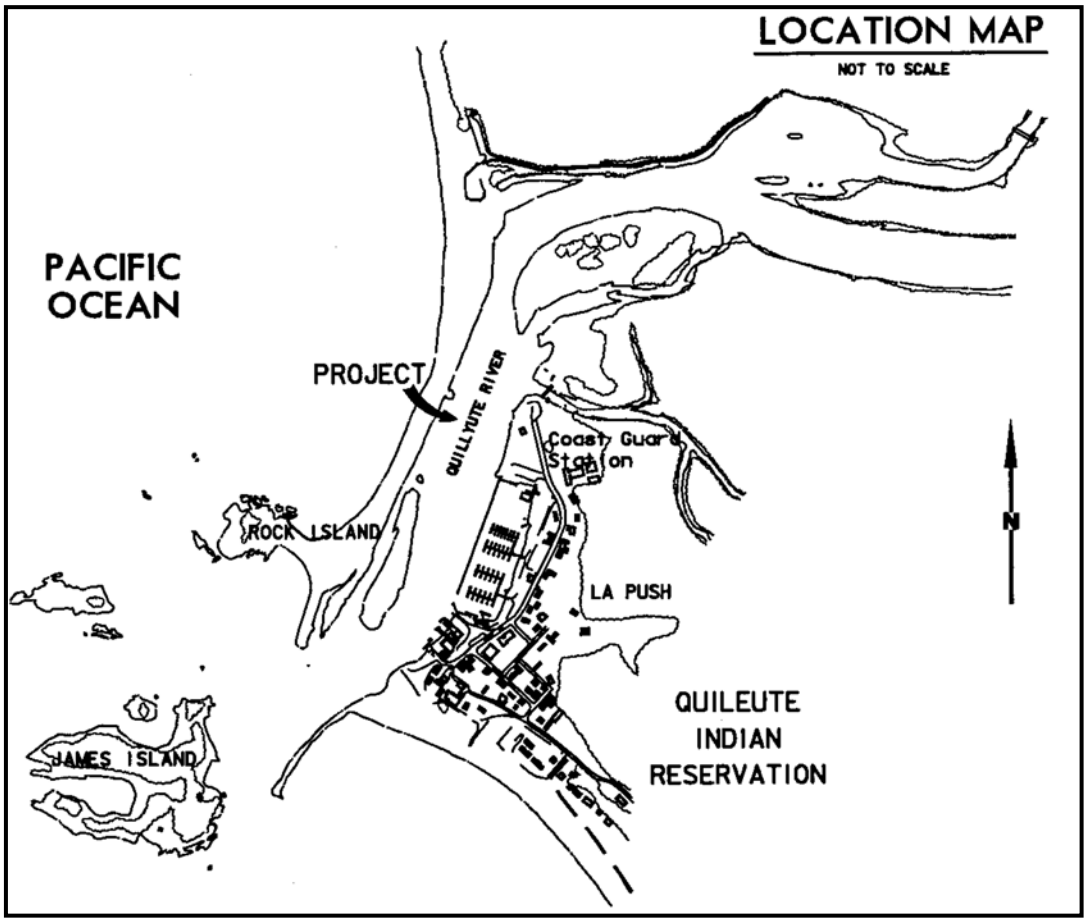

Figure 2. Quillayute River federal navigation channel with U.S. Coast Guard Station.

1.2. Background

The project was constructed in 1932; federal maintenance began in 1949 and has continued to the present. The purpose of this continuing maintenance is to protect the navigational channel and the community of La Push. The current project features were developed in 1962. Authorized features of the federal navigation project include the following (Figures 2 and 3):

1. A small boat basin 1,070 feet long, 313 feet wide, and 10 feet deep, with a 1,500 foot timber training wall constructed to elevation +16 feet MLLW along the west side to reduce shoaling inside the boat basin, and a timber seawall at the downstream end to protect against ocean waves;
2. A rubble mound jetty 1,400 feet long along the east side of the river mouth at +15 MLLW;
3. A rubble mound dike 1,050 feet long, +8 MLLW, along the west side of the river between Quillayute Spit and James Island;
4. A navigation channel varying from 100 to 275 feet wide and -10 feet MLLW with an entrance channel southeast of James Island and extending 3,500 feet upstream ending with a stilling basin alongside the marina's training wall.
5. Maintenance of Quillayute Spit, 2,080 feet long and +20 MLLW, a naturally occurring spit that is artificially maintained with armoring to provide protection to the marina and town from ocean waves.

Review of aerial photographs from 1976 and historical documentation contained in the 1986 Final Environmental Impact Statement indicates the upper spit area (Figure 3) consisted of sand, small gravel,

and sporadic vegetation. The upper spit breached in 1954 and 1955 and was repaired with sand. During the 1960s, large drift logs were cabled together and beach material was relocated to low spots in the upper spit to prevent breaches. During annual maintenance dredging in the 1960s, dredged material from the boat basin (coarse sand and gravel) in the average amount of 50,000 cubic yards (cy) was placed on the upper spit; however, yearly emergency action was generally required to prevent breaching of the spit (Schuldt 1974).

Figure 3. Navigation and flood protection features at the mouth of Quillayute River (2007).

In 1971, 300,000 cy of sand, heavy gravel, and cobbles were dredged from the river and deposited on the ocean side of the upper spit (Figure 3), a naturally occurring sand spit along the west edge of the river mouth. The Corps monitored the rate of erosion. By September 1974, the spit had lost nearly all of the 300,000 cy of material at an erosion rate of 100,000 cy per year. To reduce the increasing expense of repairing the spit, 50,000 tons of 10- to 1,000-pound rocks were placed along the middle 1,600 feet of the spit. Then in 1979, an additional 90,000 tons of the rocks were placed on the spit. This was considered an interim repair that will give an additional four to five years of protection. In 1982, the Corps added 56,000 tons of spalls and large armor rock on the spit to extend the protection longer than the estimated five years. Between 1982 and 1996, the Corps placed dredged material on the spit to maintain the portion of the spit that had not been armored with riprap.

On January 16, 1996, a winter storm caused an 800-foot-wide breach along the natural sand spit just north of the area that had been armored in 1982. In August of 1996, the Corps placed 205,000 tons of riprap along a 1,900-foot section of the spit to close the breach and bring the armored portion of the spit to a height of +20 feet above MLLW. This work included a permanent riprap toe along the river side of the spit to prevent undermining of the armored spit by river currents.

1.3. Authority

The Quillayute River Navigation Channel project and maintenance dredging by the Department of the Army was authorized by the Rivers and Harbors Act of 3 July 1930 (House Document 290, 71st Congress, 2nd session) and modified by the Rivers and Harbors Act of 2 March 1945 and 3 September 1954. The

authority provides for an entrance channel at a depth of -10 feet (MLLW), varying from 100 to 275 feet wide extending upstream from deep water, and a 75-foot wide channel also at a depth of -10 feet (MLLW) extending 900 feet upstream to Smith Slough; a boat basin with a timber-planked training wall with a +16-foot top elevation including a rock toe; a jetty approximately 1,400 feet long at a +15-foot elevation on the left bank; and a low dike 1,050 feet long on the right bank protecting the entrance channel. Maintenance of the upstream 900 feet of channel is not performed, as navigation access is no longer required to Smith's Slough.

1.4. Project Purpose and Need

Maintenance dredging of the navigation channel is required as riverborne sand and gravel forms shoals within the navigation channel; this occurs roughly every two years. The purpose of this work is to return a section of the navigation channel to its authorized depth of -10 feet below MLLW plus two feet of overdredge, and to remove accumulated material from the USCG moorage slips. This work is needed so that vessels may safely transit the channel for entry and exit from the marina, and so that the USCG can keep their response vessels stationed effectively in the current location. The La Push station is the only vessel rescue response point between Neah Bay and Grays Harbor and is therefore an important location for timely response to endangered mariners in nearby Pacific Ocean. The marina at La Push offers a livelihood for approximately 325 Tribal members and 50 non-Tribal citizens including USCG personnel. The primary commercial activity is fishing and fish processing, which generates approximately $4,000,000 in annual income.

1.5. Proposed Action

The Quillayute River Navigation Channel project consists of routine maintenance dredging of roughly 100,000 cy of material from the navigation channel and USCG basin once every two years. The navigation channel is dredged to the authorized depth of -10 feet (MLLW) plus 2 feet overdredge to an overall depth of -12-feet (MLLW). The project includes the 3,500-foot long navigation channel, which varies in width from 100 to 275 feet wide, and a 115,000 square foot area within the boat basin (Figure 4).

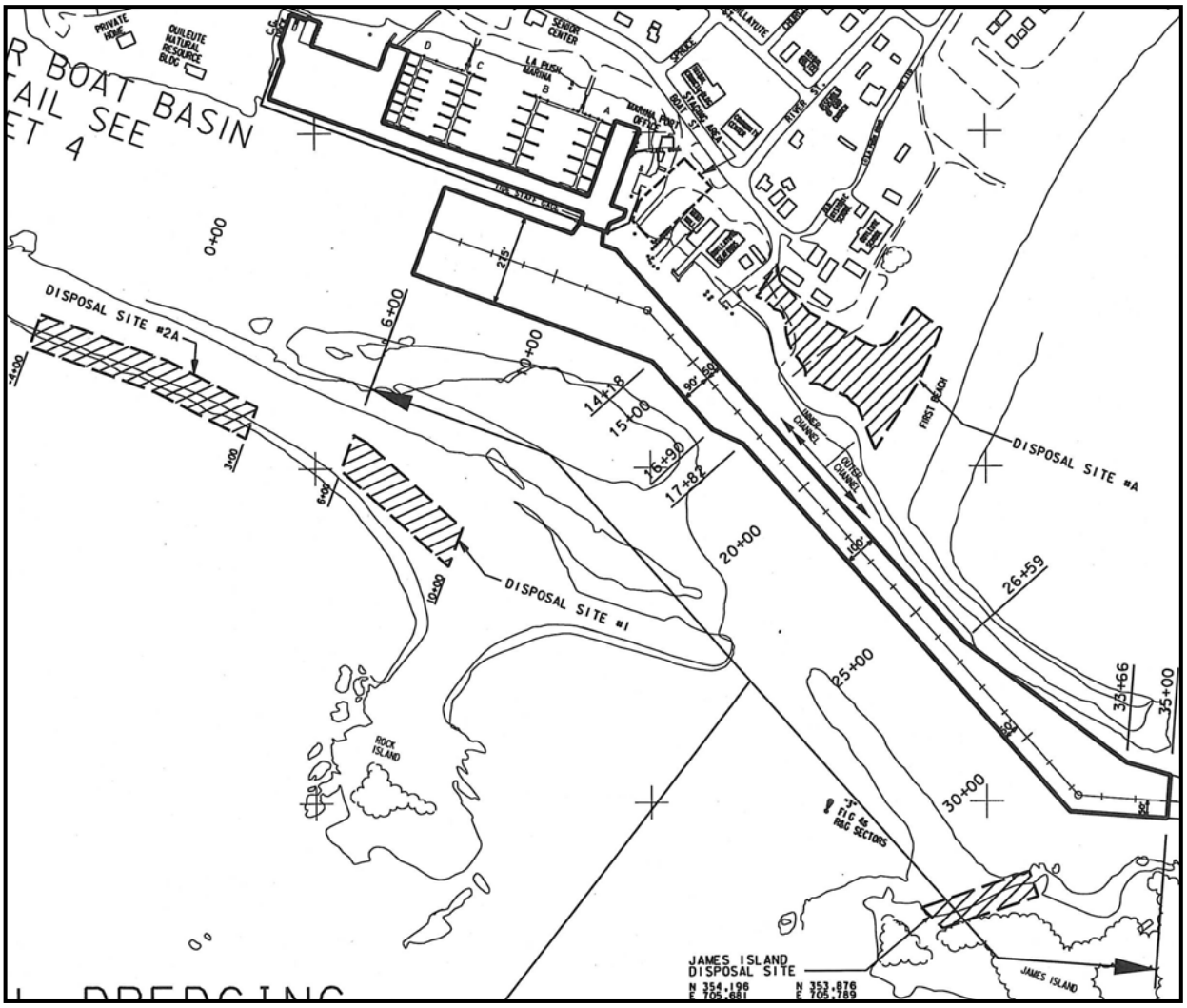

Figure 4. Areas proposed for dredging with three established disposal sites.

