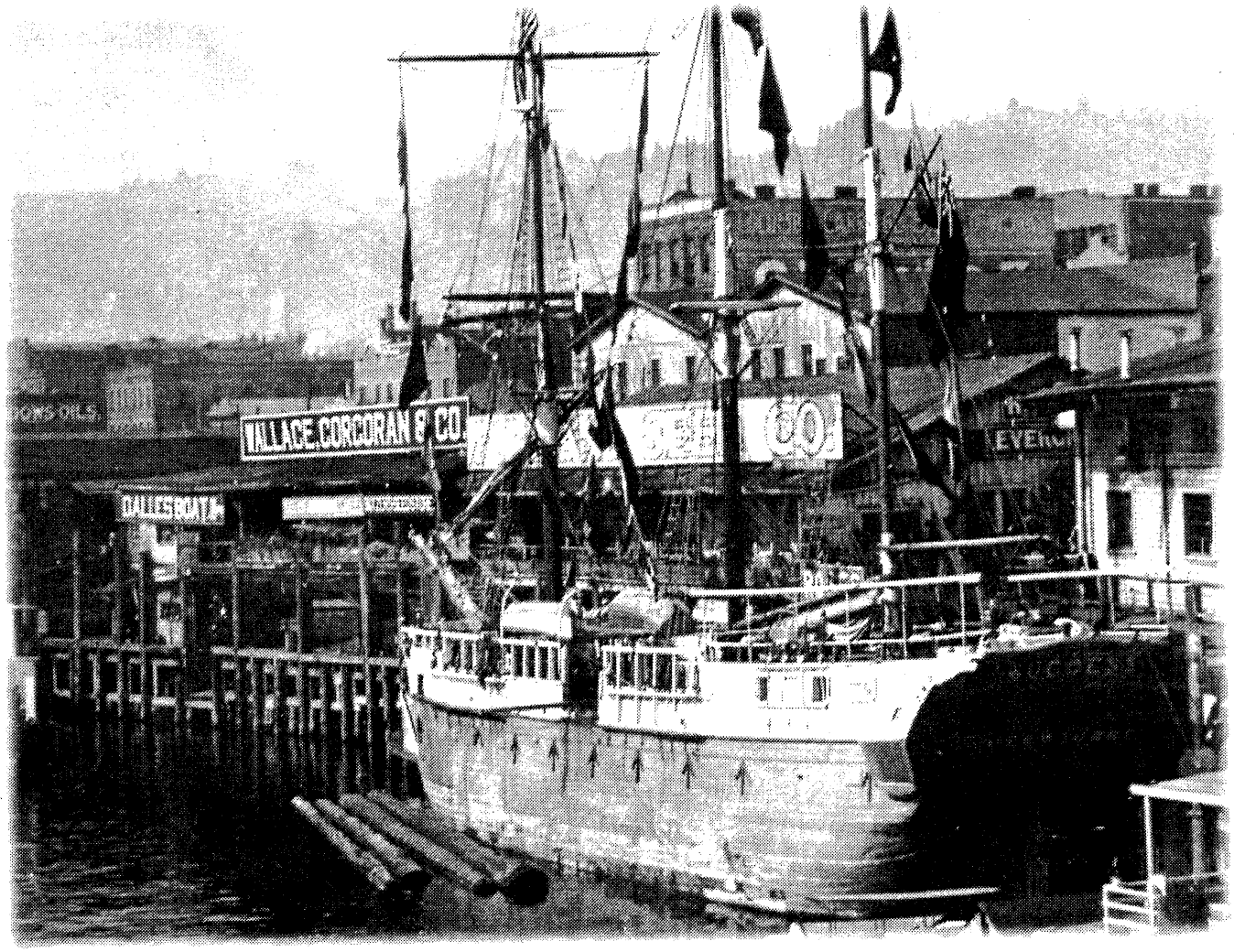
US Army Corps
of Engineers®
Portland District

Volume II: Draft EIS Comments and Responses

Integrated Feasibility Report for Channel Improvements and Environmental Impact Statement

Columbia & Lower Willamette River Federal Navigation Channel



Portland Waterfront Circa 1900
Photo Courtesy of Port of Portland

August 1999

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

FEB 4 1999

Reply To
Attn Of: ECO-088

U.S. Army Corps of Engineers, Portland District
CENWP-PE-E ATTN: Steven J. Stevens
P.O. Box 2946
Portland, Oregon 97208-2946

Dear Mr. Stevens:

The Environmental Protection Agency (EPA) has reviewed the Draft Integrated Feasibility Report for Channel Improvements and Environmental Impact Statement (draft EIS) for the Columbia and Lower Willamette Rivers for review in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. The draft EIS analyzes alternatives for improving deep-draft navigation for 103.5 miles of the Columbia River below Vancouver, Washington and 11.6 miles of the Willamette River below Portland, Oregon.

1. EPA is a cooperating agency on this EIS and intends to adopt the final to support our formal designation of Ocean Dumping sites at the mouth of the Columbia River. The information contained in the draft EIS is considered insufficient for designation purposes. Deficiencies include inadequate discussion of the Ocean Dumping Site Evaluation process that was conducted by the Corps and EPA which resulted in the identification of three potential sites described in the draft EIS, and the narrow scope of the draft Site Management and Monitoring Plan for those potential sites. Regarding the latter, not all management options were disclosed and a final "plan" agreed upon. In addition, most of the information pertaining to the ocean sites was relegated to Appendix H. A summary of environmental effects and compliance with the Ocean Dumping criteria needs to be included in the main body of the final EIS. EPA intends to work closely with the Corps to rewrite the appropriate sections of the EIS and appendices and respond to comments from the agencies and public on the ocean dumping components.

2. It is important to recognize that these comments on the draft EIS stem from our NEPA review authorities described above and that they are separate from our participation as a cooperating agency. These comments do, however, reflect significant coordination within our agency to include our Aquatic Resources staff recommendations as part of the ongoing cooperating agency process. We offer our comments here in the spirit of creating a more thorough document for public understanding and review under NEPA.

EPA commends the Corps for incorporating Ecosystem Restoration as an integrated part of the proposed project. In addition, EPA appreciates that the Corps has included "ecosystem

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1. The final EIS has been revised to include a thorough discussion of ocean dumping criteria as well as additional discussion on ocean disposal site selections.

2. Comments noted.

Restoration for fish and wildlife habitats" as a major part of the purpose and need for the project.

Based upon our review we have rated the draft EIS EC-2 (Environmental Concerns – Insufficient Information). We are concerned that in addition to the aforementioned Ocean Dumping Site Evaluation concerns, the draft EIS lacks information regarding the following issues:

1. Upland and instream dredged disposal sites.

2. Impacts of the new channel and sediment regimes in the Columbia and the Willamette Rivers.

3. Cumulative environmental impacts from past, present and future activities in the project area.

4. The absence of firm commitments to implement and follow through on the above referenced proposed Ecosystem Restoration measures.

5. The relationship between the proposed dredging activities and the future decision on whether to draw down the John Day Reservoir and selected dams on the Lower Snake River.

An explanation of the EPA rating system for draft EIS's is enclosed for your reference. This rating and a summary of these comments will be published in the Federal Register. If you have questions, please contact John Bregar (206) 553-1984 or John Malek (206) 553-1286 in our Office of Ecosystems and Communities.

Sincerely,

Richard B. Parkin

Richard B. Parkin, Manager
Geographic Implementation Unit

Corps of Engineers Response

3. Comments noted. Specific responses are provided to these issues and others provided in your attachment.

Environmental Protection Agency
Detailed Comments on the Draft Integrated Feasibility Report for Channel Improvements

Upland and Instream Dredging Disposal

4. Many of the diked areas along the Columbia River are wetlands. We are aware that some of the areas that have been diked and are now being considered as dredged material disposal sites, are also wetlands. The document does not indicate that wetland determinations have been made for all such diked areas being considered as disposal sites. If such determinations have been made, the data sheets need to be included in the EIS indicating size and location of the wetland in order to explain how wetland functions lost and acres of wetlands lost have been used to determine adequate and/or appropriate mitigation. Some of the proposed fill sites are areas under agricultural use (cropping or grazing) which still possess the characteristics of wetlands, and have the potential for restoration and enhancement.

5. The Columbia River Channel Improvement Study maps that are included in Chapter 4, do not indicate where the in-water disposal sites will be located. On earlier maps, not associated with this EIS, information on in-water disposal sites are clearly shown. The final EIS should include more specific maps showing proposed in-stream dredged material disposal sites.

6. In addition, in inland waters, the Corps and EPA can cooperate to select sites using the Clean Water Act §230.80 advanced identification authority. EPA anticipates that these actions will occur following the publication of the final EIS for the Columbia River Deepening. As part of the §230.80 process, we also expect that the Corps and EPA, along with both Washington and Oregon partners, will develop site management and monitoring plans (SMMP) for all sites, that will guide future use of each site. At this time it is uncertain whether all sites could be covered by a single generic plan, presumably some sites will need to be managed uniquely. Appropriate early management of sites may provide environmental benefits. Indication of the necessity and intent to develop these plans should be included in the EIS.

