

Section 404(b)(1) Evaluation
Rehabilitation Project for the North and South Jetty
At the Mouth of the Columbia River
In Washington and Oregon

I. Introduction

Section 404 of the Clean Water Act (CWA) of 1977, as amended, requires that all projects involving the discharge of dredged or fill material into waters of the United States be evaluated for water quality and other effects prior to making the discharge. All fill materials associated with the South and North Jetty Repair are activities undertaken by or at the direction of the Corps of Engineers. Federal regulations, at 33 CFR 336.1, provide that a Section 404 permit will not be issued for such fill material by the Corps; however, the Corps shall apply the Section 404(b)(1) guidelines to the project. This evaluation assesses the effects of the fill, as described below, for the North and South Jetty Rehabilitation utilizing guidelines established by the U.S. Environmental Protection Agency (USEPA) in conjunction with the Secretary of the Army under the authority of Section 404(b)(1) of the Act.

II. Description of Proposed Action

Proposed Action

This evaluation is being written to evaluate the affects of a major rehabilitation of both the North and South Jetties at the Mouth of the Columbia River (MCR). Due to funding constraints, only the most severe areas will be repaired in the immediate future with the remaining components of the major rehabilitation to follow when funding becomes available. The immediate proposed work will be referred to in this evaluation as “repair” and the long term proposed work will be referred to as “rehabilitation”. Emergency action may also become necessary if either jetty breaches prior to the proposed repairs.

With funding available for Fiscal Year 05 (Oct 1, 2004 to Sept 30, 2005), the Portland District plans to begin construction and repairs of the critical portions of the North Jetty and will prioritize critical repair work to the South Jetty subject to future availability of funding. Completion of the proposed repairs at the South Jetty may take from one to three years.

The premise of the jetty repair is to repair the most vulnerable areas of the North and South Jetties, where the consequences of jetty failure (a breach through either jetty) would rapidly and significantly degrade navigation through the Mouth of the Columbia River (MCR). The intent of the proposed design concept will be three-fold: 1) Improve the stability of the foundation (toe) of each jetty as affected by scour, 2) Improve the side slope (above and below water) stability of each jetty as affected by classical static slope stability criteria, 3) Improve the dynamic stability of each jetty as affected by wave forces impinging the jetties. The proposed action described below is “worst case;” i.e., it is the largest repair proposed for the degraded sections of jetty (Rehabilitation). The initial repair is likely to be less comprehensive.

The proposed rehabilitation would occur along an 8,000 foot-long reach of the South Jetty (stations 220+00 to 300+00) and a 4,000 foot-long reach of the North Jetty (stations 40+00 to 80+00), shown in Figures 1a and b and 2. The rehabilitation work would require placement of approximately 200,000 to 300,000 tons of stone along the North Jetty and 300,000 to 500,000 tons along the South Jetty. The total amount of stone to be placed for the repairs is 30,000 tons on the North Jetty and 40,000 tons on the South Jetty. For repairs, the total stone to be placed at the North Jetty is approximately 30,000 tons and for the South Jetty approximately 40,000 tons will be placed. The total stone to date placed on the South and North Jetty is 8.7 and 3.3 million tons, respectively. Proposed repair cross sections are shown in Figures 3 and 4 for the North and South jetties, respectively.

The cross-section design (templates) proposed for the repair of the North and South jetties lie essentially within the existing jetty footprint, based on the configuration of the original cross section, previous repair cross sections, and redistribution of jetty stone by wave action. There may be a minor deviation of the proposed template design from the existing jetty configuration at rehabilitation areas where jetty damage has been extensive or scour along the toe has been severe. Crest elevation for the repair template for both the north and the south jetties is expected to be +25 ft mean lower low water (MLLW). Crest width is set at 30 feet wide.