Dredging will be accomplished with a hydraulic dredge and pipeline, which is expected to achieve a rate of roughly 1,500 cy per day. The dredging will be expected to take up to 60 days with some interruptions due to weather. Disposal of the dredged sand and gravel will occur at four disposal sites. Material from the outer channel will be disposed at Site A on the south corner of the Tribe's reservation land. A seepage berm will be constructed to allow water to drain toward First Beach. The outer channel has not been dredged since 2003, so an unusually large quantity of sediment has accumulated there. The quantity of material expected to be placed at Site A is roughly 12,000 cubic yards in 2009; however, the quantity of accumulated material is expected to be significantly less in following years assuming the biannual dredging cycle is maintained. Material from the inner channel will be disposed at Site 2A with contingency disposal at Site 1 on the spit if ocean conditions dictate doing so in light of safety considerations. The Corps has received approval from the Quileute Tribe to place approximately 5,000 cy of additional dredged gravel material from the outer channel in the intertidal zone where the sea dike intersects with James Island. Material placed here is expected to erode northward. The James Island site may be used in any dredge year in the event that the outer channel contains more material than the maximum capacity at upland disposal Site A, which is estimated to be 15,000 cy.

The proposed start date for dredging is 1 September for the outer channel with disposal at Site A and at the James Island site, and 1 October with disposal at Site 2A (with contingency disposal at Site 1). In previous years, work windows for protection of fish species have meant that dredging could not begin until 16 September or even as late as 1 November. The legally mandated fish window for protection of forage fish opens on 16 September each year; an advisory window opens 1 November based on a recommendation from the National Park Service (NPS) to protect surf smelt. The 1 November start date was mandated by a previous water quality certification issued by the EPA. The restriction to fall and winter dredging has caused a variety of problems for the Corps' ability to maintain the navigation channel to authorized depth. Problems have stemmed from the safety issues for dredging vessels on the Washington coast during the winter storm season. The Corps proposed the staggered start dates of 1 September and 1 October in conjunction with surf smelt monitoring in order to obtain a new water quality certification from EPA. The proposed start dates have been agreed upon for the fall 2009 dredging among WDFW, NPS, EPA, and the Quileute Tribe. For future years, the Corps, the Tribe, and the natural resource agencies will evaluate the results of the surf smelt monitoring, which is anticipated to provide guidance on the impacts of beach disposal to spawning surf smelt on Rialto Beach. Since one of the main concerns for surf smelt spawning habitat is the stability of beach material, the study has been designed to attempt to detect changes in beach slope profile and grain size distribution that may result from dredged material disposal. While few or no surf smelt are expected to be present when disposal begins on 1 October in 2009, the results of the study may reveal whether the habitat conditions during disposal are adequate to support spawning. If conditions within the zone of influence of disposal are found not to be significantly different from the control area beyond the zone of influence, then the Corps will propose an earlier start date for disposal, such as 16 September, for example.

Results of the 2009 surf smelt monitoring study will be reported to EPA and distributed to other interested parties no later than six months after the completion of dredging, or by 1 September 2010, whichever is sooner, in order to comply with the 2009-10 Water Quality Certification issued by EPA on 12 June 2009. The authorization to begin beach disposal at the Quillayute spit sites applies to the 2009-10 dredging event only. This is documented in the above named Water Quality Certification. The Corps will need to request a re-issuance of the Water Quality Certification for any dredging beyond 2010; therefore, following distribution of the report, the Corps will propose dredging and disposal start dates based on the findings of the 2009 surf smelt monitoring. A change to the dredging work windows as a result of monitoring will require assessment of the adequacy of this analysis performed to comply with the National Environmental Policy Act (NEPA), and possible re-evaluation of the conclusions of this Environmental Assessment and Finding of No Significant Impact.

2. ALTERNATIVES

2.1. No Action Alternative

If no action is taken, the Quillayute River Channel will not be dredged during this maintenance cycle. Delaying the proposed dredging would cause the channel to continue to fill in posing a risk to the USCG's ability to carry out rescue missions, and to recreational boaters and commercial fishermen who may run aground when transiting the channel. Eventually, access to the marina would be blocked. Discontinuing the present maintenance-dredging program would cause the Quillayute River Channel to shoal, preventing passage of most vessels. This would have significant economic effects to the Quileute Tribe at the town of La Push, and the USCG has stated that they would likely have to close this station. This alternative will not meet the project purpose and need, but is carried forward for evaluation purposes.

2.2. Maintenance Dredging beginning 1 November

In previous years, the Corps followed an advisory fish window that required no dredged material placement on the ocean side of the spit until the surf smelt spawning season had passed. Dredging during

the winter storm season has posed a variety of problems for dredgers including risks to human safety and loss of machinery during storms. In the 2007 dredge cycle, the Corps received no bids on the contract for the work worth roughly $1,000,000. Dredgers have been unable to dredge the dangerous entrance bar since 2003. This alternative will not meet all project objectives. The Corps analyzed the risks of advertising a dredge contract for the Fiscal Year 2009 dredging with the 1 November start date, but has rejected this alternative in favor of negotiating an earlier start date with the natural resource agencies, by conducting monitoring of surf smelt spawning and stability of habitat before, during, and after the FY09 dredging.

2.3. Maintenance Dredging with Beach and Upland Disposal – Preferred Alternative

The preferred alternative was selected for its capability to meet project objectives at a reasonable cost, to minimize impacts to the environment and fishery resources, and to satisfy the concerns of the Quileute Tribe, USCG, and resource agencies.

The preferred alternative consists of the maintenance dredging of approximately 100,000 cy once every two years from the navigation channel and the boat basin as described in Section 1.5 above. A hydraulic dredge will be able to move approximately 1,500 cy of material per day and complete the project within roughly two months, weather permitting. Dredge cycle years will be 2009, 2011, and 2013 including the full duration of the fish work window that closes 1 March each year. This document is intended to cover the period from summer 2009 to 1 March 2015 to allow for the possibility that dredging may be required throughout the fifth dredging year, beginning 1 September 2014, in the event the Corps may need the entire fish window through 28 February 2015 to complete the work.

Disposal is proposed to occur at four different disposal sites around the vicinity of the navigation channel. Site A is an upland location on tribal land at the southwest corner of the town of La Push and has capacity for approximately 12,000 cy. Dredged material is placed at this site for the beneficial use of the Quileute Tribe for their construction needs. Disposal at Site A will be confined by using ecology blocks and hay bales to direct runoff onto first beach so that settling of sediments can occur before entering a water body. Site 2A is on the ocean side of the spit and centers on the area of the spit that received riprap as repair material after the 1996 breach. Site 2A is the preferred disposal site for the majority of the dredged material, because placing material here helps reinforce the stability of the spit to prevent breaching and avoids additional maintenance work on the armored spit that provides protection of the marina and shoreline developments from ocean waves. Additionally, the grain size distribution of most of the dredged material is appropriate for surf smelt spawning, and the material is expected to move northward along the spit onto Rialto Beach. Site 1 is also on the spit, south of Site 2A, and may be used in the event that ocean conditions require safety precautions be taken by reducing the length of the dredge pipeline. The Corps has proposed a fourth disposal site at the intersection of the sea dike at James Island (Figure 5). The Quileute Tribe has approved of disposal at this location. The plan is to place up to 5,000 cy on the beach and intertidal zone below mean higher high water (MHHW) with the intention that it will erode rapidly in a northerly direction. The James Island sea dike disposal location may be used during any dredging episodes in which the amount of accumulated material in the channel exceeds the capacity of Site A, or if otherwise deemed necessary to feed material to the sea dike. Material may be directed to this location in the event that it cannot be transported to site 2A. It is important that material dredged from the Quillayute River navigation channel be utilized within the system on the ocean side of the rocky islands and armored spit to reduce maintenance needs of the navigation features that protect the waterfront developments and to minimize unnecessary alterations of environmental processes. Therefore, alternatives that involve large quantities of material to be placed upland will likely be rejected in favor of the least environmentally damaging alternative.

Figure 5. New intertidal beach disposal area at James Island.

The natural resource agencies and the Quileute Tribe have concurred with the Corps' proposal to begin dredging on 1 September in the outer channel with disposal at Site A and at James Island, and then begin dredging the inner channel not until 1 October with disposal at Site 2A and Site 1, if applicable. The agreement for this is conditioned on the Corps performing a surf smelt monitoring study that will analyze the following four elements:

1. Beach slope profiles along equally spaced transects along the spit and southern end of Rialto Beach
2. Grain size distribution in the established study area
3. Egg density and distribution across the study area following the standardized WDFW protocol (Moulton and Penttila 2000)
4. Catch per unit effort of surf smelt adults, with fork length and sex ratio

Sampling will occur during biweekly events beginning early July 2009 and ending mid-November 2009. The above-mentioned samples will be collected in the disposal area zone of influence and at a control site to the north along the Quillayute spit. A monitoring plan has been developed utilizing established methods for each parameter that will be measured (ICF-Jones&Stokes 2009).

The purpose in studying these items is to detect whether material disposal causes changes in appropriate spawning gravel composition and egg abundance, changes in beach morphology in the spawning area, and to quantify the adult surf smelt population in the study area. The overall purpose for monitoring the surf smelt spawning and habitat is to quantify any impacts that material disposal may have, and then to avoid and/or minimize the impacts to an acceptable level so that the Corps can perform the required

maintenance dredging earlier in the year and still protect the natural resources in the area. Adjustments to disposal that may be made include timing, quantity, location, and source material.

3. EXISTING ENVIRONMENT

The Quillayute River extends from river mile 5.6 at the confluence of the Bogachiel and Sol Duc Rivers, which drain a portion of the northwest slope of the Olympic Mountains in Clallam County, Washington. The Quillayute is joined by the Dickey River at Mora, then flows another mile where an armored spit turns the river south. It forms the north boundary of the Quileute Indian Reservation and enters the Pacific Ocean at La Push. The mouth of the river enters the ocean among rocky islands and sea stacks.

3.1. Sediments

The Quillayute River drainage basin occupies the northwest corner of the Olympic Mountain Range. The basin is composed of old sandstones and conglomerates, and a broad upland surface that is underlain by Pleistocene marine sands, silts, and gravels, and mantled by glacial outwash. Because of these sources of material, as well as a history of timber harvest in the central basin, the river transports a moderate bedload of variously sized sediment depending on seasonal discharges. A single storm event of higher river stages can deliver significant quantities of gravel and sand to the estuary.

At the mouth of the river, the bottom is predominantly smooth gravel and cobble decreasing in size to sand nearer the shore. The last sediment characterization was performed by the Corps in 2005 and included sediments in the boat basin. There is no heavy industrialization within the community nor upstream of the project site; therefore the sediment is qualified in accordance with the Dredged Material Management Program (DMMP) for open water, upland, and near shore disposal. The grain size distribution in the boat basin by dry weight is as follows: less than one percent gravel, 56 percent sand, 37 percent silt, and six percent clay. The outer channel has not been analyzed recently, however, observation of dredged material revealed mostly gravel and cobbles as large as six inches in diameter.

3.2. Water Quality

No part of the 5.6-mile Quillayute River is on the 303(d) list for any water quality parameters. The Washington Department of Ecology (Ecology) classified the fresh/estuarine waters of the Quillayute River and the coastal marine waters as Class AA (extraordinary). Aside from logging and a road network in the sub-basins of the upper watershed tributaries to the Quillayute, there is little other disturbance that might affect water quality. In the estuary, the marina with its associated boat use and maintenance may contribute some pollutants. The Corps's most recent Dredged Material Suitability Determination USACE 2005) states that the material is acceptable for marine disposal. The Corps will analyze the sediments again according to DMMP protocol.