7. On Pg. 4-15, (under paragraph 4.4.3.4 Upland Disposal Site Screening) the document states, "Unconfined in-water disposal in or adjacent to the channel was counted as one site for the length -of the river regardless of the initial disposal depth identified." How is this information related to the topic of the paragraph, upland disposal? In light of the information in the sentence, how are the individual disposal sites to be monitored and tracked?

Channel/Sediment Issues

In several areas the EIS discusses the realignment of the river bottom sediment after

Corps of Engineers Response

4. Although wetland determinations were not made for disposal sites, they will be prepared by project sponsors in conjunction with the 404 permit process before any wetland fill occurs at the two remaining upland disposal sites that affect wetlands. Although some of the proposed fill sites may still possess some of the characteristics of wetlands, it is very unlikely that these sites would be withdrawn from agricultural use to allow for wetland restoration without landowner compensation. The wildlife mitigation process was relied upon to characterize the wildlife value of each disposal site, including those areas with some wetland characteristics. The mitigation process represents an alternative means to assess wetland value. Participants in the interagency mitigation team sought an emphasis on wetland development in the wildlife mitigation plan. The mitigation plan in the DEIS (Appendix G) would restore or develop 210 acres of wetland habitat or over ten times the 20.4 acre impact. Several state agencies have stated that Peavey Oval will require mitigation for the wetland habitat present. As a result of this new information, the disposal plan has been adjusted by eliminating Peavey Oval as a disposal site to avoid wetlands impacts.

5. Section 4.4.3.7 describes the in-water disposal sites; sites other than flowlane are mapped.

6. Comment noted. Text has been added to the final EIS concerning SMMP development. Development of upland disposal site SMMP's will occur after the sites have been acquired by the non-federal sponsor.

7. The section heading will be changed to read "Disposal Site Screening" as in-water, beach nourishment and upland disposal sites were considered in the analysis discussed in this section. Unconfined, in-water disposal would not be restricted to explicit sites. Rather, unconfined in-water disposal locations would shift over time depending upon location of shoals and availability of suitable water depth adjacent to the dredging area for disposal actions.

deepening the channel. In wider reaches of the river, a new angle of repose may not be a problem as a result of dredging. However, in narrower reaches, dredging could create a
8. realignment of 50 to 60 feet which could involve the entire river bed., from bank to bank. Such a change in the river bottom could have far-reaching effects on the local ecosystem. There does not appear to be a discussion in the document where such effects have been measured qualitatively or quantitatively. The final EIS should address this concern.

Certain Willamette River sediments are contaminated and are presently undergoing remediation studies. Since any future development along the Willamette River will probably involve those same sediments, what type of coordination has been initiated to integrate this deepening study with studies of potentially contaminated sediments? In Appendix B, page 11, the conclusion drawn is that Willamette River sediments "would be required to either undergo biological testing under Tier III or be disposed of under guidelines and regulations for confined
9. in water or upland" disposal sites. The document does not appear to go further in dealing with a sampling plan or potential sites for disposal. The information related to advanced identification of sites for disposal of contaminated sediments, sampling plans, dredging volumes and methods, etc., should all be discussed in the final EIS.

Section 5.1.7.3, Navigation Channel Sediments, describes the results of June 1997 sampling efforts along reaches of the Columbia and Willamette Rivers. The final EIS should clarify which of the Willamette River samples were surface grab samples and which were core samples. The core samples should be further broken down to indicate sample depth.

Cumulative Impacts

The cumulative impacts section on page 6-57 indicates that approximately 51,997 acres of wetland/marsh habitat and 27,004 acres of forested wetland habitat has been lost along the lower Columbia and Willamette rivers since the 1880's. In addition to substantial hydrologic alteration, these rivers have almost lost all of their natural flow characteristics and have sustained tremendous cumulative damage over the years. We believe that the Corps has an obligation to attempt to minimize future disturbance of wetlands and other sensitive areas along the rivers in order to help move them toward a more natural state. The January 1997 cumulative impacts guidance from the Council on Environmental Quality (CEQ) entitled, "Considering Cumulative Effects" speaks to this issue:
10.

> The historical context and full suite of ongoing actions are not only critical for evaluating cumulative effects, but also for developing potential restoration as well. The first step in developing a river restoration plan is to understand how past actions ... have contributed to the current condition of the water body. (Page 42).

The guidance goes on to define several examples of significant cumulative impacts, including cumulative impacts on wetlands. Significant cumulative wetland impacts occur when

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8. Sections 4.4.3.2 and 6.2.3.1 of the report discuss this concern.

9. All data generated under this study has been or will be provided to DEQ for incorporation into their database. The local sponsor has requested to defer all dredging on the Willamette River pending the completion of the ongoing remediation studies. No further studies of the sediment quality or identification of disposal options are planned until a decision is made whether or not to deepen the Willamette River.

Appendix B Section 5.0 and Sections 7.1 and 7.2 describe the sample notation number which identifies surface samples and core samples. All samples with a "BC" designation are surface grab samples (i.e. CR-BC-34 or WR-BC-5) collected by a Van Veen grab sampler. The core samples collected in the Willamette River were collected using a 4-inch vibra core.

10. The FEIS, including the 404(b)(1) analysis, has been revised to include more detailed discussion of the guidelines and cumulative effects. The recommended plan is revised from that found in the DEIS to reduce the wetland impact to 20.4 acres. The rationale for disposal site selection, including wetland and riparian areas, is thoroughly discussed. We have concluded that these remaining impacted sites cannot be reasonably avoided, and that, with mitigation, net wetland/riparian values would be greatly increased.

hypothetical past actions have created large reductions in wetlands, present and future actions would cause a small loss of wetland acreage annually and the proposed action would disturb a small amount of wetlands. It is important to note that the proposed action alone would not create significant cumulative impacts, but when combined with past, present and future impacts, not necessarily within the jurisdiction of the lead agency (40 CFR part 1508.7), the action is considered significant.

> If it is determined that significant cumulative effects would occur as a result of a proposed action, the project proponent should avoid, minimize, or mitigate adverse effects by modifying or adding alternatives. (Page 44.)

With specific regard to the proposed action, four of seven alternatives contain provisions to fill approximately 38 acres of wetlands and 66 acres of riparian habitat. We believe that further justification is required in the final EIS to support these actions in order to meet the intent of the CEQ cumulative impact guidance, as well as to demonstrate consistency with the Clean Water Act Section 404(b)(1) requirements which stipulate that filling of waters of the U.S. must undergo a least environmentally damaging practicable alternative analysis. The draft 404(b)(1) analysis in Exhibit D does not readily demonstrate compliance with requirements or intent of the Clean Water Act Section 404 guidelines which state at 40 CFR 230.5 which state in part,

> In evaluating whether a particular discharge site may be specified, the permitting authority should use these Guidelines in the following sequence:
> ....(c) Examine practicable alternatives to the proposed discharge, that is, not discharging into an alternative aquatic site with potentially less damaging consequences.

11. Continued at 230.10, the Guidelines state,

> (a) Except as provided under section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences..... (a)(2) An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes...

The 404(b)(1) analysis in Exhibit D is missing the necessary elements to support the conclusion that, "Any remaining wetlands or riparian areas affected by disposal were considered unavoidable in achieving a practicable disposal plan, identified as the Least Cost Disposal Plan." As the guidelines in 230.10 stipulate, it is assumed that upland disposal sites are available and less damaging unless specifically proven otherwise. This proof is absent from the existing analysis.

The alternatives analysis presented in the draft NEPA EIS can, according to 230.10(4), provide information required for the 404(b)(1) analysis. Although proposed sites are displayed on Table 4-4, there is no reference to 404(b)(1), nor is there any detailed look at why upland sites did not take precedence over aquatic sites. The final EIS should provide more information, presented in one designated area in the text, to describe the 404(b)(1) process and explain the

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11. The Corps exercised its obligation to minimize future disturbance of wetlands and other sensitive areas along the project area. We proceeded through an extensive disposal site screening process (reference Section 4.4.3.4 and Table 4.4). Disposal site screening included cost analyses for using alternative sites versus mitigation of impacts. These referenced areas of the DEIS represent a least environmentally damaging practicable alternative analysis. Additionally, we hosted seven interagency meetings on disposal siting by reach early in the feasibility study. Agency opinions on disposal siting were actively sought to aid our disposal site selection process. Separate meetings were held with NMFS on ESA Critical Habitat for listed salmonids. The Corps executed these actions in order to minimize impacts to riparian and wetland habitat to the extent practicable. The Corps actions, as identified in the DEIS and our Dredged Material Management Plan, will lead to a virtual elimination of shoreline (beach nourishment) disposal in the future allowing gradual recovery of natural banklines.

Also see response #4 of this letter.

rationale behind the chosen disposal sites.

11. (con't)

The incremental filling of 38 acres of wetlands and 66 acres of riparian habitat may not seem significant at first, but when added to the past damage that has accrued over the years, it is an unacceptable impact without a strong justification of costs/benefits. Restoration alone is not enough in this situation to compensate for these losses without such a justification.