Repair Work Generic to Both the North and South Jetties

The proposed jetty repair work would be conducted by marine and/or land access activities. For marine-based delivery and placement of stone the contractor will be provided with three options: marine-based using a tow boat and barge, a barge off-loading platform and land based operations bringing in material via existing park roads. Material will be trucked through the county park via the county road. The county road will be used to bring in the trucks for movement of the jetty stone, transportation of construction material and employee use during the construction timeframe. Prior to construction, the contractor will document the condition of the road and will be responsible for repairing the road to its pre-construction condition upon completion of the construction work.

Tow Boat and Barge

A tow boat and barge would deliver the stone to either jetty, where water depth, wave, and current conditions permit. During stone off-loading, the barge may be secured to four to eight dolphins situated within 200 feet of the jetty. The dolphins would be composed of multiple untreated timber piles driven to depth of 15-25 feet below grade, by a vibratory pile hammer or similar equipment. An impact hammer may be used at the final driving to ensure pilings are driven properly. The dolphins will be relocated as work advances along the jetty and would be removed at the conclusion of the work. The maximum number of dolphins present along the North or South Jetty during any one time during the work is estimated to be 10 to 20. Stone would be off-loaded from the "stone barge" by a crane (either land or marine based) and either placed directly within the jetty work or stock piled on the jetty crest for placement at a later time.

For marine-based stone placement, a lattice boom crane or large track hoe excavator would be fixed to a moored barge. The crane barge would be moored using either a series of anchors or the barge would be lashed to four to eight dolphins paralleling the jetty work area (same concept for a marine-based stone delivery). The marine-based crane would pick stones either directly from the stone barge or from stones stock-piled on the jetty crest and place the stones into the work area. The crane would advance along the jetty as work is completed.

Barge Off-loading Platform

The barge off-loading platform for either the South or North Jetty would be an enclosed cell structure constructed of sheet piles with the placement of clean quarry waste (crushed gravel) within the structure (Figures 5 and 6). Three inches of compacted material will be placed on top of the crushed gravel to form a road that will provide a stable surface for vehicles to load jetty stones. For the south jetty only, the area riverward of the sheet pile retaining wall will need to be dredged to accommodate the 12-16 foot draft of the off-loading barges. Approximately 2000 to 4000 cubic yards (cy) of material will need to be dredged for the south jetty platform. If found suitable, the contractor will have the option of reusing the material to back fill the area after removal of the sheetpile or to find a suitable location for the material upon removal. The North and South Jetties would require about 12,000 and 25,000 tons of rip rap and gravel, respectively. Access ramps would be removed following construction.

Land-based Placement

For land-based stone placement, a lattice boom crane or large track hoe excavator would be situated on top of the jetty. A land based placement operation would require the construction of a jetty "haul road" along the jetty crest within the proposed work area limits for each jetty, and possibly an access road that would ramp up to the jetty crest. Jetty haul and access roads associated with this phase of the rehabilitation and repair would be located above Mean Higher High Water (MHHW) and located to avoid wetlands. The crane or excavator would use the haul road to move along the top of jetty. Construction of a jetty haul road for the repairs along the North and South Jetty would require about 12,000 and 25,000 tons of rip rap and gravel, respectively. Access ramps would be removed following construction.

The North Jetty has the highest funding priority; however, once the activities are fully underway, repair work may occur simultaneously on the South and North Jetties. Unless otherwise directed by the Corps, the work along the North and South Jetties will be left to the contractor's discretion. Where weather and other conditions allow, the work could occur throughout the year (winter, summer, fall, spring). Conditions that could shut down work on the jetties are wave direction and wave height. For the South Jetty, 10 foot offshore waves at high tide and 14 foot offshore waves at low tide would shut down construction. For the North Jetty, 14 foot waves at high tide and 18 foot waves at low tide would halt construction. Winds gusting to about 35 knots would cause boom crane operation to stop. The duration of stone placement activities for completing jetty repairs for both North and South Jetties is estimated to be one to three years and is largely dependent on quarry production rates.