3.3. Biological Resources

3.3.1. Vegetation

The coastal beach zone consists of cobble, gravel and sand and large drift logs dominate the beach within the storm tide zone. The jetties, dike, and rocky habitat have attached micro- and macroalgae. The beach grass/scrub zone is a narrow zone typically above the line of driftwood. This area is dominated by dunegrass (*Leymus mollis*), yarrow (*Achillea millefolium*), English plantain (*Plantago lanceolata*), tansy ragwort (*Senecio jacobaea*), and oxeye daisy (*Leucanthemum vulgare*). Other species present include goldenrod (*Solidago* spp.), vetch (*Vicia* spp.), hawksbeard (*Crepis* spp.), and everlasting (*Anaphalis margaritacea*). The scrub zone is thought to be an older successional zone on accreting sandy areas. Common plants there are twinberry (*Lonicera involucrata*), salal (*Gaultheria shallon*), Sitka willow (*Salix sitchensis*), and red alder (*Alnus rubra*).

The intertidal estuarine areas at the mouth of the Quillayute River have a mostly diked or riprapped shoreline. At low tide, mixed sand and gravel bars become exposed. Further upstream past the marina, sparsely vegetated sand and gravel bars exist in the low water areas and the riverbanks become steep above the mean water line. A few patches of brackish marsh have been observed with typical salt-tolerant plant species. The vegetation on the riverbanks is almost exclusively freshwater species. Emergent marshes occur on intertidal shores of unconsolidated substrate that are colonized by erect, rooted, herbaceous hydrophytes. Perennial plants dominate most of the growing season in most years. Emergent marshes tend to form in the mixing region where tidal energy generates flood tide periods with high settling of suspended sediments. The lowest water vegetation is comprised mainly of hairgrass (*Deschampsia caespitosa*), pea (*Lathyrus* spp.), Douglas aster (*Aster subspicatus*), and curly dock (*Rumex crispus*). The high water vegetation zone is comprised principally of common rush (*Juncus effuses*), silverweed (*Argentina egedii*), sedge (*Carex* spp.), and redtop (*Agrostis gigantea*).

The sand flats are dominated by forbs and graminoids. The most common species in this area are dune grass, reed canary grass (*Phalaris anrundinacea*), silverweed, and thistle (*Cirsium* spp.). Other less abundant species include English plantain and yarrow, while woody species are absent.

An area of sedge wet meadow exists just upstream from the project area in the last bend of the river. This is a seasonally saturated freshwater wetland dominated by sedge (*Carex* spp.) and common rush. Woody species are absent.

Both maritime forest and broadleaf mixed forest can be found near the project area at the mouth of the river. The maritime forest is adjacent to local wetlands and the river floodplain, and is comprised of Sitka spruce (*Picea sitchensis*) and red alder (*Alnus rubra*) with occasional patches of sedges and willows. The broadleaf mixed forest community is dominated by red alder groves with some Sitka spruce, ash (*Fraxinus* spp.), and hemlock (*Tsuga heterophylla*). The understory is dominated by salmonberry (*Rubus spectabilis*), buttercups (*Ranunculus* spp.), and piggyback (*Tolmiea menziesii*), with small invasions of typical non-native plants.

3.3.2. Fish

The Quileute Tribe Fisheries Department conducted an environmental resources survey of the Quillayute River estuary in 1979 and 1980 in order to assist the Corps in scheduling dredging and other maintenance activities in times during the year when the impacts of these activities can be best minimized (Chitwood 1981). Information on fish resources from this study is incorporated below as well as information from more recent sources.

The Quillayute River supports runs of five species of salmon: Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), chum (*O. keta*), pink (*O. gorbuscha*), and sockeye (*O. nerka*) and an anadromous trout, steelhead (*O. mykiss*). Chinook are the most important fishery species for the Quileute Tribe. Usage of the estuary occurs throughout the year, though the greatest numbers have been found in summer and the least in winter. Continuing outmigration studies have shown that maximum usage of the estuary by young-of-the-year Chinook consistently occurs between April and September; coho predominantly outmigrate between April and August each year.

Two distinct sizes of surf smelt (*Hypomesus pretiosus*) have been found in the estuary (60-100mm and 120-250mm), possibly representing one-year-old and two to three-year-old age classes, respectively. The majority of the smelt were caught in the lower and mid estuary. The surf smelt are known to spawn on Rialto Beach May through September with the peak in July and August (Fradkin 2001). Small numbers of other fish included saddleback gunnels (*Pholis ornata*), pacific herring (*Clupea pallasii*), starry flounder (*Platichthys stellatus*), sculpins (Scorpaniformes), rockfish (*Sebastes* spp.), perch (Percidae), sticklebacks

(*Gasterosteus aculeatus*), sand lance (*Ammodytes hexapterus*), anchovy (*Engraulis mordax*), and shad (*Alosa sapidissima*) (Chitwood 1981). No Pacific smelt were captured during the Tribe's 1979-80 study, and no bull trout were recorded in the catch data.

3.3.3. Wildlife

The Corps conducted wildlife surveys in 2002 focusing on the navigation maintenance project area. Four habitat areas were identified: the revetted/modified beach, the sea stacks with coves, estuarine river area, and the developed waterfront (SAIC 2003).

A total of 35 bird species were observed across the four habitats studied. A majority of the observed species (60 percent) utilize the estuary, while 20 percent were found on the revetted beach, and 17 percent of the species occurred within the sea stacks marine habitat. During low tide, gulls loaf on the exposed intertidal area, and spotted sandpipers and whimbrels feed in the shallow margins. Cormorants and mergansers commonly utilize the estuary and river area. The cove between sea stacks is commonly used by scoters, pigeon guillemots, and cormorants. Petrel Island is an important nesting area of common murres and peregrine falcons. Several other bird species also roost within the sea stacks including brown pelicans. Bald Eagles are commonly observed throughout all of the project area. Marbled murrelets are known to occur in the area, mainly flying over as no nesting habitat occurs in the project area.

Harbor seals (*Phoca vitulina*) are commonly seen in the estuary, and occasionally a California sea lion (*Zalophus californianus*) is seen. River otters (*Lutra Canadensis*) feed in the estuary and river. Common terrestrial mammals along the beach and riverbank include raccoon (*Procyon lotor*), Douglas squirrel (*Tamiasciurus douglasi*), and black-tailed deer (*Odocoileus hemionus*).

3.3.4. Benthic Invertebrates

The only species of crabs found during the Tribe's 1979-80 sampling was the Dungeness (*Cancer magister*). This species uses the estuary most heavily in the spring and summer months; very few were found during the winter (Chitwood 1981).

Abundance and distribution of the benthic intertidal organisms was studied by the Corps in July 1980, and the study was replicated in 2002 (SAIC 2003). Researchers found 27 taxa among the 21 sampling sites located on ocean beaches and in the estuary. The greatest numbers of epibenthic taxa were found on the boulders comprising the dike. The greatest densities of infaunal organisms were found in subtidal mud sediments and in the cobble/gravel habitat in the estuary. The predominant species in these areas were amphipods and oligochaetes, while amphipods and nemertean worms were the most abundant taxa on the outer coast beaches. In the bay between James and Rock Islands, the dominant species included several polychaete families, amphipods, oligochaetes, and flabelliferan isopods. Bivalve mollusks were found exclusively in this bay.

3.4. Threatened and Endangered Species

In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. In order to satisfy the requirements of the Act, the Corps has initiated informal consultation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) regarding the effects of the proposed action on listed species. The Corps prepared a biological evaluation (BE) in May 2009 to determine the effects of the project.

The following species may be found in the general vicinity of the project:

- Coastal/Puget Sound bull trout (*threatened*); critical habitat designated
- Northern spotted owl (*threatened*); critical habitat designated

- Brown pelican (*endangered*)
- Marbled murrelet (*threatened*); critical habitat designated
- Short-tailed albatross (*endangered*)
- Steller sea lion (*threatened*)
- Southern Resident killer whale (*endangered*)
- Humpback whale (*threatened*)
- Blue whale (*threatened*)
- Pacific smelt (*proposed*)

3.5. Cultural Resources

Section 106 of the National Historic Preservation Act of 1966 (NHPA), amended, (16 U.S.C. 470) requires that federal agencies evaluate the effects of federal undertakings on cultural resources and afford the Advisory Council on Historic Preservation opportunities to comment on the proposed undertaking. Federal law requires the consideration of effects to historical and cultural resources prior to authorizing any activity. 36 CFR 296 (Protection of Archaeological Resources) and 36 CFR 800 (Protection of Historic and Cultural Properties) provide guidelines for the protection of cultural resources, while state law requires the protection of historical and cultural resources.

The area surrounding the Quillayute Navigation Channel Maintenance Dredging project areas was traditionally occupied by the Quileute, whose original territory extended from south of Cape Alava to Destruction Island. European settlers arrived in the area in the late 1700s and early 1800s. Oral tradition tells of the "drifting white people", shipwrecked Spaniards who lived among them. Meares' references houses atop James Island during his 1788-1789 voyage (1790). Captain Robert Gray later traded with the Quileute in 1792. In 1808 a Russian-American Company ship wrecked at the mouth of the Quillayute River. The survivors spent several months in the area enslaved before being ransomed by American traders. There was little additional interaction with Europeans until 1855 when the Quileute were approached regarding the Quinault Treaty, which was signed on July 1, 1855 with the representatives of Governor Isaac Stevens' staff of the Washington Territory. In 1856 a delegation of Quileute signed a treaty with the United States that gave up their land and would relocate the Quileute tribe to a reservation. However, the relocation did not occur until 1889 (Powell 1990, Ruby and Brown 1992, Meares 1790). The current Quileute constitution and by-laws were adopted in 1936, and the corporate charter that was adopted in 1937 recognized the independence of the Quileute as a self-governing political entity (Powell 1990).

Similar to many Northwest Coast tribes, in pre-Colonial times the Quileute subsisted by fishing in local rivers and the Pacific Ocean. They depended heavily on fish resources, which provided nearly year-round food supplies with both spring and winter runs. Fish were eaten boiled and roasted, or dried and stored for later use. This diet was supplemented by land and sea mammals, e.g. elk, deer, seal; shellfish and waterfowl, in addition to woodland vegetal foodstuffs, including berries and roots, especially in and around fire managed prairies. The Quileute were among the few tribes that hunted whales. Winter houses were constructed of split cedar planks, while summer lodging was often mobile shelters of reed matting or lean-tos (Powell 1990, Ruby and Brown 1992, Suttles and Lane 1990, Waterman 2001).

3.6. Air Quality and Noise

Air quality along Washington Coast is not monitored by the Olympic Region Clean Air Agency. It is assumed that because the northern coast is largely within the Olympic National Park and is free of cities or industrial complexes, the air quality meets high standards and is at low risk for health concerns. There are no significant sources of air pollution within the project area, and onshore winds disperse local emissions from residential and vehicular sources. Due to the cleansing effect of ocean storms and westerly winds, the air quality in the project area is considered excellent.

At the project site, the principal sources of sound are engine noise as recreational and commercial boat traffic moves through the channel. Natural sources such as wind and surf are also present, and noise from boat rigging in the marina increases with wind speed.

3.7. Land Use and Socioeconomics

The project area is contained within the Quileute Tribe's 594-acre Reservation. This area contains the Quileute Headquarters building, a museum, a school, a seafood company, ocean front resorts, fish hatchery, the USCG station, the Quileute Natural Resources building, marina, convenience store, and additional amenities. In 2000, there were a total of 128 housing units in the community, of which 91% were occupied and 9% were vacant. Of the occupied housing units, 87% were owner occupied and 13% were renter occupied.

According to the 2000 U.S. Census, La Push had a population of 371, with a gender distribution of 57% male and 43% female. In 2000 about 83% of residents were American Indian and Alaska Native, 11% White, 0.5% Black, 0.3% of some other race, and 5% of two or more races. Approximately 5% of residents identified as Hispanic or Latino. A small percentage of residents (4%) were foreign-born having come from Mexico, Canada, and Australia. The median age in La Push in 2000 was 27.5, significantly lower than the national median age of 35.3. Of the population age 18 years and over, 53% had graduated from high school or continued on to higher education, 4% had received a bachelor's degree or higher, and 2% had received a graduate or professional degree according to the 2000 U.S. Census. The Census reports that in 1999 the income of 35% of the population was below the poverty level. Fishing and fishing-related tourism are the two most significant sources of income for the community.