Ecosystem Restoration

12. There are four large scale ecosystem restoration measures provided as a result of consultation with Federal agencies and the sponsoring ports. These are discussed on pages 4-65 through 4-71. We are strongly in support of the implementation of these proposed measures. However, in the main body of the draft EIS the assurances that these measures will be successful are absent. The final EIS should contain detailed commitments to implement these measures as well as monitoring plans, contingency plans and assurances that all project-related mitigation measures will be completed within a specified time frame with sufficient funding sources identified.

13. EPA understands that ecosystem restoration objectives are implemented under separate authority than for mitigation for project impacts. Under ecosystem restoration provisions, congressional approval is ultimately required to guarantee that the proposed measures will go forward and be funded. It is difficult to predict the outcome of a congressional vote on the subject. Absent these ecosystem restoration objectives, however, EPA will have very strong concerns with the continuation of the dredging project as proposed. The final EIS should provide additional clarity regarding the authorities for ecosystem restoration and a plan for assuring that these measures will be implemented even in the event that Congress does not approve them as part of the ecosystem restoration package.

Lower Columbia and Lower Snake River Drawdown

14. The draft EIS is largely silent on the issue of potential drawdowns in the future at the John Day Dam and the four Lower Snake River dams. Presently, no decisions have been made regarding drawdown, but studies by the Walla Walla District Army Corps and regional working groups have indicated that the only way to truly restore the dwindling aquatic resources in the Columbia Basin is to move the river toward a more normative flow regime. If this were to occur, it would seem to have significant implications related to the proposed action with regard to flow regimes as well as shipping activity up the river. The cost/benefit relationships for this project may also be altered. The final EIS should examine the relationships between the proposed deepening action and potential drawdown actions as well as the environmental and economic effects.

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12. If the project is authorized, it will include the ecosystem restoration features described in the FEIS, which will be constructed during the construction period for the project starting in November 2001. Mitigation efforts are distinct and separate from ecosystem restoration efforts. Monitoring plans for wildlife mitigation measures were presented in Appendix G. We perceive no need to develop contingency plans. Project-related wildlife mitigation measures will be implemented prior to or concurrent with project construction per established Corps guidance. Mitigation costs are part of the general project cost and mitigation funds will become available when Congress appropriates construction monies. There are no Corps monitoring plans established for ecosystem restoration measures.

13. The Corps will provide additional clarification on the ecosystem restoration authority in Chapter 4, Section 4.8. The Corps will implement those ecosystem restoration measures that Congress authorizes and appropriates funds for their construction. As ecosystem restoration is an integral element of the study, Congressional approval of the study automatically confers approval of the ecosystem restoration measures.

14. The dams in question provide minimal flow regulation for the mainstem Columbia River. Alterations in flow regimes, if those dams were ever drawn down, would have insignificant impacts on sediment discharged to the Pacific Ocean and on the maintenance-dredging forecast.

The sensitivity analysis in the Economic Appendix (C) addresses concerns regarding reduction in tonnage due to drawdowns. All of the tonnage that arrives via barge could be removed from the benefit analysis without significantly impacting the benefits.

Page Specific Comments on the Main Body of the EIS and Volume I of Appendix H.

15. 1. Suggest reducing the written material from mid-page 2 to bottom of page 3 in the executive summary that discusses dredging and disposal for present operations and the proposed 43-foot channel. A properly designed table here and one in Chapter 4, Alternatives, that show the dredging and disposal amounts as well as disposal locations for both present and proposed operations would supplant much of the written material and make it more understandable for the reader. Construction as well as Operation & Maintenance volumes for periods up to 50 years should be included. For example, from the numbers shown on page 2-13, if the present shoreline disposal volume is desired, that number needs to be backed out from the other numbers given on that page. Tabular presentations would be clearer and cleaner.

16. 2. Pages 2-1 & 2-2 Depth of channel should be more accurately described -- considering advance dredging and portions of channel naturally deeper than 40 feet.

3. Page 2-1 Define difference between short ton and ton

4. Page 5-1 p.3 Unclear sentence meaning-- wave heights are greater seasonally?

5. Page 5-3 p.l Believe published estimates give mouth of Columbia River flow as about 260,000 cfs

6. Page 5-3 p.4 Suggest expanding explanation on flood and ebb tide and estuary circulation direction for clarity or delete entire paragraph.

7. Page 5-4 p.3.... velocity drops below 3 fps.... instead of 3 cfs

8. Page 5-4 p.4 Not sure of meaning of phrase.... current average suspended bed material transport..... in suspended sediment section of text

9. Page 5-6 p. 4 The explanation to arrive at conclusion that effects occur above -3 feet CRD is not clear

10. Page 5-7 P.2 and other locations-- Suggest specifying river mile for islands and other locations referred to in text

17. 11. Page 5-7 p.3 Implies that more than 40 miles of shoreline have been dredged material disposal sites. Is that correct?

18. 12. Page 5-7 p.4 Erosion rates should be in units of feet per year if that is what they are.

13. Page 5-13 p.3 Third sentence is incomplete

Corps of Engineers Response

15. Comment noted.

16. Your suggested report changes and clarifications in comments # 2 through #10 have been made in the final EIS.

17. Yes, this is a correct statement.

18. The suggested report changes have been made in the final report.

19. 14. Page 5-27 p.4 Ospreys not mentioned. Suggest discuss osprey use of unneeded navigation aids in Columbia River

20. 15. Page 5-35 p.4 Suggest more specificity as to ... very high ... North American population density

21. 16. Page 6-27 p. 1 Suggest more prominent placement of plans for upland disposal sites management and monitoring plans. We understand that these plans will be developed after the final feasibility report and EIS.

The comments following refer to Appendix H Volume 1

17. Page 7 p.1 Separate paragraph starting with ... Since 1977.... from material preceding it

18. Page 7 p.3 Suggest moving the reference to figure 2 to the end of the next sentence because the 1993 expansion is not shown on figure 2

22. 19. Page 8 p. 2 Suggest rephrasing or rewriting to clarify meaning and intent of first sentence

20. Page 10 p.4 Suggest locating estuarine sites C and D on an illustration.

21. Page 16 Most of page 16 is an almost word for word repeat of material on pages 13 and 14. Presume this was not intended.

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19. The following text has been added to the final report. "Osprey occur throughout the project area. They nest on navigation aids, dolphins, range markers and natural locations such as snags. Their presence along the lower Columbia River has increased markedly since the late 1970s."

20. Comment noted.

21. We have incorporated this brief paragraph under its own subsection heading in the final report to highlight its placement. As stated in the text, disposal site management plans will be developed after site acquisition.

22. Concur with your comments #17, #18, #19, and #21: text has been revised.
Comment #20: Sites C and D are located on Figure B-3, Exhibit B in Appendix H.

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements

Environmental Impact of the Action

LO - - Lack of Objections

The Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC - - Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO - - Environmental Objections

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU - - Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 - - Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 - - Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonaby available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 - - Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information. data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
HABITAT CONSERVATION DIVISION
525 NE Oregon Street
PORTLAND, OREGON 97232-2737

February 2, 1999

Mr. Steve Stevens
Corps of Engineers, Portland District
Attn: CENWP-PE-E
P.O. Box 2946
Portland, Oregon 97208-2946

RE: Draft Integrated Feasibility Report for Channel Improvements and Environmental Impact Statement

Dear Mr. Stevens:

The National Marine Fisheries Service (NMFS) has reviewed the subject Draft Integrated Feasibility Report for Channel Improvements and Environmental Impact Statement (EIS) which describes the Army Corps of Engineers' (COE) proposed plan for deepening the existing 40 foot navigation channel in the Columbia River and lower Willamette River to a maximum depth of 43 feet. We provide the following comments based on our concerns for the potential impacts of this project on marine, estuarine and anadromous fishery resources and their habitats.

The NMFS appreciates the amount of work the COE has put into development of the report. It has been a significant task to determine and address potential issues that result from the proposed project. The COE has done an admirable job in attempting to accomplish that. However, NMFS believes that there are still several major issues that need to be addressed: ocean disposal impacts; in-water disposal impacts to sturgeon; disposal on estuarine islands; impacts to estuarine fish and invertebrate species; impacts to Columbia River smelt; increased wave erosion; sediment budget for the Columbia River; contamination in the Willamette River and ecosystem restoration.

1. Pacific coastal waters are some of the most productive in the United States (Resources Agency of California, 1995). Estuaries are the bays and inlets influenced by both the ocean and a river and serve as the transitional zone between fresh and salt water (Botkin et al. 1995). Estuaries support a community of plants and animals that are adapted to the zone where fresh and salt waters mix (Zedler et al. 1992). Estuaries are naturally dynamic and complex. Human actions alter estuaries by stabilizing and simplifying this complexity (Williams et al. 1996). These activities have substantially changed the estuaries' ability to function in a manner beneficial to anadromous and marine fish. Habitat degradation and loss adversely affect inshore and riverine ecosystems critical to living marine resources (Chambers 1992). In addition, the cumulative effects of small changes in many estuaries may have a large systematic impact on estuarine and coastal oceanic carrying capacity (Monaco et al. 1990).