Repair of the North and South Jetties is not expected to interfere with the dredging and disposal activities associated with the annual maintenance of the MCR navigation channel, including use of the North Jetty dredged material disposal site. Use of the North Jetty disposal site would be coordinated with the marine delivery of stone such that the use of the North Jetty site during jetty construction would not be impacted.

The South Jetty

For the South Jetty, marine-based activities likely would be used to deliver armor and fill stone from the barge off-loading platform to the project site by use of the pre-existing haul road from previous repairs (Figure 5). Since the old haul road used a portion of the existing park road and would cut off use of the road and viewing platform at the end of the road, the contractor will be directed to construct a small, new section of the road from the off-loading platform to the existing haul road. The width of both the new and old road will be 20 feet wide. The new road will be bladed and gravel will be placed atop the new and existing haul road.

A 200-foot barge off-loading structure will be built at the end of the haul road (Figure 5). Approximately fifty feet of sheet pile will be placed to form a cell structure that would be filled with quarry waste material. Approximately 4000 cy of material will need to be dredged riverward of the platform to ensure that the barges can off-load at the site. The new and old areas will be replanted upon completion of the project. Any damage to the existing asphalt roads will be restored to pre-project condition.

For land based jetty access, transportation of jetty stone would be via the existing asphalt surfaced road through Fort Stevens State Park to the work area located at the end of the east parking lot.

Two five-acre work areas would be needed where a stone weighing facility could be erected, to maneuver trucks/stone handling equipment and/or stockpile stone near the jetty. One five-acre site would be located adjacent to the barge off-loading platform. The second five-acre site would be located near the jetty and would use approximately half of the east parking lot and some adjacent land (see Figure 5). Some grading of sand would be conducted and crushed gravel would be used to improve the work area. A temporary gravel access road would be placed to facilitate equipment access from the work area to the jetty crest. The work area and access road area would be restored after jetty work is completed. The 400 foot-long access road (25 feet wide) and ramp would be situated above MHHW and would be constructed of 4,000 cy of sand, gravel and small rip-rap. The access road and ramp would be removed at the completion of work. This road would require a 3-foot-diameter galvanized culvert to facilitate tidal exchange and surface water run off to/from the wetland within Clatsop Spit. (Temporary fill of waters of the U.S. related to construction is accommodated within Nationwide Permit number 33.)

The North Jetty

For the North Jetty, marine or land based activities could be used to delivery armor stone and fill stone to the project site. The method of delivery will be at the discretion of the contractor. For marine based construction, a barge off-loading platform could be constructed at approximate

station 40+00 requiring approximately 12,000 cubic yards (cys) of quarry waste material to be placed within sheet piles on the ocean side of the north jetty and 500 cys of material placed on the land side of the jetty (Figure 6). The sheet piles will be driven by vibratory hammers. All material placed within the sheet piles will be removed before removal of the sheet piles. The total wetland area that may be impacted within the footprint of the jetty would be approximately 0.10 acres and outside the jetty footprint would be approximately 0.15 to 0.25 acres. The fill material will be quarry waste and removed upon completion of construction. Upon completion of the construction project, the area will be restored to its preexisting condition. Since the impact area to the wetlands outside the footprint of the jetty is minimal, no mitigation will be necessary.

For land based construction, heavy equipment would access the site via an existing asphalt surfaced road to the Benson Beach Parking lot at Cape Disappointment State Park (Figure 6). A five acre work area for equipment and possible rock storage would be located near the parking lot. A second five acre work area will be constructed across from the potential barge off-loading site where a stone weighing facility may be erected. Two rock access roads and ramps would be constructed adjacent to the jetty located approximately at between 60+00 and 70+00 stations. Both access roads will be removed once the jetty is repaired. The access roads, about 400 feet in length and 25 feet wide, would each be constructed of approximately 4,000 cy of sand, gravel and small rip rap and located above MHHW on beach sand.

Purpose and Need

The purpose of the action is to repair critical trunk portions of the North and South Jetties and when future funding becomes available to rehabilitate the remaining critical sections of both jetties. This action is necessary to prevent further deterioration and subsequent breaching of the jetties.