3.8. Recreation and Aesthetics

The rugged wilderness character of the area attracts travelers from throughout the northwest. Sportfishing is a popular activity at La Push; anglers fish for salmon, halibut, rockfish, and lingcod. Surfing has been gaining popularity at the beaches on the south side of town, which also bring in campers and backpackers. Cabin rental and recreational vehicle parking is highest in summer, but winter stormwatching can bring visitors to La Push in the non-typical tourist season. A wide variety of bird species can be seen around the off-shore rocks as well as along the wilderness beaches north and south of town and this area is extremely popular among nature photographers due to the wilderness scenery.

4. EFFECTS OF THE ALTERNATIVES

4.1. Sediments

Under the No Action alternative, sediment would continue to accumulate in the navigation channel. The current shoaling of sediment is hampering vessel passage to and from the marina across the bar. In the event that dredging was delayed for a number of years and then executed, many of the other effects of dredging described below would be increased or intensified due to the increased quantity of sediment that would need to be removed.

With the preferred alternative, execution of planned dredging will entail disposal at Site A (upland), Site 2A (with contingency disposal at Site 1, as necessary), and up to 5,000 cy disposed on the beach at the intersection of the sea dike and James Island during any dredging event in which the capacity at Site A is exceeded by the amount of material that must be removed from the outer channel. The sediments have been analyzed and deemed appropriate for marine disposal by the DMMP agencies (USACE 2005). The DMMP agencies have agreed to extend the recency determination for one year until January 2011. Additional characterization of the navigation channel outside the boat basin is required prior to the next dredging cycle after January 2011. If any portion of the sediments is determined to be unsuitable for

unrestricted aquatic disposal, this EA will be revisited and the conclusions of environmental effects reevaluated. Disposal at Site A will remove approximately 10,000 to 15,000 cy from the estuarine environment per episode. The rest of the roughly 85,000 to 90,000 cy will be disposed on the ocean side of Quillayute Spit and at the James Island beach. In the event that Site A and the James Island site do not have enough capacity for the larger-sized accumulated sediments that are less appropriate for the spit, then the Corps may reduce the total quantity that is dredged during that episode. The majority of material that accumulates, especially in the inner navigation channel and boat basin, is deemed appropriate grain size distribution to help maintain the surf smelt spawning habitat. Disposal at Site 2A and Site 1 will aid in preventing a breach in the spit, which could cause flooding and damage to waterfront properties and the marina in the town of La Push. Repair of a breach would likely be done with large boulders that are less appropriate than the native sand, gravel, and cobble. Therefore, disposal of dredged material at Site 2A and Site 1 is considered to be a beneficial use of the dredged material that is preferable to large rock placement for the marine environment. Corps coastal engineers have stated that the coarse-grained material has been documented to play a critical role in protecting the spit and sea dike structures from wave damage and erosion (Schuldt 1974).

4.2. Water Quality

The No Action alternative would have no effect on water quality in the lower Quillayute River.

With the preferred alternative, dredging the material, composed of clean sands and gravel, is expected to cause only minor localized increases in turbidity. This turbidity is expected to be of short duration due to the coarse grain size of the material that settles out rapidly, and because the strong flow of the river flushes fine material downstream quickly. The Corps has obtained a Water Quality Certification from the EPA, dated 12 June 2009, and will comply with all conditions contained in the certification. The certification allows for a mixing zone of 150 feet radial or 300 feet downcurrent from the immediate dredging operation and/or disposal in which the Class AA standard for turbidity is waived. No release of contaminants is expected due to the clean nature of the material. Dissolved oxygen may be only slightly depressed very briefly as the material contains very low levels of organic material. This project is not expected to add any nutrients to the water that could affect the clarity, color, odor, or aesthetic value of the water. Runoff from disposal at Site A will be controlled by setting up a containment berm with ecology blocks and hay bales. Sediment will be captured and contained on site while water is directed to runoff toward First Beach where fine sediment will settle out before the water reaches the ocean. Sediment characterization of the navigation channel will be performed before the 2011 dredging episode. If any portion of the sediments is determined to be unsuitable for unrestricted aquatic disposal, this EA will be revisited and the conclusions of environmental effects reevaluated.

4.3. Biological Resources

4.3.1. Vegetation

No vegetation would be affected if the No Action alternative was selected.

Under the Preferred Alternative, there is a possibility that dunegrass could be buried, however this species is expected to recolonize the disposal area quickly due to recruitment of plants from adjacent unaffected areas and because the deposited material erodes rapidly off the beach.

4.3.2. Fish

The No Action Alternative would not affect any fish species in the lower Quillayute River.

With implementation of the Preferred Alternative, disturbances to fish in the immediate vicinity of the navigation channel may be temporary and localized due to noise from dredge machinery, an increase in

localized turbidity in the channel, and presence of the barge. Pelagic fish are not expected to remain in the immediate vicinity of the dredge long enough for the suspended sediments to cause mortality, although perhaps some fish may suffer minor gill irritation. The timing of the dredging has been coordinated to start well after the juvenile salmon outmigration, which typically occurs March through July. Entrainment of small demersal species such as sculpins and juvenile flatfish may occur. Dredging will maintain the engineered channelization of the river mouth rather than allowing more natural dynamic changes of the estuary. No significant degradation of fish habitat is expected from the proposed dredging, because sediment fills this channel quickly and the fish species are expected to repopulate the area rapidly after dredging is complete.

Surf smelt spawning occurs from March to September at Rialto Beach, immediately north of the armored section of Quillayute Spit. Surf smelt spawn during high tides on the beach in the intertidal zone. Stability of the sandy beach is important as is appropriate grain size distribution. Natural resource agencies have concerns over the effects of the revetment on the dynamic processes of sediment deposition and erosion on the spit and northward along the coast that is in both the Olympic National Park and the Olympic Coast National Marine Sanctuary. The Corps has been placing material dredged from the navigation channel and boat basin over the 1,900-foot armored spit section so as to create a more natural beach habitat. Because spawning occurs in the summer, disposal of dredged material on the spit is restricted to 1 October through 28 February. The Corps will begin dredging the inner channel on 1 October with disposal of dredged material at Site 2A and Site 1. In addition to the maintenance dredging, the Corps will perform surf smelt habitat monitoring July through November 2009 in order to monitor the before, during, and after conditions of dredged material disposal on the beach habitat. The results of 2009 habitat monitoring will guide decision-making by the Corps, the resource agencies, and the Tribe regarding timing and impacts of dredged material disposal in subsequent years. The Corps may repeat the monitoring during the 2011 maintenance dredging cycle in the event that the 2009 monitoring results are inconclusive and it is determined that a second year of monitoring would increase the power of statistical tests and confidence in the results.

4.3.3. Wildlife

The No Action Alternative would have no effect on wildlife in the vicinity of the federal navigation channel and Quillayute spit.

Routine biannual maintenance dredging of the federal navigation channel with its associated disposal sites may have the effect of temporarily displacing a small number of cormorants, mergansers, and sandpipers that commonly utilize the estuary. Harbor seals are frequently present in the estuary and boat basin regardless of boat traffic. They typically avoid vessels, so the presence of the dredge may cause similar avoidance behavior. The dredge is no larger than the typical fishing vessels that use the marina and is therefore not expected to cause more than the usual amount of disturbance to fish or marine mammals; however, the constant noise from the operating dredge may cause marine mammals to avoid the estuary during the two months of dredging. They are expected to return to normal once the dredging is complete in late November.

4.3.4. Benthic Invertebrates

The No Action Alternative would have no effect on the benthic biota in the estuary and outer spit environments.

Dredging the navigation channel and boat basin every two years will result in removal of benthic epifauna and infauna and their habitat. However, in a relatively short time frame benthic communities will become reestablished in the impact areas; populations are expected to become re-established due to recruitment from adjacent non-disturbed areas. Benthic invertebrate populations are expected to return to pre-

dredging conditions within a month after dredging is complete, and the community in the channel is likely adapted to the maintenance dredging cycle (McCauley et al. 1977).

4.4. Threatened and Endangered Species

Under the No Action alternative, there would be no effect to any ESA-listed species.

The Corps has prepared a Biological Evaluation (BE) pursuant to ESA Section 7(a)(2). The BE was submitted to NMFS June 1, 2009 for their review. For species under jurisdiction of USFWS, the Corps determined "no effect."

According to the BE, it was determined the project *may affect, but is not likely to adversely affect* the following species:

- Steller sea lion (*threatened*)
- Southern Resident killer whale (*endangered*)
- Pacific smelt (*proposed*)

The basis for the conclusion that the project is not likely to adversely affect Steller sea lion and Southern Resident killer whale is because of the low likelihood that either of these species would be present in the Quillayute estuary or suffer any ill effects from the beach disposal on the spit. The project is deemed not likely to jeopardize the continued existence of Pacific smelt because none of this species were captured during the 1979-80 environmental studies (Chitwood 1981), nor the 2002 replication of the previous studies (SAIC 2003).

Also according to the BE, it was determined the project will have *no effect* on the following species:

- Coastal/Puget Sound bull trout (*threatened*); critical habitat designated
- Northern spotted owl (*threatened*); critical habitat designated
- Brown pelican (*endangered*)
- Marbled murrelet (*threatened*); critical habitat designated
- Short-tailed albatross (*endangered*)
- Humpback whale (*threatened*)
- Blue whale (*threatened*)
- Fin whale (*threatened*)
- Sei whale (*threatened*)
- Sperm whale (*threatened*)
- Leatherback sea turtle (*endangered*)
- Loggerhead sea turtle (*threatened*)
- East Pacific green sea turtle (*endangered*)
- Southern green sturgeon (*threatened*)

4.5. Cultural Resources

A proposed action would be considered to have a significant effect on cultural resources if it adversely affects a resource listed on or determined to be eligible for listing on the National Register of Historic Places (NRHP). Eligible properties must generally be at least 50 years old, possess integrity of physical characteristics, and meet at least one of four criteria for significance. The regulations implementing Section 106 (36 CFR Part 800) encourage maximum coordination with the environmental review process required by the National Environmental Policy Act (NEPA) and with other statutes. The Washington State Archaeological Sites and Resources Act (RCW 27.53) may also apply. The lead agency must examine whether feasible alternatives exist that would avoid eligible cultural resources. If an effect cannot reasonably be avoided, measures must be taken to minimize or mitigate potential adverse effects.

Coordination has taken place with affected tribes and with the Washington Department of Archaeology and Historic Preservation (DAHP).

Under the No-Action Alternative, there would be no effect on cultural resources.

There are no documented properties listed in, or eligible for listing in the National Register of Historic Places (NRHP) within the project area of potential effects (APE). The Quillayute River Navigation Project Long-range Operations and Maintenance Final EIS states that an ethno-historic survey of the area was conducted to determine potential effects of all scheduled operations and maintenance work on cultural and religious sites of importance to the Quileute people. To comply with Section 106 of the NHPA, Corps archaeologists conducted cultural resources reconnaissance surveys of the proposed project Areas of Potential Effect (APEs). Cultural resources studies conducted for the project included a search of the Washington Department of Archaeology and Historic Preservation (DAHP) Electronic Historic Sites Inventory Database, and other background and archival research. In addition, the Corps conducted an on-the-ground, pedestrian reconnaissance of the upland disposal sites and jetty alignments. Although a number of cultural resources sites were documented within the general vicinity of the project, they are outside of the project APE as defined. Moreover, the nature of the undertaking (maintenance work entirely within an existing federal navigation project of long standing) is of a type that has No Potential to Cause Effects to Historic Properties.

A report was sent via letter dated 12 June 2009 to the Washington Department of Archeology and Historic Preservation (State Historic Preservation Office, or SHPO), detailing the no-effect with conditions determination. The SHPO replied on 16 June 2009 concurring with the Corps' determination. The proposed project will have no significant effect on historical properties.

4.6. Air Quality and Noise

The No Action alternative would incur no degradation of air quality, and no impact to ambient noise.