Corps of Engineers Response

1. Comments noted.

Fox (1992) states: "The ability of habitats to support high productivity levels of marine resources is diminishing, while pressures for their conversion to other uses are continuing." Point and non-point discharges, waste dumps, eutrophication, acid rain, and other human impacts reduce this ability (Fox 1992). Population growth and demands for international business trade along the Pacific Rim exert pressure to expand coastal towns and port facilities - resulting in net estuary losses (Kagan 1991, Fawcett and Marcus 1991). Carefoot (1977), discussing Pacific seashores, states "Estuaries are complex systems which can succumb to humankind's massive and pervasive assaults."

2. Estuarine habitats fulfill fish and wildlife needs for reproduction, feeding, refuge, and other physiological necessities (Simenstad et al. 1991, Good 1987, Phillips 1984). Coastal fish populations depend upon both the quantity and quality of the available habitat (Peters and Cross 1992). Almost all marine and intertidal waters, wetlands, swamps and marshes are critical to fish (Fedler and Crookshank 1992).

Estuarine zone fisheries are of great economic importance across the Nation (Herke and Rogers 1993). Three-fourths of the fish species caught in the United States are supported by estuarine habitats (Hinman 1992, Fox 1992). Clams, crabs, oysters, mussels, scallops, and estuarine and nearshore small commercial fishes contributed an average dockside revenue of $389 million nationally from 1990 to 1992 (National Marine Fisheries Service 1993). Using National Marine Fisheries Service data, Chambers (1992) determined that seventy-five percent of all commercial fish and shellfish landings are of estuarine-dependent species. Of the 83 species identified by the Pacific Fishery Management Council in its Groundfish Fishery Management Plan, at least 31 inhabit estuaries and nearshore kelp forests for part, or all, of their life cycle.

Ocean Disposal Impacts

NMFS realizes the need for designation of new sites for disposal of dredge material from the Columbia River. The designation of new sites is critical to maintaining the navigation channel at the mouth of the Columbia River. Although the size of the proposed sites will alleviate the need to continuously designate small sites as they fill, the NMFS believes that there are still major issues to be resolved regarding the exact configuration and placement of the proposed sites. Therefore, the COE should further work with the resource agencies and commercial fishermen to refine the proposed sites. The NMFS also has concern over the proposed disposal methods within any sites and the lack of mitigation for impacts to resources from disposal.

3. The COE indicates that a single dredging dump would result in up to 10 inches of material spread over a 20-50 acre area. The material from a single year of disposal in the nearshore area of the proposed sites would result in a uniform 10 inches over 4 square miles, and the offshore area could receive a 1-5 foot thick mound covering a quarter mile square area. The study conducted by the Corps on impacts to crabs indicated that 72% of the tested crabs died when depth of accumulation was greater than about 4 inches. The potential impacts to the crab

Corps of Engineers Response

2. Comments noted.

3. Concur with comments. Since the preparation of the draft report, further workshop meetings have been conducted which have resulted in modification to the site location, size, and management/monitoring. The management plan will be reviewed on an annual basis. The report has been revised to address the issues you have raised; see Chapter 4 and 6 of the main report and Appendix H. Impacts to the resources have been minimized by reducing the size of the sites and locating them in areas that have acceptable impacts to the commercial fishery.

resources and the crab fisherman off the Columbia River mouth resulting from disposal would be substantial. An analysis of these impacts should be included in the final EIS.

3. (con't)

Based on this, NMFS cannot support any disposal methodology that would result in widespread depth accumulations greater than 4 inches. The ability to place disposal in a dispersive or thin layer manner is unproven off the Columbia River and needs to be tested before it is selected as the method to be used. NMFS recommends that the COE work with the resource agencies and commercial fishermen to develop and utilize appropriate methodology for dumping within the newly designated sites prior to any further disposal events.

The COE identifies a proposed management plan that would be in place for ten years before any review is conducted. A thorough review of any final plan should be conducted at least every five years throughout the life of the project and yearly for the first five years to adequately address the success or failure of the plan.

This area will probably soon be designated as Essential Fish Habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act. The NMFS, in their recommendations to the Pacific Fishery Management Council on EFH designations for groundfish stocks, provided the following general considerations for assessing potential impacts of proposed projects.

- The extent to which the activity would directly and indirectly affect the occurrence, abundance, health, and continued existence of fishery resources;
- The extent to which the potential for cumulative impacts exists;
- The extent to which adverse impacts can be avoided through project modification, alternative site selection or other safeguards;

4.

- The extent to which the activity is water dependent if loss or degradation of EFH is involved; and
- The extent to which mitigation may be used to offset unavoidable loss of habitat functions and values.

The following recommendations were made for dredging and dredge material disposal:

- The cumulative impacts of past and current dredging operations on Essential Fish Habitat should be addressed.
- Environmentally sound engineering and management practices (e.g., seasonal restrictions, dredging methods, and disposal options) should be employed for all dredging and construction projects.
- Compensation for impacts to benthic environments from dredging should be provided.

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4. A discussion of impacts of the proposed project is found in Chapters 4 and 6 of the main report and Appendix H.

- Federal agencies should identify the direct and indirect impacts such projects may have on EFH. Benthic productivity should be determined by sampling prior to any discharge of fill material. Sampling design should be developed with input from state and Federal resource agencies.

4. (con't)

Disposal by any method will result in mortality of crabs, fish and other benthic animals. The extent of that loss has not been addressed in the EIS. The COE has also not provided any proposed mitigation for this loss in the EIS. The size of the proposed sites (over 70 square miles) is unprecedented. The COE will need to extensively evaluate impacts from their disposal actions to consult with NMFS on impacts to EFH. Much of the area has not been evaluated as to its productivity and substrate composition. Sediment grain size from the Columbia River may be close in size to substrate within the disposal area, but there will be differences, especially the further offshore the disposal is placed. An analysis of the effects on benthic invertebrates resulting from the change should be undertaken and provided to the resource agencies for review. Comprehensive surveys are needed to identify areas that are of high biological productivity, of unique substrate/habitat and to establish a baseline for evaluation of impacts. Mitigation for impacts and substrate changes are necessary. NMFS recommends that the COE work with the resource agencies and commercial fishermen to develop mitigation for impacts resulting from disposal.

In-Water Disposal Impacts

The COE indicates that over 15 million cubic yards (mcy) of material would be placed in the main in-water disposal area (Columbia River miles 27-42) over the 20 years of the project. They further indicate that this would result in a 20 foot rise over 400 acres of riverbed. The EIS does
5. not adequately describe how this impact could be avoided or mitigated. If a majority of this material would be destined for the proposed restoration activities near Miller Sands (see comments below on restoration), the COE will need to identify other alternatives and propose mitigation. NMFS recommends that the COE work with the resource agencies to develop mitigation for impacts resulting from disposal.

In-water disposal within the Columbia River also has the potential to impact juvenile sturgeon. The Washington Department of Fish and Wildlife has indicated that there are four potential impacts to sturgeon from channel dredging and flowlane disposals: 1) alteration of critical rearing habitats, especially nursery habitat, 2) disruption of benthic invertebrate production- an
6. essential forage base for sturgeon of all ages, 3) disturbance and reintroduction of contaminants into the food chain bound in river sediments, and 4) direct mortality of juvenile, subadult, and adult sturgeon from dredging operations.

Juvenile sturgeon utilize deep water areas quite extensively. Most young-of the-year (YOY) and juvenile white sturgeon were captured in the thalweg and deeper holes of the lower Columbia

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5. In-water disposal could occur at numerous locations in the reach between river miles 27 and 42. This reach has been used in the past for in-water disposal during maintenance dredging. The 2.5 mcy of construction disposal is a one-time action that is much larger than the annual O&M disposal in this reach. The 12 mcy of O&M equates to an average of 600,000 cy/yr, which is only a one third increase over the 1990-96 O&M average of nearly 450,000 cy/yr. Nearly half of the proposed in-water disposal in this reach would occur between CRMs 29 and 32 with the remainder spread throughout the reach. The actual change in bed elevations that occur will depend on factors such as the total area used for disposal, the volumes disposed, and the amount of material transported away from the sites. If the 14.5 mcy of disposal were concentrated on 400 acres and no material was transported away, the bed elevation would be raised by about 20 feet. This depth of fill is only likely to occur between CRMs 29 and 32 as the flowlane disposal can be moved around to avoid large changes in bed elevations.

Coordination with resource agencies has resulted in an agreement to conduct biological sampling in these areas to determine level of resources impact. If the sampling identifies high levels of important resources, the disposal plan will be modified to avoid or minimize impacts.

6. Impacts to juvenile sturgeon from in-water disposal have been discussed in the EIS. Some additional information has been added to the effects section in response to your comments. As discussed in the EIS, benthic invertebrate recolonization rates for the freshwater portion of the Columbia River were investigated in a study done for a dredging project for the Westport Ferry near Puget Island. Though this site was shallower than the sites referred to in the above comment (and recovery rate likely faster), the study should still give an indication of how benthic invertebrate populations would recover from a major disturbance.

river where dredging operations will be concentrated (McCabe and Tracy 1994, Parsley et al. 1993). The impact to them from continuous disposal in deep water areas has not been analyzed.