Both North and South MCR Jetties contain badly deteriorated areas where degradation has accelerated in recent years due to increased storm activity and loss of sand, upon which the jetties are constructed. Breaching near the shoreline (most likely scenario, especially at the North Jetty) would allow sand to migrate into the Columbia River navigation channel, thereby disrupting deep draft navigation and increasing dredging requirements. Within the next five years there is a high likelihood that a significant breach will occur on either jetty. The likelihood of a jetty breach will continue to increase with time.

Emergency repairs required for either or both jetties within the next few years appears highly probable; however repairs could not necessarily be made during the winter, especially at the South Jetty. Costs to repair following a breach are estimated at two to five times higher than if completed prior to the failure.

General Description of Dredged or Fill Material

The rehabilitation project would require placement of armor and fill stone. The material would come from a locally approved quarry.

The barge off-loading platform for either the south or north jetty would be constructed of five intersecting sheet piles with the placement of tested quarry waste (crushed gravel) between the sheetpiles (Figures 5 and 6). Three inches of compacted material will be placed on top of the crushed gravel to form a road that will provide a stable surface for vehicles to load jetty stones. The area riverward of the sheet pile retaining wall will need to be dredged to accommodate the 12-16 foot draft of the off-loading barges. Approximately 2000 to 4000 cubic yards (cy) of material will need to be dredged. The material will be tested prior to dredging. If found suitable for upland disposal the contractor will have the option of reusing the material to back fill the area after removal of the sheetpile or to find a suitable location for the material upon removal. The North and South Jetties would require about 12,000 and 25,000 tons of rip rap and gravel, respectively. Access ramps would be removed following construction.

Description of the Proposed Discharge Site

There will be discharge site associated with the rehabilitation or repair of the North and South Jetties.

III. Alternatives

Various design alternatives have been considered. These deal with type and size of stone, slope, which areas to repair first, etc. The footprint of these designs would not exceed that of the proposed action.

The “no action” alternative was considered in the alternatives analysis and was determined to be unacceptable due to the danger and risk of jeopardizing the integrity of the jetty. To allow the jetty to continue to deteriorate will eventually lead to breaching and sediment transport into the estuary which will increase offshore shoaling outside of the channel entrance. As the jetty continues to deteriorate, waves will move into the inner harbor adding to the difficulty of maintaining a reliable year round channel, and increase boating hazards.

Should the condition of the jetty worsen to the point an emergency is declared, repair would commence as soon as funding could be obtained. Environmental documentation would follow, if not completed prior to emergency construction.

IV. Factual Determinations (40 CFR § 230.11)

Physical Substrate Determinations

Placement of the rubble stone will not have an affect on the substrate.

Water Circulation, Fluctuation and Salinity Determinations

Water quality characteristics such as salinity, water chemistry, clarity, color, odor, taste, dissolved gas levels and nutrients are not likely to be affected. Hydraulic features such as current patterns, water circulation, velocity and salinity would remain unchanged.

Suspended Particulate/Turbidity Determinations

An increase in suspended sediments in the water column is expected during the construction period; however, this impact is expected to stay within acceptable levels for fish and wildlife species of concern. Short-term turbidity is expected to occur with the placement of the temporary dolphins. Long-term adverse impacts are not anticipated.

Contaminant Determinations

The material to be dredged in front of the barge off-loading will be tested prior to the beginning of construction and a determination will be made as to whether the material is suitable for open water or upland disposal. If the material is found to be free of contaminants, the contractor may use the material in construction of the barge off-loading platform.

Aquatic Ecosystems and Organism Determination

Some short-term loss of microhabitat will occur during the construction period but will be replaced by the completion of the proposed action. Avoidance of the area may occur throughout the construction period as a result of the increased activities and noise, but all species would be expected to return following project completion. No adverse affects on any listed/candidate threatened or endangered species are anticipated. Construction is expected to occur year-round. Some work would occur during appropriate in-water work periods determined by fishery agencies to minimize impacts to fish, wildlife and habitat; most of the work would occur outside these periods.