According to 40 CFR Section 51.853 (c)(ix), the requirement for a conformity determination is waived where the proposal will result in clearly *de miminis* emissions, and where the project involves maintenance dredging and disposal operations in which no new depths are required and approved disposal sites are utilized. Dredging operations will cause a temporary and localized reduction in air quality due to emissions from operating equipment. These emissions are not expected to cause adverse health effects or result in violation of applicable air quality standards, therefore, impacts will be inconsequential. Winter storms and westerly winds will disperse machine exhaust out of the area quickly.

Ambient noise levels will increase slightly due to operation of dredging equipment. Noise type will shift from natural sources, such as wind and surf, and minor boat engine noise, to heavy equipment noise. The dredge will be working 24 hours per day in the channel. Effects on birds, wildlife, and humans will be temporary and localized for the 60 days of dredging, and are expected to return to normal after the work. Few residences are located in the vicinity where dredge noise is expected to be audible.

4.7. Land Use and Socioeconomics

For the No Action alternative, the USCG has expressed concern about their ability to provide fast search and rescue response due to the severe shallowness in the entrance reach of the channel. For the Corps to take no action would mean the USCG may have to consider closing the Quillayute River station. The residents of the town of La Push rely heavily on tourist spending, sport and tribal fishing, and income from the visitors who arrive via recreational vessels. If vessels are not able to access the services of the port, the local economy could suffer as boaters seek other ports. Additionally, the commercial fishing

industry and sportfishing tourism would experience major impacts as these bring in millions of dollars each year to the local economy.

Completing the preferred alternative will not change the usage patterns of the marina or waterfront properties. This project will allow the local community to continue earning income from the marina-dependent activities, which includes approximately 40 vessels that participate in commercial fishing and sportfishing charters.

4.8. Recreation and Aesthetics

The No Action alternative, which would allow the navigation channel to continue to fill in, would cause a severe decline in recreational vessel usage of the marina. The No Action alternative would not affect the ability of the public to enjoy view corridors along the waterfront.

Maintaining the navigation channel by completing the proposed dredging will allow the current level of recreational vessel traffic to continue using the marina for permanent and transient moorage, as well as refueling and restocking boat supplies and groceries. For the roughly 60 days of dredging activity, the dredge will be visible from the shore of the marina, and could be seen as an industrial interruption to the viewscape of the Quillayute River estuary. However, the marina itself is a built environment with vessel traffic, so the presence of a dredge will not be a substantial degradation of the local aesthetics and will not be a permanent fixture.

5. UNAVOIDABLE ADVERSE EFFECTS

The anticipated unavoidable adverse effects that could occur as a result of the preferred alternative are temporary stress and displacement of forage fish, temporary depression of benthic invertebrate populations in the dredged area, and noise disturbance to humans, birds, and marine mammals in the dredging and disposal vicinity. Given the temporary, localized, and discountable nature of these effects, the effects are not considered significant.

6. MITIGATION

Mitigation measures for impacts of a proposed action must be addressed per NEPA requirements. In general, mitigation can take the following forms (40 CFR 1508.20):

a. Avoiding the impact altogether by not taking a certain action or parts of an action.
b. Minimizing impacts by limting the degree or magnitude of the action and its implementation.
c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
e. Compensating for the impact by replacing or providing substitute resources or environments.

The preferred alternative includes several measures that will be employed to avoid and minimize any adverse effects, including:

a. All work will occur during the WDFW, NMFS, and USFWS approved in-water work windows that protect salmon, bull trout, and forage fish, with additional dispensation to dredge and dispose under controlled conditions beginning 1 September, through special arrangement in light of surf smelt monitoring
b. No work will occur during the spring months when macroalgae are most susceptible to harm from increases in turbidity
c. All work will occur in areas previously disturbed by the navigation project; no new dredging will occur

d. Turbidity will be monitored during construction, and work will stop if an exceedance of state water quality standards occurs
e. The Corps will implement a monitoring study to determine impacts to surf smelt habitat so that dredge timing may be scheduled to avoid impacts to surf smelt

7. COORDINATION

The following agencies and entities have been consulted during the preparation of this environmental assessment:

- National Marine Fisheries Service
- U.S. Fish and Wildlife Service
- National Park Service
- Environmental Protection Agency
- U.S. Coast Guard
- Washington Department of Fish and Wildlife
- Olympic Coast National Marine Sanctuary
- Washington State Office of Archaeology and Historic Preservation
- Washington Department of Ecology

8. CUMULATIVE EFFECTS

The NEPA defines cumulative effects as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR §1508.7).

The lower Quillayute River has endured significant hydrological modifications in order to support the marina, USCG station, and flood protection features to protect the town of La Push. The river has been channelized to the point that sediment is no longer naturally delivered to the adjacent ocean beaches, which exhibit signs of erosion. Past construction actions in the project area include initial construction of the boat basin and navigation channel in 1932 and federal maintenance beginning in 1949 continuing to the present. Additional project features were constructed in 1962 and include a timber training wall 1,500 feet long with elevation at +16 MLLW, the south jetty at 1,400 feet long and +15 MLLW, and the sea dike at James Island 1,050 feet long at +8 MLLW. As part of routine operations and maintenance, the navigation channel is maintained to authorized depth of -10 MLLW.

Actions undertaken to repair navigation features include:

- 1954-55: Upper spit breach repaired with sand
- 1960s: Drift logs cabled together and beach material relocated to low spots in the spit to prevent breaches
- 1960s: Dredged material from the boat basin averaging 50,000 cy per year was placed on the spit to prevent breaching but was unreliable
- 1971: 300,000 cy of sand, gravel, and cobbles were dredged from the river and deposited on the spit. Regular monitoring revealed an annual erosion rate of roughly 100,000 cy
- 1974: 50,000 tons of 10- to 1000-pound rocks and boulders were placed along the middle 1,600 feet of the spit to reduce the growing expense of repairs
- 1981: The lower spit, south of Rock Island, received material from maintenance dredging plus an additional 39,000 tons of armor rock and spalls
- 1979: An additional 90,000 tons of the large rocks were place on the spit; repairs were made to the south jetty

- 1982: The Corps added 56,000 tons of spalls and larger armor rock on the spit to extend the protection longer than the estimated four to five years; repairs were made to the south jetty
- 1982-96: Through routine maintenance dredging of the navigation channel, material was placed on the portion of the spit that had not been armored with large rocks
- 1996: A winter storm caused an 800-foot breach in the spit north of the previously placed armoring; the Corps repaired the breach with 205,000 tons of armor rock along a 1,900-foot section of the spit, with a riprap toe on the riverside of the spit to prevent undermining of the armoring by river currents
- 2000: repairs were made to the south jetty

Construction and repair of navigation features described above is linked to a loss of 6.8 acres of beach habitat, 3.4 acres of beach grass, 2.8 acres of sandbar, and a gain of 7.6 acres of rocky habitat (SAIC 2003); however, these changes can also be linked to activities in the upper watershed such as past forestry practices. In light of the many tens and hundreds of thousands of tons of riprap armoring that has been placed on the spit, the proposed action of placing approximately 85,000 cy of sand and gravel, and removing 10,000 to 15,000 cy every other year will not add a significant incremental effect to the cumulative impacts of modifications performed in the action area. The short-term disruption of material placement is outweighed by the assumed long-term benefit of avoiding further introduction of non-native rock material into the natural beach environment. In the context of past dredging and maintenance activities, the proposed episodes of maintenance dredging and disposal will cause only a small incremental impact to biological functions and minor temporary loss of benthic invertebrates.

The only near-term Corps action anticipated to occur at the Quillayute River Navigation Channel project site includes potential repair of the sea dike to authorized height of +8 MLLW, and continued maintenance dredging of approximately 100,000 cy every other year.

In consideration of past developments still in existence in the Quillayute estuary, and the limited amount of known future alterations, the proposed routine maintenance of the federal navigation channel with associated disposal sites is not a significant addition to cumulative impacts at the mouth of the Quillayute River. The Corps therefore concludes that there will be no significant contribution to cumulative effects associated with the proposed maintenance dredging and disposal actions.

9. ENVIRONMENTAL COMPLIANCE

LAWS AND REGULATIONS RELATING TO THE PROPOSED ALTERNATIVE	SUMMARY OF REQUIREMENT	CONSISTENCY OF PREFERRED ALTERNATIVE
National Environmental Policy Act (NEPA) 42 USC 4321 *et seq*.	Requires all federal agencies to consider the environmental effects of their actions and to minimize negative impacts	Consistent – Draft Environmental Assessment completed and made available for public comment; Draft Finding of No Significant Impact prepared
Endangered Species Act 16 USC 1531 *et seq*.	Requires federal agencies to protect listed species and to consult with USFWS and NMFS regarding a proposed action that may affect listed species or designated critical habitat	Consistent – a Biological Evaluation was prepared and submitted to NMFS; a "no effect" determination was made for USFWS species and does not require consultation
Clean Water Act Section 401	Requires federal agencies to comply with state water quality standards	Consistent – a 401 Water Quality Certification has been obtained from

		the Environmental Protection Agency
Clean Water Act Section 404	Requires federal agencies to protect waters of the United States. Disallows the placement of dredged or fill material into waters (and excavation) unless it can be demonstrated there are no practicable alternatives	Consistent per 404(b)(1) evaluation – see Appendix A in this document
Coastal Zone Management Act	Requires federal agencies to comply to the maximum extent practicable with approved state coastal zone management programs	A Coastal Zone Consistency Determination has been prepared and submitted to the Department of Ecology; the project is consistent to the maximum extent practicable
Clean Air Act	Section 176 of the Clean Air Act, 42 USC 7506(c), prohibits federal agencies from approving any action that does not conform to an approved state or federal implementation plan	Consistent – see the Air Quality effects evaluation in this document
National Historic Preservation Act	Requires federal agencies to identify and protect historic properties	Consistent – refer to the Cultural Resources section of this document
Executive Order 12898 Environmental Justice	Requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations	Consistent – the surrounding area is a marina and working waterfront, which will benefit from the action without causing disproportionate adverse human health or environmental effects on any population segment
Executive Order 11988 Floodplain Management	Requires federal agencies to consider how their activities may encourage future development in floodplains	Consistent – no new or additional dredging will be conducted that will encourage additional development

10. CONCLUSION

Based on staff assessment and on coordination with federal and state resource agencies, it is determined that the proposed action will not result in significant adverse environmental impacts on the Quillayute River aquatic ecosystem. The proposed project is not considered a major federal action significantly affecting the quality of the human environment and does not require preparation of an environmental impact statement. A finding of no significant impact (FONSI) has been prepared and is attached as Appendix C.

11. REFERENCES

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Appendix A: Clean Water Act Section 404 (b)(1) Analysis

Fiscal Years 2009 to 2014 Maintenance Dredge and Disposal
Quillayute River Navigation Channel
Clallam County, Washington

Substantive Compliance for
Clean Water Act Section 404 and Rivers and Harbors Act

1. Introduction. The purpose of this document is to record the Corps' evaluation and findings regarding this project pursuant to Section 404 of the Clean Water Act (CWA) and the Rivers and Harbors Act (RHA).

The following actions are covered by this document:

a. upland disposal of maintenance material dredged from the Quillayute River Navigation Channel via hydraulic dredge on the Quileute reservation at disposal Site A;
b. disposal below MHHW at Site 2A, Site 1 as necessary based on safety consideration, and the James Island sea dike

The information contained in this document reflects the findings of the project record. Specific sources of information included the following:

a. Quillayute River Navigation Channel Sediment Characterization Summary for Disposal (2005)
b. Dredged Material Evaluation Procedures and Disposal Site Manual, dated June 1995
c. 404(b)(1) Evaluation (see below)
d. Public Interest Review (see below)

This document addresses the substantive compliance issues of the Clean Water Act 404(b)(1) Guidelines [40 CFR §230.12(a)] and the Regulatory Programs of the Corps of Engineers [33 CFR §320.4(a)].