6 (con't) The EIS states that deep water areas are relatively low in productivity. Almost all age classes of sturgeon subsist to some degree on benthic invertebrates, especially *Corophium* spp. McCabe et al. (1993) found that there is a critical dependence on benthic invertebrates by YOY and juvenile white sturgeon <725mm. Since juvenile sturgeon frequently use these areas, any impact to productivity would have a much larger impact than if it was a highly productive area. In addition, there is no information presented as to how long it takes to recolonize deep water areas that are buried. A lack of any benthic invertebrates could pose significant risk to sturgeon populations. The COE should conduct studies to determine rates of benthic recolonization in these deep water areas.

Studies of the Lower Columbia River indicate relatively high concentrations of heavy metals, PCB's, organic pesticides and other polycyclic aromatic hydrocarbons, dioxins, furans, and
7. radionuclides in lower Columbia River sediments (Tetra Tech 1993). Sturgeon bioaccumulate many of these due to the nature of their feeding habits and the fact that they are long-lived. This bioaccumulation could lead to reduced breeding success and threats to human health from ingestion of sturgeon.

In the response to the Fish and Wildlife Service's Draft Coordination Act Report (CAR), the COE stated that juvenile flatfish survival rates after burial should be analogous to juvenile sturgeon and therefore there should be little affect to them (Page 1 of the COE's response to the CAR). The NMFS disagrees with this analogy. Different species often do not exhibit the same behavior patterns in response to perturbations, and different environments (river vs. ocean) will
8. also elicit different responses. We do not know how juvenile sturgeon would respond to being inundated with sand. In addition, juvenile sturgeon have been found to be susceptible to entrainment by dredging (Buell 1992), yet juvenile salmonid entrainment studies conducted by the COE have not shown entrainment to be a problem (Kim Larson personal communication). In light of many of these uncertainties and the potential impacts, the COE should work with the resource agencies to evaluate the impact to sturgeon from flow-lane disposal.

Estuarine Fish and Invertebrate Impacts

In earlier fish entrainment studies conducted by the COE at the mouth of the Columbia River, 30 different species were collected (Larson and Moehl 1990). The primary species entrained were Pacific sand lance (*Ammodytes hexapterus*) at a rate of .341/cy. Other species were entrained at a
9. much lower rate: juvenile flatfish at .008/cy, Pacific staghorn sculpin at .003/cy, Poachers at .009/cy, herring and anchovy at .008/cy and Eulachon (Columbia River smelt) at .002/cy. While these numbers seem low, they are based on a value per cubic yard. The COE proposes ocean disposal of 6.2 mcy for construction of the 43' channel and 4.2 mcy per year for the 20 year life of the project. Results from multiplying the entrainment rate of the above species are shown in

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6 (continued). Since the flowlane disposal sites will be used on a continuous basis, full recovery of benthic productivity is not expected to occur between disposal events. Productivity in these deeper areas is very low and it is unlikely that they provide much in the way of food for juvenile sturgeon even in an undisturbed condition. It is more likely that if sturgeon are feeding in the deep holes, then they are feeding on items that are drifting down river and settling in the deeper areas.

The two dragheads of the hopper dredge *Essayons* have a combined width of about 12 feet with a zone of effect extending a few feet beyond that. The cutterheads of pipeline dredges have a similar narrow zone of effect. When operating and buried in channel sediments, their ability to entrain organisms is limited to a narrow area immediately around the draghead. The navigation channel is generally 600 feet wide throughout the project. The main river channel is about 1,500 to 2,000 feet wide. Consequently, dragheads and cutterheads influence at any one point in time about 2 to 3 percent of the navigation channel, and only a fraction of a percent of the main river channel. Further, dragheads of hopper dredges are not continuously in operation, as the vessel must periodically transit to and from disposal locations. Dredging operations are also site specific at any given point in time. Therefore, impacts are limited in geographical scope and do not encompass all of the potential travel path at any given point in time. Cutterheads and dragheads only impact a limited area at the bottom of the water column.

Juvenile smelt and sturgeon are mobile whether through active movement or passive transport by the current. Consequently, once they have moved past a dredging operation, their exposure to entrainment is generally over. Additional entrainment opportunities may arise if the dredging operation shifts downstream. As demonstrated above, their exposure in a specific section of the navigation or main river channel is minimized at the point of dredging operation.

7. The Bi-State study only sampled 2 stations in the federal channel. Both were in the estuary and both were sand. Contamination levels were mostly below detection limits. No constituent exceeded the established screening levels for the evaluation of dredged material in the Columbia River. Four out of 69 total Bi-State sediment stations had contamination levels above the Dredged Material Evaluation Framework (DMEF) screening levels. All were for DDT. These stations were not located in the federal channel and consisted of fine-grained material not typically found in the areas to be dredged for the project. Channel materials are not considered contaminated and would pose no impact to sturgeon.

8. We concur that different species of fish may behave differently to similar circumstances and therefore, the juvenile flat fish tests may not directly apply to sturgeon. Both species, however, are bottom dwellers and live in a moving sand environment and appear to be similar in structural resistance to mechanical damage. Consequently, it seems reasonable to conclude that survival from dredged material disposal would be similar for both species. The Corps has agreed to conduct benthic and fish sampling in the deep water areas of flowlane sites between CRMs 27 to 42 to further assess potential impacts to juvenile sturgeon.

Table 1.

Although these are some fairly significant numbers, there are no estimates of the populations of these species within the Columbia River. Without those numbers, it is hard to establish the extent of impacts resulting from the proposed dredging. The NMFS believes that there may be a significant impact to Pacific sand lance populations and that the COE should evaluate that impact prior to construction. In addition, the NMFS has concerns about the impacts to Columbia River smelt, which are discussed below.

9. (con't)

Table 1. Entrainment of estuarine fish species over the proposed 20 year dredging program

Species	Construction Entrainment	Maintenance Dredging Entrainment	Total Entrainment
Pacific Sand Lance	2,114,200	28,644,000	30,758,200
Juvenile Flatfish	49,600	672,000	721,600
Pacific Staghorn Sculpin	18,600	252,000	270,600
Poachers	55,800	756,000	811,800
Herring and Anchovy	49,600	672,000	721,600
Eulachon (Columbia River smelt)	12,400	168,000	180,400

The proposed and current dredging operations conducted by the COE also results in mortality of Dungeness crabs, which are potentially found as far upstream as Grays Bay. The Coastal Zone and Estuarine Studies Division of NMFS found extensive populations of Dungeness crabs in the Columbia River estuary, extending as far upriver as River Kilometer 27. Their study indicated that the estuary provided valuable habitat for Dungeness crabs whose populations fluctuated temporally and spatially. Entrainment of these crabs needs to be mitigated. The COE should work with the resource agencies to develop appropriate mitigation for impacts to crab and estuarine fish species prior to beginning the deepening project.

Estuarine Island Disposal Impacts

10. The estuarine islands created by dredge disposal have created habitat that has been extremely productive for avian predators such as gulls, terns and cormorants. Piscivorous bird populations have increased exponentially in the Columbia River Estuary due almost entirely to the creation of protected nesting islands by the Corps of Engineers in the course of navigation channel maintenance. Most of this increase has been in the past ten years and coincides with precipitous declines in salmonid survival. Estimates of juvenile salmonid mortality from avian predators range from 10 to 30 million. This represents up to 30% off all smolts that enter the estuary.

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9. The entrainment samples referred to in this comment were taken from the Mouth of the Columbia River (MCR) project, which extends from river miles 3.0 to -3.0, which is not part of the proposed channel improvement project. Most of the species referred to in the comment do not occur in large numbers upstream of river mile 3.0. This is particularly true for sand lance which are principally marine species. Your concerns should be addressed in connection with the MCR project.

10. The Corps has worked cooperatively with the interagency Caspian Tern Working Group, since its inception, on management solutions to Caspian tern predation on juvenile salmonids in the Columbia River estuary. We have implemented and/or cooperated in a number of management strategies so far in 1999 to preclude Caspian terns from nesting on Rice Island, except for a one acre control site, and to shift the tern's nesting efforts to East Sand Island. Measures implemented included planting of winter wheat on Rice Island, Miller Sands Spit, and Pillar Rock Island, development of alternative nesting habitat on East Sand Island, and placement of silt fencing at Rice Island. Further management efforts will be directed toward reduction of tern numbers and predation impacts to juvenile salmonids in the year 2000 and later. Interagency team work is now addressing long-term management strategies. Further, management measures under the BIOP's for DMMS and this study are being negotiated.

11. Further disposal activities on these islands needs to be conducted in a manner that does not facilitate further expansion of these colonies. The NMFS recommends that the COE engage in further discussions with NMFS to determine how best to dispose of material on the islands and what measures need to be taken to mitigate for past and future use of the islands.