Proposed Disposal Site Determinations

Any clean material that will be dredged from the front of the barge off-loading platform will be disposed of either in-water, to a suitable upland site, used to construct the jetty haul road or the contractor may use the fill material to construct the barge off-loading platform.

Potential Effects on Human Use Characteristics

Municipal and Private Water Supplies: There are no municipal or private water supply intakes in the vicinity of the disposal areas.

Recreational and Commercial Fisheries: Crab fishermen generally crab in the area adjacent to the North Jetty. There will be an impact to recreational fisheries along the channel side of the North Jetty as a result of barge traffic to and from the barge off-loading platform. The recreational crab fisherman will be notified as to when the construction activities will take place and they will need to limit their crab pots in the area to accommodate barge traffic.

Water-related recreation: No impacts to water-related recreation are anticipated.

Aesthetics: No impacts to aesthetics are anticipated.

Parks, etc: Impacts to both Cape Disappointment State Park and Fort Candy State Park will involve the temporary placement of jetty stone and temporary staging areas for construction equipment. The impact will be temporary and any scraping will be repaired and any placement of construction material will be removed and the site restored to its pre-construction state.

Determination of Cumulative Effects on the Aquatic Ecosystem

The proposed action is not expected to cause any significant cumulative effects on the aquatic ecosystem given the low productivity levels of aquatic organisms in the fill area and on the jetties.

Determination of Secondary Effects on the Aquatic Ecosystem

No secondary effects on the aquatic ecosystem are anticipated.

Coordination

The proposed work has been coordinated with the following agencies:

Federal

U.S. Environmental Protection Agency
U.S. Fish and Wildlife
National Oceanic and Atmospheric Administration

State of Oregon

Oregon Department of Fish and Wildlife
Oregon Department of State Lands
Oregon Department of Environmental Quality
Oregon Department of Land Conservation and Development

V. Findings of Compliance (40 CFR § 230.12)

- a. No significant adaptations of the guidelines were made relative to this evaluation.
- b. Alternatives: The no action alternative was considered and subsequently rejected. Breaching of the jetty would cause severe ecological and economic damage to the region.
- c. Water Quality Standards [40 CFR § 230.10(b)(1)]. Water quality certification from both the States of Washington and Oregon have been requested.

d. Toxic Effluent Standards [40 CFR § 230.10(b)(2)]. The proposed action would not violate the toxic effluent standards of Section 307 of the Clean Water Act.

e. Endangered Species [40 CFR § 230.10(b)(3)]. The placement of fill would not harm any endangered species or their habitat as discussed under the Endangered Species Act of 1973.

f. Marine Sanctuaries [40 CFR § 230.10(b)(4)]. No marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972 will be affected by the proposed action.

g. No Significant Degradation [40 CFR § 230.10(c)].

(1) The proposed action would not result in significant adverse effects on human health or welfare, including municipal water supplies, plankton, fish, shellfish, or wildlife.

(2) Significant adverse effects on life stages of aquatic life and other wildlife dependent on the aquatic ecosystem, on ecosystem diversity, productivity, or stability, or on recreational, esthetic, or economic values would not occur.

(3) No significant adverse effects on aquatic ecosystem diversity, productivity and stability are expected due to avoidance, impact minimization, and implementation of best management practices, and monitoring actions, to assess project-related impacts throughout the project life.

(4) No significant adverse effects of the fill material are expected on recreational, aesthetic and economic values.

h. Minimization of Impacts [40 CFR § 230.10(d)]. Appropriate actions to minimize potential adverse impacts would be specified in the construction contract.

VI. Conclusions

On the basis of the factual determinations and findings made above, the proposed fill materials comply with the Guidelines at 40 CFR Part 230 and with the requirements of Executive Order 11,990 (Protection of Wetlands) and based on the factual determinations and findings made above that the proposed fill material associated with this project is in the overall public interest.