2. Project Background. Public Notice CENWS-OD-TS-NS-31 and a NEPA Environmental Assessment describe the maintenance dredging of the federal navigation channel and adjacent boat basin. The Quillayute River navigation channel was originally authorized in 1930 and has been routinely dredged since the 1950s. The current action is routine maintenance dredging to maintain the channel's authorized depth of -10 feet below mean lower low water (MLLW).

3. Project Need. The Quillayute River navigation channel is typically dredged every other year. Without maintenance dredging, shoaling would reduce the ability of vessels to enter and leave the Quillayute marina safely under full load or during low tide conditions. Additionally, the USCG vessels moored in the northeast corner of the boat basin require maintenance dredging at their slips. The entrance channel across the bar has not been dredged since 2003 and is now only two feet deep at low tide (MLLW). The USCG's rescue capabilities are hindered by the shallowness of the bar.

4. Project Purpose. The purpose of this dredging work is to return the partially filled-in channel to its authorized depth of -10 feet MLLW, and to properly dispose of the dredged material.

5. Availability of Less Environmentally Damaging Practicable Alternatives to Meet the Project Purpose. The alternatives evaluated for this project were as follows:

a. Alternative 1 (No Action). Under this alternative, the Corps would not dredge the Quillayute River navigation channel, and consequently no aquatic disposal would take place. The channel would continue

to fill in by accumulating sediments that are delivered downstream by the river and into the bar from the ocean. Allowing the channel to fill in would cause boats to run aground and could cause the risk of fuel spills if boat hulls are damaged by the shallowness of the channel. Additionally, the USCG would not be able to embark on patrolling and rescue missions. The Quileute Tribe would suffer economic losses due to being unable to embark on fishing trips, and loss of recreational boat traffic income.

b. Alternative 2 (Maintenance Dredging beginning 1 November). In previous years, the Corps followed an advisory fish window that required no dredged material placement on the ocean side of the spit until the surf smelt spawning season had passed. Dredging during the winter storm season has posed a variety of problems for dredgers including risks to human safety and loss of machinery during storms. In the 2007 dredge cycle, the Corps received no bids on the contract for the work worth roughly $1,000,000. Dredgers have been unable to dredge the dangerous entrance bar since 2003. The Corps analyzed the risks of advertising a dredge contract for the Fiscal Year 2009 dredging with the 1 November start date, but has rejected this alternative in favor of negotiating an earlier start date with the natural resource agencies by conducting monitoring of surf smelt spawning and stability of habitat before, during, and after the FY09 dredging.

c. Alternative 3 (Maintenance Dredging commencing September 1). Preferred Alternative. Based on the most recent (2009) condition survey data, dredging the channel and USCG boat basin with authorized widths and depths (+2'overdredge) would require dredging approximately 100,000 cubic yards (cy) in 2009; the quantities are expected to be similar in 2011 and 2013. The areas that will be dredged include the boat basin, and the navigation channel, which is approximately 3,500 feet long and ranges from 100 to 275 feet wide. A hydraulic dredge would remove material from the channel and pump it through a pipeline first to upland Site A and James Island, and then to the ocean side of the spit at Site 2A, with contingent disposal at Site 1, depending on safety considerations. The grain size distribution of accumulated sediments varies by area of deposition. The inner channel and boat basin accumulate finer sediments up to gravel size; the outer channel accumulates larger cobbles as large as six inches in diameter. The preferred disposal location varies according to grain size. The 2009-10 Water Quality Certification states that the majority of dredged material should be placed at Site 2A as this assists with stabilizing the spit to avoid breaching, and keeps the sediments within the natural system of the estuary and ocean beach. However, the cobble-sized material that accumulates in the outer channel is larger than what is typically found in the surf smelt spawning habitat known to exist near Site 2A. Additionally, the size of hydraulic dredge that is appropriate for this project is too small to be able to tow safely the very long length of pipeline that is required to reach the 3,000 feet from the bar to the disposal site. For these reasons, outer channel sediment has typically been disposed at upland Site A during past maintenance dredging, and may be disposed at the intersection of the sea dike and James Island in upcoming maintenance dredging. These two sites are closer to the outer channel and require a shorter length of pipeline connected to the dredge. Since Site A is upland and the sea dike has no known surf smelt spawning, EPA has allowed material to be deposited at these locations earlier than at Site 1 and Site 2A. For this reason, the Corps has proposed the staggered start dates of 1 September for the outer channel and 1 October for the inner channel and boat basin. Dredging the outer channel will begin on 1 September 2009 with disposal at Site A and the James Island sea dike; dredging of the inner channel and boat basin will begin 1 October 2009 with disposal at Site 2A and Site 1, as necessary. The Corps will be conducting monitoring of surf smelt spawning activity and stability of beach habitat to determine impacts of material disposal on the spit. If the results of the monitoring show that material placement beginning 1 October has an unacceptable level of disturbance to surf smelt spawning, then the dredging start date in 2011 and 2013 will occur later in the season so that the impact on spawning surf smelt is reduced to a level of insignificance. The duration of the work each year will be approximately 60 days if the dredge is able to work 24 hours per day. Disruptions are expected due to weather or for allowances for Tribal fisheries.

Findings. The Corps rejected Alternative 1 because it will not meet the project purpose. Alternative 2 was rejected due to the risks of receiving no bids on the contract and thus losing the opportunity to dredge the channel across the bar for an entire year, which would preclude the USCG from being able to launch rescue missions, as well as the risks of having a dredge on the dangerous bar during winter storms. Alternative 3 was selected because the timing allows the dredge to begin during the calmer month of September and minimizes the risk to surf smelt while still achieving the purpose of the project.

6. Significant Degradation, either Individually or Cumulatively, to the Aquatic Environment

a. Impacts on Ecosystem Function. Benthic habitat in the navigation channel will be disturbed by dredging operations and will result in temporary depression of benthic invertebrate populations; however these populations will be restored in a relatively short time due to recruitment of juveniles from adjacent, non-dredged areas. The Corps has assessed potential impacts to the aquatic ecosystem from channel maintenance operations and determined that they will be localized to previously disturbed areas, short in duration, and minor in scope. Known impacts of dredging operations on salmonids and forage fish will be reduced and/or avoided through implementation of timing restrictions and through implementation of a surf smelt habitat monitoring study to help minimize impacts in subsequent dredging events. Due to these measures, impacts to these important aquatic ecosystem resources should not be significant either individually or cumulatively.

b. Impacts on Recreational, Aesthetic, and Economic Values. No significant adverse effects on recreation, aesthetics, or the economy are anticipated. Businesses rely on access to the water and maintenance of the navigation channel is crucial for these water-dependent businesses. Completing the proposed dredging will allow the current level of recreational vessel traffic to continue using the marina for permanent and transient moorage, as well as refueling and restocking boat supplies and groceries. For the roughly 60 days of dredging activity, the dredge will be visible from the shore of the marina, and could be seen as an industrial interruption to the viewscape of the Quillayute estuary. However, the marina itself is a built environment with vessel traffic, so the presence of a dredge will not be a substantial degradation of the local aesthetics and will not be a permanent fixture.

Findings. The Corps has determined that there will be no significant adverse impacts to aquatic ecosystem functions and values.

7. Appropriate and Practicable Measures to Minimize Potential Harm to the Aquatic Ecosystem

a. Impact Avoidance Measures. Potential impacts of dredging and disposal operations on juvenile salmonids and forage fish will be avoided through implementation of timing restrictions. Fish work windows for allowing in-water work in marine areas are as follows:

- Juvenile salmon window closure 1 March to 15 June
- Coastal forage fish window closure 1 March to 15 September

These restrictions provide for an opening of 16 September through 28 February for in-water work in the Quillayute estuary and ocean beach. Through negotiations with National Park Service, Environmental Protection Agency, Washington Department of Fish and Wildlife, and the Quileute Tribe, the Corps obtained concurrence with the proposal to begin dredging on 1 September 2009 in the outer channel with disposal at Site A (upland) and on the beach at James Island. The Corps will follow with beginning dredging on 1 October 2009 with disposal at Site 2A, and Site 1 as necessary, on the spit south of Rialto Beach. As part of the agreement, the Corps will conduct surf smelt habitat monitoring and use the results of this work to determine the level of impact to spawning habitat and coordinate with the resource agencies and Tribe to discuss adjustment to dredging dates for subsequent years. Identification of adverse impacts necessitating changes to disposal windows may require revisiting this 404(b)(1) evaluation and reassessing its conclusions.

b. Impact Minimization Measures. Impacts to fish, shellfish, and other benthic invertebrates entrained or damaged by dredging equipment will be minimized by dredge timing restrictions involving juvenile salmonids and forage fish. Dredging and disposal timing restrictions will be adjusted based on the results of the surf smelt habitat monitoring conducted in 2009 and possibly in 2011.

Dissolved oxygen (DO) levels may be temporarily reduced, but generally only on the order of 1 to 2 milligrams per liter (mg/l) from ambient levels. Turbidity and dissolved oxygen are monitored during dredging. If DO levels drop below 5.0 mg/l, operations will be suspended until conditions improve; additionally, if turbidity shows an exceedance of state water quality standards, dredging is stopped until conditions improve.

Other impact minimization measures include the following:

- Best management practices (BMPs) will be used to ensure that no unnecessary damages to the environment occur. BMPs will include holding the operation of heavy equipment in the intertidal areas to the minimum necessary, use of hay bales to direct runoff and minimize turbidity of runoff, minimizing disturbance of vegetation, and removing all construction debris from the project.
- A spill kit will be onboard the dredge at all times.
- Fuel hoses, oil drums, oil or transfer valves and fittings, etc., shall be checked regularly for drips and leaks, and shall be maintained and stored properly to prevent spills into tribal or state waters
- Refueling shall be monitored by the contractor for the duration of each event

c. Compensatory Mitigation Measures. Because environmental impacts are estimated to be unsubstantial, as assessed through the Biological Evaluation and the Environmental Assessment, no compensatory mitigation measures have been proposed for this action.

Findings. The Corps has determined that all appropriate and practicable measures have been taken to minimize potential harm.

8. Other Factors in the Public Interest.

a. Fish and Wildlife. The Corps has consulted with state and federal agencies, as well as the Quileute Tribe, to assure careful consideration of fish and wildlife resources. The Corps has prepared a Biological Evaluation in accordance with the Endangered Species Act and submitted the evaluation to National Marine Fisheries Service (NMFS) for their concurrence. The Corps will assure full compliance with the Endangered Species Act prior to and during project implementation.

b. Water Quality. The Corps received a water quality certification from the EPA dated 12 June 2009 and will abide by the conditions to ensure compliance with state water quality standards.

c. Historic and Cultural Resources. There are no documented properties listed in, or eligible for listing in the National Register of Historic Places (NRHP) within the project area of potential effects (APE). The Quillayute River Navigation Project Long-range Operations and Maintenance Final EIS states that an ethno-historic survey of the area was conducted to determine potential effects of all scheduled operations and maintenance work on cultural and religious sites of importance to the Quileute people. To comply with Section 106 of the NHPA, Corps archaeologists conducted cultural resources reconnaissance surveys of the proposed project Areas of Potential Effect (APEs). Cultural resources studies conducted for the project included a search of the Washington Department of Archaeology and Historic Preservation (DAHP) Electronic Historic Sites Inventory Database, and other background and archival research. In addition, the Corps conducted an on-the-ground, pedestrian reconnaissance of the upland disposal sites and jetty alignments. Although a number of cultural resources sites were documented within the general vicinity of the project, they are outside of the project APE as defined. Moreover, the nature of the undertaking (maintenance work entirely within an existing federal navigation project of long standing) is of a type that has No Potential to Cause Effects to Historic Properties.

d. Activities Affecting Coastal Zones. The Corps has determined that this work is consistent to the maximum extent practicable with the Coastal Zone Management Act.

e. Environmental Benefits. No substantial benefits to the environment have been identified as part of this proposed work.

f. Navigation. A minor, temporary disruption of navigation traffic may result from dredging and disposal operations. The dredge will not block the navigation channel but may impinge on the total width available to vessel traffic. A Notice to Mariners will be issued before dredging and disposal operations are initiated. The result of the project will be an improvement to the currently shallow condition of the navigation channel, returning it to its authorized depth of -10 feet MLLW.