Columbia River Smelt Impacts

Columbia River smelt are an important resource in the lower river. They serve as the prey base for numerous birds, fish and mammals. In addition, they are a commercially viable species. The EIS section on commercial fisheries (page 5-23) does not address commercial fishing for Columbia River smelt. An extensive fishery has been in existence for a number of years with substantial landing and earnings. The 1997 value of the fishery was roughly $145,000 to 300,000 dollars. This fishery has been in substantial decline since 1992 (3.67 million pounds in 1992 to 9 thousand pounds in 1996) and Columbia River smelt are now a species of concern to NMFS. Known spawning areas in the Columbia River include Clifton Channel, between Eagle Cliff and Stella, and between the Kalama River and the Lewis River. Smelt also are known to spawn in the Grays River, Cowlitz River, Kalama River, Lewis River, and the Sandy River.

Spawning occurs primarily over a bed of fine pea-sized gravel or semi-sandy areas where the water flows at moderate velocities. Normal hatching time is approximately 30 to 40 days after spawning. Newly hatched smelt drift with the current and are swept down river to the ocean. Preferred smelt spawning habitat in the mainstem Columbia River may be affected dredging. This may further impact an already depressed population

12. Time closures for dredging operations within the Columbia River from the Sandy River to below Cathlamet, Washington are being recommended by both NMFS and WDFW to protect juvenile smelt. The CAR issued by the Fish and Wildlife Service recommended the use of a clamshell dredge from January 1 to June 1 downstream of the mouth of the Lewis River. We recommend that restriction be extended up to the mouth of the Sandy River.

In its response to the Draft Coordination Act Report, the COE indicated that these closures would increase cost and not allow them to meet construction time lines. The COE indicated that it may be possible to alter areas of dredging to avoid impacts. If the population of these fish does not improve, there is a definite possibility that they will be proposed for listing, or listed, under the ESA prior to the proposed deepening occurring. The COE should consider this potential and modify their construction techniques and time lines accordingly. These comments also pertain to current maintenance dredging practices conducted by the COE.

Wave Erosion

The NMFS is concerned about potential increases in wave erosion associated with ship wakes as a result of channel deepening. The COE indicates that there could be larger wakes generated by

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11. See response #10. Through ESA consultation, currently ongoing, the Corps will reach an agreement with NMFS regarding further disposal of dredged material on these islands. This agreement will include an acceptable solution to preclude tern use of the islands while allowing for the islands continued use as dredged material disposal sites.

12. A discussion on the commercial smelt fishery has been added to the final EIS.
A discussion of dredging impacts on smelt has been added to the final EIS. Dredge timing restrictions to prevent impacts to smelt would only be appropriate for construction dredging since maintenance dredging does not normally begin until after June. Restricting the construction dredging to 6 months per year (July to December) will increase construction time from two years to four years. Using a clam shell dredge during the January to June time period will increase construction from two years to three-four years because it is a slower form of dredging and requires double handling of the material. In addition, we know of no information that would lead to the conclusion that clamshell dredging would entrain fewer smelt. Each scoop with a clamshell dredge will impact both the water column and the surface of the bottom with each pass. A hopper dredge, on the other hand, has the draghead buried in the bottom during operation with only a small area surrounding it that could potential entrain smelt. Tests done on model dragheads have indicated that the entrainment area from the side is about half the width of the draghead. Consequently, it seems likely that hopper dredging would have a lesser impact on smelt than clamshell dredging and in addition would complete construction of the project in a more timely manner.

See our response #6. Dragheads only encompass a small percentage area of the navigation channel and a lesser amount of the river channel at any point in time. Therefore, it is difficult to conclude that there would be a significant impact to the smelt population.

ships drawing more than their current target drafts (page 6-2). They further indicate that results from the one study conducted on wave erosion on Puget Island could account for up to 24% of the total erosion. The COE states that "The impacts from a few larger wakes could be partially offset by the reduction in the total number of ships transiting the river." However, the deepening may further encourage expansion of port facilities resulting in an increase in vessels, not a decrease. The increased depth of the channel will increase the depth certainty for vessels allowing for increased vessel speeds. This also could increase wave action and shoreline erosion.
13. There are already substantial requests by landowners along the Columbia River for the COE to periodically provide beach nourishment to their eroding waterfront property. Increased erosion could further exacerbate that problem. The COE needs to further evaluate increased wave erosion potential resulting from channel deepening.

The COE further states that the natural shoreline of the Columbia River has been stable for the last 100 years (page 6-3). The shoreline of the Columbia River has been so severely altered through filling and diking that there is very little natural shoreline left. Buildings and other facilities have been placed outside flood control dikes and are being impacted by erosion. The COE needs to evaluate these impacts and include them in the evaluation of the overall cost of this project.

Columbia River Sediment Budget

The COE estimates that 19 million cubic yards of material would be removed for construction of the 43' channel. Upland disposal would be the major source of disposal, removing the material
14. completely from the system. However, there is no analysis of recruitment and what the removal of this material from the system will do to the overall sediment budget of the Columbia River. The COE should further evaluate these impacts and provide the results to the resource agencies prior to construction.

Willamette River Contamination

The lower Willamette River has been nominated for inclusion on the National Priorities List (NPL) also known as Superfund. The Environmental Protection Agency (EPA) has delayed a decision until May 99 on adding the site to the NPL in order to give the Oregon Department of Environmental Quality (DEQ) time to develop a remediation plan. DEQ's proposed process is
15. intended to result in an implementation plan with sufficient detail to convince EPA that DEQ can pursue an NPL-caliber cleanup without a listing. Any activities the COE would undertake to deepen the channel should not preclude clean-up efforts by either agency. This process could take many years to develop and implement. Therefore, the NMFS recommends that any further actions taken towards deepening the Willamette River be shelved until such time as the contaminant issue is resolved.

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13. Sections 5.1.5.3, 6.2.2, and 6.2.3.1 of the main report discuss ship wake size and frequency, and ship wake caused erosion. Corps regulations preclude us from including costs associated with erosion to beaches or structures built on fill outside of flood control structures on a federally authorized navigation channel.

14. Sections 5.1.5 and 6.2.3.1 of the report discuss the sediment budget and sand recruitment.

15. The local sponsors for the channel improvement project have requested that the Willamette River dredging be delayed in order to allow coordination with the Oregon DEQ investigation and remediation planning for the Portland Harbor. If the harbor is listed as an EPA-designated Superfund site, no navigational maintenance or new work dredging can be conducted in the listed area under the Clean Water Act (CWA). If the harbor is not listed, dredging for navigation channel improvements would not preclude cleanup activities but would enhance and perhaps extend the effort. The dredging in the Willamette River would require full compliance with the all laws including the CWA, Endangered Species Act, and the National Environmental Policy Act.

Ecosystem Restoration

16. The proposed improvement to embayment circulation appears to have merit, however there is no information provided as to current usage of these areas by juvenile salmonids nor on how monitoring will be conducted to determine if the actions are successful in increasing juvenile usage. The COE should develop a monitoring plan and conduct an analysis of juvenile usage of the embayments to establish baseline information to evaluate the success of the project.

17. The COE has proposed tidegate retrofits as part of ecosystem restoration (Page 4-68). The NMFS suggests that the tidegate on Chinook River be added to the proposed list. Modifying the tidegate here would allow for increased and safer passage for both adults and juveniles within the Chinook River. The NMFS does have concern over the proposed tidegate retrofit at Deep River. The WDFW is currently developing a coho net pen terminal fishery in this river. Without further information as to what species are being targeted as part of the habitat improvement, NMFS believes that the retrofit at this site needs substantial review before approval.

18. The proposed ecosystem restoration project to restore shallow water habitat areas around Miller Sands and Pillar Rock Islands, which at first glance appears beneficial to juvenile salmonids, could actually result in increased losses of juvenile salmonids. The placement of pile dike fields necessary to sustain the habitat will result in an increase in avian predator usage of the area. The potential for increased bird predation on juvenile salmonids resulting from these activities outweighs any potential benefit that could be provided. The NMFS does not support the placement of any pile dike fields in the Columbia River estuary, especially in the area around Miller Sands and Rice Island. The approximately 3 million dollars proposed to be spent for this project would be better spent on other activities. The NMFS is willing to aid in identification of some of these potential activities.

The COE proposes that the actions be adopted given their "contribution to recovery" of ESA listed or proposed species. Of the three actions only the tidegate retrofits would directly aid salmonids. The Shillapoo Lake project will not benefit anadromous fish stocks and would have to be carefully designed to not impact salmonids within Lake River. The other two projects are, or may be, detrimental to salmonids. Consequently, the contribution to recovery of upriver salmonid stocks may be at best minimal. The retrofits of tidegates would be of benefit to lower river stocks.

In summary, the NMFS believes that the COE should undertake the following recommendations as part of any deepening of the Columbia River Navigation Channel:

19. • The COE should further work with the resource agencies and commercial fishermen to refine the proposed disposal sites.

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16. We have made preliminary inquiries with NMFS to determine approximate costs for monitoring juvenile salmonid use of these embayments for the pre- and post-construction condition. The initial estimate exceeded $100,000 which is far in excess of the construction cost for the simple channels proposed at these two locations. It is not cost efficient to implement a monitoring study nor does it seem necessary when, intuitively, the proposed action would benefit juvenile out-migrants. No monitoring effort will occur.