Findings. The Corps has determined that this project is within the public interest.

9. Conclusions. Based on the analyses presented in project NEPA and ESA documents, as well as the following 404(b)(1) Evaluation and General Policies for the Evaluation of Permit Applications analysis, the Corps finds that this project complies with the substantive elements of Section 404 of the Clean Water Act and the Rivers and Harbors Act.

404(b)(1) Evaluation [40 CFR §230]

Potential Impacts on Physical and Chemical Characteristics (Subpart C)

1. Substrate [230.20] The Quillayute River Federal Navigation Channel is dredged roughly every two years. The inner channel was last dredged in 2007; however, the outer channel has not been dredged since 2003 mainly due to rough weather during the time available for dredging. A bathymetric survey shows that six to eight feet of sediment has accumulated in the channel since the last maintenance dredge making the channel only two feet deep across the bar at median tides. The dredged material analysis performed in 2005 showed that the material meets the suitability guidelines of the inter-agency Dredged Material Management Program (DMMP) for in-water disposal. Maintenance dredging will return the channel to the authorized depth of -10 feet MLLW.

2. Suspended Particulate/Turbidity [230.21] Residual dredged material that escapes the hydraulic dredge will result in a temporary increase in turbidity and suspended particulate levels in the water column, particularly in near-bottom waters. The material is mostly sand and gravel. Sand and most silts sink rapidly to the bottom, while a small percentage of finer material is expected to remain in suspension. Increases in turbidity associated with disposal operations will be minimal and of short duration.

3. Water Quality [230.22] No significant water quality effects are anticipated. A small plume of turbidity will occur around the suction pipeline mouth, but is expected to return to background levels within 300 feet. During disposal operations, a localized turbidity plume may enter the water column at the disposal site. All of the sediments have been tested and approved for open water disposal under the guidelines of the DMMP, which is administered by the Corps, EPA, Ecology, and Washington Department of Natural Resources (DNR).

4. Current Patterns and Water Circulation [230.23] Dredging accumulated sediment from the Quillayute River Navigation Channel will not obstruct flow, change the direction or velocity of water flow/circulation, or otherwise change the dimensions of the receiving water body. The material will be disposed at one upland location and two beach disposal sites. The Corps is anticipating that the same current patterns known to exist now will continue to erode the material off its beach disposal locations.

5. Normal Water Fluctuations [230.24] The disposal of material dredged from the Quillayute River Navigation Channel will not impede normal tidal fluctuations. The beach disposal sites are expected to allow material to erode rapidly.

6. Salinity Gradients [230.25] The dredging and disposal of material from the Quillayute River Navigation Channel will not divert or restrict tidal flows, nor will it change the salinity in the project area.

Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D)

1. Threatened and Endangered Species [230.30] Pursuant to Section 7 of the Endangered Species Act, the Corps prepared a Biological Evaluation to assess potential impacts of the proposed work on species protected under the Act. This document concluded that Quillayute River Navigation Channel maintenance dredging is not likely to adversely affect Coastal/Puget Sound bull trout (*Salvelinus confluentus*), Northern spotted owl, marbled murrelet, brown pelican, short-tailed albatross, Southern Resident killer whale (*Orcinus orca*), and Steller sea lion (*Eumetopias jubatus*), and not likely to jeopardize the continued existence of Pacific smelt (*Thaleichthys pacificus*).

2. Aquatic Food Web [230.31] Turbidity associated with dredging and disposal operations may interfere with feeding and respiratory mechanisms of benthic, epibenthic, and planktonic invertebrates. Some sessile invertebrates at the dredge location may suffer mortality from entrainment. Several studies have found that benthic infauna recolonize dredging and disposal sites quickly, but that they may never reach mature equilibrium benthic communities. More mobile epibenthic organisms are expected to escape the immediate impact area without significant injury. Potential impacts of dredging and disposal operations on salmonids and forage fish will be reduced and/or avoided with dredge timing restrictions.

3. Wildlife [230.32] Noise associated with disposal operations may have an effect on birds and marine mammals in the project vicinity. The impacts of any sound disturbance may result in displacement of animals rather than injury. Increases in turbidity associated with dredged material disposal could reduce visibility in the immediate vicinity of disposal activities, thereby reducing foraging success for any animals in the area. Any reduction in availability of food will be highly localized and will subside rapidly upon completion of the dredging and disposal operations. Disposal operations are not expected to result in a long-term reduction in the abundance and distribution of prey items. No breeding or nesting areas will be directly impacted.

Potential Impacts to Special Aquatic Sites (Subpart E)

1. Sanctuaries and Refuges [230.40] The Olympic Coast National Marine Sanctuary is located offshore from the Quileute Tribe's reservation and to the north and south. The maintenance dredging of the navigation channel does not pose a threat to Sanctuary resources. Disposal of dredged material is intended to keep the estuarine sediments within the local environment and provide appropriate-sized sediment for surf smelt spawning. The proposed project will not adversely impact any designated sanctuary or refuge area.

2. Wetlands [230.41] There are no wetlands associated with this project.

3. Mudflats [230.42] There are no mudflats associated with this project.

4. Vegetated Shallows [230.43] Dredged material will not be discharged onto or adjacent to vegetated shallows.

5. Coral Reefs [230.44] Not applicable.

6. Riffle and Pool Complexes [230.45] The portion of the river to be dredged is the lower estuary, downstream from riverine riffle and pool complexes. The navigation channel is heavily tidally influenced as it has a direct connection to the Pacific Ocean.

Potential Effects on Human Use Characteristics (Subpart F)

1. Municipal and Private Water Supplies [230.50] Not applicable.

2. Recreational and Commercial Fisheries [230.51] Dredging is timed to avoid critical life stages of salmonids. The proposed dredging will significantly improve navigation after completion thereby enhancing the ability of sport and commercial fishermen to enter and exit the marina.

3. Water-related Recreation [230.52] Water-related recreation is not expected to be impacted in the vicinity during the dredging and disposal.

4. Aesthetics [230.53] Localized, temporary increases in noise and turbidity will occur while equipment is operating, but are not expected to be significant. Disposal operations may slightly change the slope of the beach at James Island in the project area until the sediment is eroded by the strong northerly ocean current at that site.

5. Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves [230.54] Olympic National Park shares a border with the Quileute Tribe's reservation. Disposal of dredged material on the ocean side of the spit is intended to provide sediment that has the appropriate grain size distribution for surf smelt spawning as the drift cell moves the sediment northward along Rialto Beach within the Park boundary. No adverse effect to any reserved areas is expected as a result from the proposed dredging and disposal operations.

Evaluation and Testing (Subpart G)

1. General Evaluation of Dredged or Fill Material [230.60] The material to be dredged is predominantly sand, gravel, and cobbles. Samples were collected and analyzed in 2005. The material meets the suitability guidelines of the inter-agency DMMP for in-water disposal.

2. Chemical, Biological, and Physical Evaluation and Testing [230.61] Testing is required of this material, and results are as indicated above.

Action to Minimize Adverse Effects (Subpart H)

1. Actions Concerning the Location of the Discharge [230.70] The effects of the discharge will be minimized by timing restrictions and the choice of disposal site. Approximately 10,000 cy from the outer channel will be disposed at Site A for use by the Tribe in upland development. Up to 5,000 cy from the outer channel will be disposed at the beach at the intersection of the sea dike and James Island. This material is expected to erode within two years as the ocean current carries it in a northerly direction. Approximately 85,000 cubic yards of sand and gravel will be disposed at Site 2A on the ocean side of the spit. This material is intended to provide sediment for the surf smelt spawning habitat in the vicinity of Rialto Beach. No material will be placed at Site 2A until 1 October in order to avoid the spawning season.

2. Actions Concerning the Material to be Discharged [230.71] The material to be discharged will not be treated before being hydraulically piped to the disposal sites since no chemicals of concern are known to be present in the sediments (See Section 3 below). The material will be discharged by pipeline dredge, a very accurate method of placement.

3. Actions Controlling the Material after Discharge [230.72] Since the dredged materials have been approved for non-confined open water disposal by the inter-agency Dredged Material Management Program (DMMP), no containment levee or capping is necessary for the two beach disposal sites. The DMMP agencies have agreed to extend the recency determination for one year until January 2011. Additional characterization of the navigation channel outside the boat basin is required prior to the next dredging cycle after January 2011. If any portion of the sediments is determined to be unsuitable for unrestricted aquatic disposal, this 404(b)(1) evaluation will be revisited and the conclusions of environmental effects reassessed. A berm will be used at the upland disposal site in order to direct run-off back toward the ocean beach.

4. Actions Affecting the Method of Dispersion [230.73] The disposal sites have been selected to make use of currents, waves, and tidal circulation patterns to gradually move the material to lower tidal levels.

5. Actions Related to Technology [270.74] Appropriate machinery and methods of transport of the material for discharge will be employed. All machinery will be properly maintained and operated.

6. Actions Affecting Plant and Animal Populations [270.75] The timing of the proposed dredging and discharge operations will minimize the potential for adverse effects to marine fish, wildlife, and vegetation.

7. Actions Affecting Human Use [230.76] The discharge will not result in damage to aesthetically pleasing features of the aquatic landscape. The discharge will not increase incompatible human activity in the remote fish and wildlife areas.

8. Other Actions [230.77] Not applicable.

General Policies for the Evaluation of Permit Applications [33 CFR §320.4]

1. Public Interest Review [320.4(a)] The Corps finds these actions to be in compliance with the 404(b)(1) guidelines and not contrary to the public interest.

2. Effects on Wetlands [320.4(b)] No wetlands will be altered by the channel dredging and disposal operations.

3. Fish and Wildlife [320.4(c)] USFWS, NMFS, and WDFW and the Quileute Tribe were consulted to ensure that direct or indirect loss and damage to fish and wildlife resources attributable to dredging and disposal operations will be minimized.

4. Water Quality [320.4(d)] The Corps will abide by the conditions of the Section 401 Water Quality Certification issued by the EPA to ensure compliance with water quality standards.

5. Historic, Cultural, Scenic, and Recreational Values [320.4(e)] No wild and scenic rivers, historic properties, National Landmarks, National Rivers, National Wilderness Areas, National Seashores, National Recreation Areas, National Lakeshores, National Parks, National Monuments, estuarine and marine sanctuaries, or archeological resources will be adversely impacted by dredging and disposal operations.

6. Effects on Limits of the Territorial Sea [320.4(f)] Dredging and disposal operations will not alter the coastline nor base line from which the territorial sea is measured for the purposes of the Submerged Lands Act and international law.

7. Consideration of Property Ownership [320.4(g)] The entire project will occur on Quileute Tribal reservation land. The Corps will seek permission to access the spit across NPS property.

8. Activities Affecting Coastal Zones [320.4(h)] The proposed work complies with the policies, general conditions, and general activities specified in the Coastal Zone Management Act.

9. Activities in Marine Sanctuaries [320.4(i)] The Quileute Tribal reservation land shares a border with the Olympic Coast National Marine Sanctuary (OCNMS). The Draft EA was provided to OCNMS for their review and comment. The Corps will consider all comments and make changes to the proposed project accordingly.

10. Other Federal, State, or Local Requirements [320.4(j)]

a. National Environmental Policy Act. An Environmental Assessment (EA) has been prepared to satisfy the documentation requirements of NEPA.

b. Endangered Species Act. In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed or proposed threatened or endangered species. A Biological Evaluation (BE) was submitted to NMFS for species under their jurisdiction on June 1, 2009. A "no effect" determination was made for species under the jurisdiction of USFWS, therefore no consultation is required.

c. Clean Water Act. The Corps must demonstrate compliance with the substantive requirements of the Clean Water Act. This document records the Corps' evaluation and findings regarding this project pursuant to Section 404 of the Act. Public Notice CENWS-OD-TS-NS-31 and a Joint Aquatic Resources form served as an application for a Section 401 Water Quality Certification from the EPA. The Corps will abide by the conditions of the Water Quality Certification to ensure compliance with water quality standards.

d. Coastal Zone Management Act. The Coastal Zone Management Act of 1972 (CZMA), as amended, requires federal agencies to carry out their activities in a manner that is consistent to the maximum extent practicable with the enforceable policies of the CZMA. The proposed action is considered consistent to the maximum extent practicable with the CZMA.

e. Marine Protection, Research, and Sanctuaries Act. Section 102 of the Marine Protection, Research, and Sanctuaries Act (MPRSA) authorizes the EPA to promulgate ocean dumping criteria and designate recommended ocean disposal sites.

f. Rivers and Harbors Act. This document records the Corps' evaluation and findings regarding this project pursuant to the Rivers and Harbors Act.

g. National Historic Preservation Act. The National Historic Preservation Act (16 USC 470) requires that the effects of proposed actions on sites, buildings, structures, or objects included or eligible for the National Register of Historic Places must be identified and evaluated. It is the policy of the Corps (33 CFR 336.1[c][6]) that historic resources surveys should not be conducted for maintenance dredging and disposal activities proposed within the boundaries of previously constructed navigation channels or previously used disposal areas. Since the proposed dredging is confined to the removal of recently deposited sediments within the previously dredged channel width and depth boundaries, no submerged cultural resources will be affected by the project.

h. Fish and Wildlife Coordination Act. The Fish and Wildlife Coordination Act (16 USC 470) requires that wildlife conservation receive equal consideration and be coordinated with other features of water resource development projects. A Fish and Wildlife Coordination Act Report is not required for the proposed work in the Quillayute River Navigation Channel, because the FWCA does not apply to operations and maintenance activities on existing projects.

11. Safety of Impoundment Structures [320.4(k)] Not applicable.

12. Floodplain Management [320.4(l)] Dredging and disposal operations will not alter any floodplains.

13. Water Supply and Conservation [320.4(m)] Not applicable.

14. Energy Conservation and Development [320.4(n)] Not applicable.

15. Navigation [320.4(o)] Dredging will maintain the channel at the authorized depth of –10 feet MLLW for vessels.

16. Environmental Benefits [320.4(p)] Clean, sandy material dredged from the navigation channel will be used to benefit long shore movement of sediment.

17. Economics [320.4(q)] The economic benefits of the Quillayute River Navigation Channel are important to the local community.

18. Mitigation [320.49(r)] Potential impacts of dredging and disposal operations on salmonids and forage fish will be avoided through implementation of timing restrictions and choice of disposal locations

Appendix B: Coastal Zone Management Act Consistency Determination

Coastal Zone Management Act Consistency Determination

Quillayute River Navigation Channel Maintenance Dredging Fiscal Years 2009-2014

The Coastal Zone Management Act of 1972, as amended, requires federal agencies to carry out their activities in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved state Coastal Zone Management (CZM) Programs. The Shoreline Management Act (SMA) of 1972 (RCW 90.58) is the core of authority of Washington's CZM Program. Primary responsibility for the implementation of the SMA is assigned to local governments.

According to 16 U.S.C. 1453 Section 304(1), "Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers or agents." The routine maintenance dredging and disposal activity proposed by the Corps occurs entirely within Quileute Tribal reservation land. However, the disposal of approximately 90,000 cubic yards below mean higher high water on the Quillayute spit and at James Island is anticipated to cause this sediment to travel northward along the beach within land controlled by the Quileute Tribe and National Park Service, which are exempt from the Clallam County Shoreline Master Program (SMP). Disposed sediment will also enter land and water controlled by the Olympic Coast National Marine Sanctuary, which includes "Waters of Statewide Significance" and is subject to the Clallam County SMP.

1. INTRODUCTION

The proposed federal action analyzed in this consistency determination is fiscal years 2009 through 2014 maintenance dredging of the Quillayute River Navigation Channel as described in the Environmental Assessment. The Quillayute River Navigation Channel project consists of routine maintenance dredging of roughly 100,000 cy of material from the navigation channel and USCG basin once every two years. An average of 10,000 cy will be placed upland for the use of the Quileute Tribe; the remaining approximately 90,000 cy will be disposed on Quillayute Spit and James Island. The navigation channel is dredged to the authorized depth of -10 feet (MLLW) plus 2 feet overdredge to an overall depth of -12-feet (MLLW). The project includes the 3,500-foot long navigation channel, which varies in width from 100 to 275 feet wide, and a 115,000 square foot area within the boat basin.

The Corps maintains three areas of the lower Quillayute estuary: the outer channel, the inner channel, and the boat basin. The inner channel begins upstream at station 6+00 and extends downstream to station 20+00. The outer channel is considered to be station 20+00 to 35+00. This reach of the river mouth includes the bar, a ridge that forms at the river and ocean interface. Dredged sediments will be disposed of at four locations: Site A is a one-acre site on the Quileute Tribe's reservation; Site 2A is on the westward spit south of Rialto Beach, and the third site is the pocket beach at the intersection of the sea dike and James Island. A fourth site, Site 1 on the spit, may be used in the event that ocean conditions require the dredger to take safety precautions by reducing the length of pipeline deployed.

This determination of consistency with the Coastal Zone Management Act is based upon review of applicable sections of the State of Washington Shoreline Management Program, and policies and standards of the adopted Clallam County Shoreline Management Master Program. Applicable sections of the plan are presented below, with the Corps' consistency indicated in ***bold italics***.

2. WASHINGTON STATE COASTAL ZONE MANAGEMENT PROGRAM

The Shoreline Management Act of 1972 (RCW 90.58) is the core of authority of Washington's CZM Program. Primary responsibility for the implementation of the SMA is assigned to local government. Clallam County has no jurisdiction over waters in or adjacent to the Quileute Tribal Reservation lands.

3. CLALLAM COUNTY SHORELINE MASTER PROGRAM

Clallam County's jurisdiction over the Quillayute River is stated as being "from the confluence of the Sol Duc and Bogachiel Rivers (S 20, T28N, R15W) downstream to Olympic National Park boundary (S 24, T28N, R15W), which does not include the Quileute Reservation or the Olympic National Park. The Shoreline Management Act applies to all marine waters of the state below the Ordinary High Water Mark (OHWM), as does local shoreline jurisdiction. The Pacific Ocean coastline has been designated a "Shoreline of Statewide Significance," a category in which specific priority uses are preferred.

The proposed project footprint is located on a "Marine Beach" in an area designated as "Natural."

Chapter 2 – Goals and General Policies; VI

Governmental units shall be considered in this Master Program as bound by the same requirements as private interest. The fact that a shoreline use is advocated by a governmental unit shall not be considered in a different light than a private use, except insofar as it is of benefit to the general public. The guiding policy in every instance will be its effect upon the public good as concerns the shorelines.

Consistent: The U.S. Army Corps of Engineers is authorized to maintain the Quillayute River Navigation Channel with material disposal on the Quillayute Spit. The general public is served by having access to the harbor of refuge and other services in the marina, and by the U.S. Coast Guard being able to transit the river mouth to engage in rescue missions. Additionally, the Spit and adjacent beach under National Park Service control have been experiencing high rates of erosion. Placement of dredged material will contribute natural sediment to the shoreline and thereby slow the rate of erosion of sand from the beach.

3.02 Natural Environment; B. Objective

In placing a shoreline in the category of a Natural Environment, it is intended to preserve, maintain or restore such a shoreline as a natural resource relatively free of human influence; to discourage or prohibit those activities which might destroy or degrade the natural characteristics which make these shorelines unique and valuable.

Consistent: Channel dredging and disposal of sediments will not destroy or degrade the natural characteristics present along the Quillayute Spit and Rialto Beach shoreline. Dredged material disposal will not contribute any appearance of human influence.

3.02 Natural Environment; C. Use Element Policies; 5. Shoreline Use Element

The use of a shoreline of a Natural Environment should be limited to those activities which preserve the natural features unchanged.

Consistent: The proposed dredging and disposal activities are routine operations and maintenance and have been practiced since 1949. All natural features of the Quillayute Spit shoreline will remain unchanged.

3.02 Natural Environment; C. Use Element Policies; 6. Conservation Element

Activities on shorelines of a Natural Environment should be confined to those which conserve the features and characteristics which are an integral part of this environment. The scenic vistas and aesthetic qualities should be preserved without alteration.

Consistent: All dredged material is naturally delivered riverborne sediments and marine-derived gravel. The proposed dredging and disposal will not alter any aesthetic qualities of the natural shoreline.

3.02 Natural Environment; C. Use Element Policies; 7. Historical/Cultural Element
In general, shorelines of historic, cultural, scientific or educational value shall be regarded as belonging in a Natural Environment. As such, any change or alteration which tends to change or degrade this value should be prohibited. The only activities which should be permitted should be those designed to preserve, protect or restore such features.
Consistent: The selected disposal sites around the lower Quillayute estuary have both cultural and scientific value. The Corps has coordinated with the Quileute Tribe and State Historic Preservation Office for approved disposal locations to avoid impacts to cultural resources. The Corps will be conducting scientific research at disposal site 2A on the Quillayute Spit to measure changes to the beach slope profile and grain size distribution to detect effects, if any, to surf smelt spawning habitat. Disposal of sediments has been thought to preserve this reach of beach environment; the study results will help reduce uncertainties.

4.01 Marine Beaches; A. Natural Environment; 1. The building of structures such as jetties, groins, and bulkheads is prohibited.
Consistent: No new jetties, groins, bulkheads or other structures will be constructed as part of the Fiscal Years 2009-2014 routine maintenance of the navigation channel.

4.01 Marine Beaches; A. Natural Environment; 2. Piers and jetties of historic value or those built before 1971 shall be allowed to remain.
Consistent: Currently existing navigational features under the Corps authority were constructed in 1962 and will not be altered as part of the proposed maintenance dredging and disposal.

4.01 Marine Beaches; A. Natural Environment; 3. The accumulation of driftwood or other material washed in from the sea must not be disturbed.
Consistent: No marine derived materials, other than the accumulated sediment in the navigation channel, will be disturbed. No materials on the marine beach will be removed or disturbed.

4.01 Marine Beaches; A. Natural Environment; 4. Removal of sand and rock is prohibited.
Consistent: No sand or rock will be removed from the natural marine beach environment. Sand and rock sediments will be deposited as a result of the proposed work in an effort to keep the natural materials within the estuarine and marine ecosystem.

4.01 Marine Beaches; A. Natural Environment; 5. The dumping of any material is prohibited.
Consistent: The Corps has coordinated the disposal of dredged material with the Washington Department of Ecology and Washington Department of Fish and Wildlife, each of whom expressed the need for the dredged material not to be removed from the estuarine and marine environment. Approximately 85,000 cubic yards of sand and gravel will be disposed at a rate of roughly 1,500 cubic yards per 24-hour period. This material is expected to be carried along the marine beach and incorporated into the overall natural environment along the Quillayute Spit and Rialto Beach.

4.01 Marine Beaches; A. Natural Environment; 6. The forest and vegetation and cliffs and benches within the wetlands behind the beach shall not be disturbed.
Consistent: No vegetation will be removed or disturbed as part of the proposed project.

4.01 Marine Beaches; A. Natural Environment; 7. Excavations or the removal of material from the shoreline or the cliffs behind are prohibited.

Consistent: No excavations will occur along the marine beach shoreline. Dredging is proposed as routine maintenance of the navigation channel.

4.01 Marine Beaches; A. Natural Environment; 8. Any activity which would contribute to erosion along the shoreline is prohibited.
Consistent: Corps coastal engineers recommend disposal of sediments on the Quillayute Spit as a method of reducing erosion along this reach of shoreline.

4. STATEMENT OF CONSISTENCY

Based on the above evaluation, the Corps has determined that the proposed disposal of 90,000 cubic yards of dredged material every other year during FY2009-2014 complies with the policies, general conditions, and activities as specified in the Clallam County Shoreline Master Program adopted in 1976 and approved by the Director of the Washington Department of Ecology. The proposed action is considered to be consistent to the maximum extent practicable with the State of Washington Shoreline Management Act and the policies and standards of the Clallam County Shoreline Master Program.

Appendix C: Water Quality Certification from Environmental Protection Agency