17. Portland District has received a letter dated April 14, 1999 from Sea Resources, Inc. requesting a Section 1135 (environmental restoration) study of the Chinook River restoration. The proposed study would entail removal or modification of the tidegate, if warranted. We have received Section 1135 funds for an initial appraisal study to determine if there is a federal interest in this potential project.

Additional information on Deep River fisheries resources benefiting from this tide gate action and the engineering aspect of this proposed action would be developed during the PED phase. The Corps finds it somewhat perplexing that NMFS would favor a commercial operation over the recovery of salmonid resources. The Deep River system upstream of the tidegates appears capable of supporting coho and winter steelhead. Spawning and rearing habitat appears available in this system for restored runs.

18. The Miller-Pillar ecosystem restoration proposal has been dropped from further consideration.

19. Concur with comment.

20. • The COE should work with the resource agencies and commercial fishermen to develop and utilize appropriate methodology for dumping within the newly designated sites prior to any further disposal events.

21. • The COE should review the final offshore disposal management plan at least every five years and yearly for the first five years to adequately address the success or failure of the plan.

22. • The COE should conduct a comprehensive survey of the proposed offshore disposal sites to identify areas that are of high biological productivity, of unique substrate/habitat and to establish a baseline for evaluation of impacts.

23. • The COE should work with the resource agencies and commercial fishermen to develop mitigation for impacts resulting from offshore disposal.

24.
- The COE should work with the resource agencies to develop mitigation for impacts resulting from riverine in-water disposal.
- The COE should conduct studies to determine rates of benthic recolonization in deep water areas within the Columbia River.
- The COE should work with the resource agencies to evaluate the impact to sturgeon from flow-lane disposal.
- The COE should evaluate impacts to Pacific sand lance populations resulting from estuarine dredging.
- The COE should work with the resource agencies to develop appropriate mitigation for impacts to crabs and fish species entrained by dredging operations in the estuary.

25. • The COE should engage in further discussions with NMFS to determine how best to dispose of materials on islands within the estuary and what measures need to be taken to mitigate for past and future use of the islands.

26.
- The COE should conduct dredging operations using only a clamshell dredge form January 1 to June 1 of any year downstream of the mouth of the Sandy River.
- The COE should consider the potential for Columbia River smelt to be listed under the ESA and adjust their construction techniques and time lines accordingly.

27. • The COE should further evaluate increased wave erosion potential resulting from channel deepening.

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20. Concur with comment.

21. Disposal operations are reviewed every year, monitoring is conducted yearly, and the management plan must be reviewed every 10 years at a minimum.

22. A baseline survey already exists for the proposed disposal sites; a pre- and post-assessment survey will be conducted. The extent of data collection for the assessment surveys will be discussed with the Ocean Disposal Taskforce. Input from this group will be used by EPA and the Corps in deciding on funding and scope for the assessment surveys.

23. Impacts to the resources have been minimized by reducing the size of the sites and locating them in areas that have acceptable impacts to the commercial fishery.

24. See our responses #6, #8, and #9.

25. Through ESA consultation, currently ongoing, the Corps will reach an agreement with NMFS regarding further disposal of dredged material on these islands. This agreement will include an acceptable solution to preclude tern use of the islands while allowing for the islands continued use as dredged material disposal sites. No mitigation for past or future impacts is proposed. Management actions have been implemented to shift the tern population and reduce their predation on juvenile salmonids.

26. See our response #12 concerning smelt impacts. In the event that Columbia river smelt is listed under the Endangered Species Act, we will consult with NMFS on any action that has the potential to impact them.

27. Sections 5.1.5.3, 6.2.2, and 6.2.3.1 of the main report discuss ship wake size and frequency, and ship wake caused erosion.

28.
- The COE should shelve consideration of deepening the Willamette River until such time as the contaminant issues are resolved.

29.
- The COE should develop a monitoring plan and conduct an analysis of juvenile usage of the embayments to establish baseline information to evaluate the success of the restoration project.
- The COE should add the tidegate on the Chinook River to the list of ecosystem restoration projects.
- The COE should further discuss the value of the tidegate on Deep River as a potential restoration project.
- The COE should further discuss the value of creation of shallow water habitat near Pillar Rock with NMFS.

30.
The COE will need to consult pursuant to the Endangered Species Act, with NMFS on the final alternative selected. The Biological Assessment will need to address potential impacts to Snake River fall chinook salmon, Snake River spring/summer chinook salmon, Snake River sockeye salmon, Upper Columbia River steelhead, Lower Columbia River steelhead and Snake River steelhead, all listed under the Endangered Species Act. Also Lower Columbia River chinook salmon, Upper Willamette River chinook salmon, Upper Columbia River spring run chinook salmon, Columbia River chum salmon, Upper Willamette River steelhead and Middle Columbia River steelhead have been proposed for listing and should be included in the Biological Assessment.

The following should also be included in the Biological Assessment: an evaluation of the continued use of Rice Island as a dredge spoil site, its use as an avian breeding colony and impacts to salmonids; and, the impact of current pile dike fields and navigation structures on salmonids.

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28. See our previous response #15. The Corps has and will continue to participate in EPA's and ODEQ's efforts to clean up the Willamette River.

29. See our previous responses #16, #17, and #18.

30. These issues have been addressed in the Biological Assessment for the channel improvement project. Further discussions regarding the Biological Opinion are ongoing.

Questions regarding this letter should be directed to Ben Meyer at (503) 230-5425.

Sincerely,

Ben Meyer

for Steven Morris, PhD.
Chief, Oregon State Branch
for Habitat Conservation

cc: USFWS - Kathi Larson
ODFW - Greg Robarts
WDFW -Ken Mahoric
Perkins Coie LLP - John Dentler
Northwest Environmental Advocates - Susan Crisfield
Dale Beasley

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United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
500 NE Multnomah Street, Suite 356
Portland, Oregon 97232-2036

IN REPLY REFER TO:

ER 98/699 February 8, 1999

Col. Robert T. Slusar, District Engineer
US Army Corps of Engineer District, Portland
Attn: CENWP-EC-E
P.O. Box 2946
Portland OR 97208-2946

Dear Col. Slusar:

The Department of the Interior (Department) has reviewed the Draft Environmental Impact Statement (DEIS) for the Columbia and Lower Willamette River Federal Navigation Project, Oregon and Washington. The following comments are provided for your information and use when preparing the Final Environmental Impact Statement (FEIS).

We have reviewed the subject document and have the following comments to offer for inclusion in the Departmental response.

General Comments:

1. The proposed Columbia and Willamette River channel deepening is very broad in its scope and quite complicated in terms of its alternatives array, its proposed implementation, its impacts to fish and wildlife resources, and in its mitigation requirements. The Corps of Engineers (Corps) has done an admiral job in drafting this document which is well written, detailed, and thorough. The salinity intrusion and ecosystem restoration workshops; candidate offshore disposal site selection process, dredged disposal studies on crabs and juvenile flatfish; and Habitat Evaluation Procedures (HEP) analysis conducted as part of the feasibility study required a significant effort on the part of the Corps and the study participants. This effort has resulted in a much better understanding of the proposed project's overall impacts on the Columbia and Willamette River environments.

2. The Service appreciates the emphasis given to consideration and discussion of alternatives in the EIS other than the typical "no action" and preferred alternative. However, we believe there is justification for a more thorough analysis of the upgrading of the LOADMAX system, i.e., the non-structural alternative. The EIS acknowledges that improving the efficiency of LOADMAX would accommodate larger, deep-draft ships safely. As a non-structural alternative, it would cause the least damage to fish and wildlife species and their habitats. It does not provide for the

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1. Comments noted.

2. The Loadmax river stage reporting and forecasting system has provided safety and transportation benefits to Columbia River shipping for the past 15 years. Loadmax forecasts are provided by the Port of Portland as a navigation planning tool for use by the shipping industry. The Loadmax forecast is based on data collected at gauging stations at several locations between Astoria and Vancouver. The forecast is generated by the National Weather Service (NWS) Northwest River Forecast Center (NWRFC), a branch of the National Oceanic and Atmospheric Administration.

Continuous improvement of Loadmax is an important priority for the ports, river and bar pilots, the NWRFC, and steamship line customers that utilize the projected and real-time tide and river-stage information system. Over the last two years, and as part of a national modernization effort, the NWRFC has made significant improvements to its hydrologic modeling that underlie the Loadmax system. These include expansion of the geographic boundary of the Dynamic Wave Operations Model that is used to forecast river stage, updating the dynamic wave calculations, adding new channel cross sections and recalibrating the model with the benefit of the data from extreme high water conditions in 1996 and 1997.

At the same time, the NWRFC has implemented advanced technology in weather forecasting which is a key component of Columbia River flows. Several automatic adjustment procedures have also been installed to remove biases between predicted and actual tides and model biases at each forecast location. Taken together, these changes have enhanced the accuracy of the river forecasts under all flow conditions. Also, the Port of Portland has installed technology at its river gauges to allow the pilots to call ahead from the vessel's bridge to obtain real-time river level information. The Port has also improved and automated the electronic delivery of the forecast data to the commercial users and research institutions that utilize the information on a regular basis. Currently, the real-time river level data collected from the Port's Loadmax gauges is reported on the NWRFC's web site at http://www.nwrfc.noaa.gov/data/streamflow/nwrfc/lc.html. Forecast information will be presented on the NWRFC's web site in the future. This improvement will provide a graphical representation of the forecasts, increase confidence level in the predictions, and provide public access to the data.

The uncertainties are due to the significant influences of Bonneville releases, tidal variations, and changes in the meteorological conditions that affect streamflow forecast. The NWRFC estimates that the current accuracy of the Loadmax forecast is 0.3 to 0.4 feet for the first 24 hours, increasing to 1.0 to 1.4 feet for the 6th day (the current forecast limit). These factors cannot be predicted or controlled far enough in advance to provide an extended forecast of greater utility to river users beyond the historical flow information already available through Corps and USGS sources.

However, maintaining safe underkeel clearance while maximizing draft requires knowledge and understanding of both water surface and riverbed conditions to predict the total depth of water available at any point in the navigation channel. The benefit of Loadmax as a navigation tool can still be enhanced if it provided controlling riverbed elevations along with the predicted river levels. Such data would provide the vessel operator with additional information to make a departure decision for a Columbia River transit, possibly allowing the ship to time a departure to avoid a shoal, load deeper and maintain safe underkeel clearance.

greatest amount of economic development but it does provide for some economic expansion without the need to deepen the channel. Another advantage of this alternative is that if it is judged infeasible to be used on its own to achieve expanded economic growth within the region, it could be readily used in combination with another, less damaging, alternative like a tiered channel
2. (con't) or a 41-foot channel. These options allow for more economic grow than just the upgraded LOADMAX system but, again, with far less impact to the environment and a lower economic cost. We recommend that these lower cost options be given a much more serious analysis. Additionally, these alternatives would be more compatible with numerous ongoing efforts in the Region to restore ecosystem health to the Columbia River and its resources, including anadromous fish.

Willamette River Dredging

The Service has serious concerns regarding dredging in the Willamette River. Although most of the dredging would take place in areas of the channel where the sediment has been characterized as appropriate for in water disposal, there are other areas that may potentially be dredged that have been defined as significantly contaminated. Disturbance of these areas must be avoided. We
3. still leave concerns about bioaccumulative impacts associated with the in water disposal of material which meets screening criteria, particularly that material which is just under the screening threshold. Based on these concerns, the Service recommends further study in the Willamette River on the impacts of dredging and disposal of contaminated materials. If the contaminant issues in the Willamette River cannot be satisfactorily resolved, it may be necessary to consider dropping the Willamette River portion of the channel deepening project.

Contaminants in Sediments

Numerous studies conducted by the U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, U.S. Geological Survey, and natural resource agencies in Oregon and Washington reveal contamination of persistent, toxic, and bioaccumulative compounds in fish and wildlife in the lower Willamette and Columbia Rivers. Studies have shown elevated concentrations of PCBs, DDE, dioxin, and furans in fish, waterbird, and in fish-eating animals such as great blue herons, minks, river otters, double-crested cormorants, ospreys, and bald eagles. Current studies are evaluating these contaminants in fish, river otters, ospreys, and semi-permeable membrane devices (SPMDs) from both rivers. The elevated concentrations of these chemicals in fish and wildlife suggests that either: 1) toxicity screening levels used to assess materials to be dredged do not adequately represent conditions in the Columbia River and are not protective of fish and wildlife; or 2) tropic transfer of these contaminants occurs primarily through the aqueous phase and the contaminants are not necessarily influenced by dredging activities.
4.
Sediments are commonly the major source of hydrophobic contaminants for biota (Maruya and Lee 1998, Thomann 1989, Forbes et al. 1998) and should be considered a plausible transfer pathway in the lower Willamette and Columbia rivers. Data from the draft EIS suggest that sediment from the lower Willamette River, as opposed to the navigation channel for the Columbia River, could be a source for transfer and subsequent bioaccumulation of contaminants in biota. In order to address this complex issue, the Service recommends the Corp add specific information or

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2 (continued). The port sponsors agree that bathymetric survey information should be presented with the Loadmax river forecast in a user-friendly manner. Such improvement will add to the safety of navigation and may assist in marginally increasing departure drafts in the Willamette and Columbia Rivers under certain conditions. The Corps has recently made its hyrdrographic surveys available in an electronic format at http://www.nwp.usace.army.mil/op/n/wh/). The port sponsors are eager to work with all the stakeholders on the design of such a new format for the forecasts.

However, even with the improvements envisioned by the Corps, the non-structural alternative described in the feasibility report does not provide sufficient potential for transportation benefits in order to be carried forward as an alternative to deepening the navigation channel. While factoring in riverbed information and improving the public presentation of Loadmax data would add to its usefulness to the marine industry, the resulting increases in both safety and maximum drafts are marginal, seasonal, and will not serve as an alternative to deepening the channel from the perspective of the deep-draft navigation users. However, they will certainly serve to maximize the benefits under any and all of the channel depths considered in this study.

This will be especially important to the container industry and its customers. Continuing the current operating practices in the proposed 43-foot channel would restrict container ships to a maximum draft of 39 feet (38 feet saltwater draft) at a time when the saltwater design drafts of newer container ships are moving toward 45 feet. A continually improved Loadmax system will afford transportation cost benefits even to these vessels from a 43-foot channel depth. With these technological improvements, the Loadmax system, among the most sophisticated of its kind in the world today, will continue to provide marine transportation benefits in the 21st century.

3. See our responses # 15 and #28 to the NMFS letter.

4. Regarding screening levels; the screening levels adopted by the states of Washington and Oregon, the Corps, and USEPA in the November 1998, *Lower Columbia River Management Area Dredged Material Evaluation Framework* (DMEF), are based upon the direct results of effects-based testing. Hundreds of pared chemical and biological tests are required to develop these values. In some cases thousands of pared tests are behind the development. These values are continually being reviewed and updated based upon new data being incorporated into the database. The DMEF tiered approach is a risk-based system for the evaluation of environmental and ecological risk of the disposal of dredged material. Sediments that demonstrate risk through biological (including bioaccumulation) testing are not allowed to be placed in open-water.

A third suggestion for elevated concentrations of the chemicals found in fish and wildlife are that contaminated sediment exist in the system which exceed screening levels. The recent EPA-DEQ Willamette River study found surface sediments with concentrations of 20,000 ppb DDT. The highest in the proposed areas to be dredged for the project was 23 ppb total DDT, the DMEF screening level is 6.9 ppb total DDT. The DDT bioaccumulation trigger for sediments is 50 ppb.

a preliminary ecological risk assessment to the EIS, to define the conditions in the two rivers that would either support or negate sediments as the source for transfer of bioaccumulative compounds. In addition, we recommend convening a forum with the Service, U.S. Geological Survey, State agencies, and other interested parties to begin an ecological assessment addressing the risks of dredging activities to higher tropic level feeders in the lower Willamette River, and to develop a monitoring plan to identify any impacts to biota during and after dredging and disposal activities.

HEP Process

Late in the HEP process conducted by the Corps and state and federal resource agencies, it was discovered that there were discrepancies in how habitat suitability indices (HSIs) were determined for some disposal and mitigation sites, for both with and without project scenarios. Unfortunately, these misinterpretations made some of the HEP data unreliable and, by inference, the habitat units calculated to be lost and gained over the life of the project inaccurate. The issue of greatest concern is the HSIs for farmed wetlands and riparian habitat.

Despite these inconsistencies, the Service believes that the HEP analysis has provided valuable information on the amount and types of habitat and the species that would be most impacted by the project. Furthermore, we believe that these discrepancies in HSI values may be balanced out by the Corps' conservative estimates of habitat recovery, i.e., in all probability, recovery would occur at a faster rate than predicted by the Corps, thus providing benefits to impacted species at
5. an earlier stage of the mitigation process. However, because of these inaccuracies in HSIs, the mitigation analysis remains suspect and the appropriateness of the project mitigation plan (Appendix G) cannot be accurately determined. Additional HEP team meetings were held to discuss how to resolve this problem. As a result of these meetings, the WDFW, WDOE, ODFW, and the Service have identified two possible options that would prevent untimely delay of the project, keep the planning process moving forward, and, at the same time, offer suitable protection of fish and wildlife resources:

Option 1. Complete the BEP analysis by collecting data to represent all habitat types and re-analyze current and future conditions based on changes in individual habitat parameters. This re-analysis could be completed during the preconstruction engineering and design (PED) phase of the project.

Option 2. Without the ability to quantify impacts and mitigation needs, it becomes necessary to look at the probable impacts of dredged material disposal and opt for a mitigation plan that provides full mitigation for these impacts. Based on the upland wildlife resource impacts expected, the Service recommends a mitigation plan that includes the addition of Burke Island and, as needed, Sauvie, Joslin, and Woodland Bottoms (or a mix of equivalent sites approved by the HEP team) to the list of mitigation sites proposed for each of the disposal plan options.

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4 (continued). Even if the Willamette River deepening were not deferred, the preliminary ecological risk assessment suggested would be beyond the scope of the proposed project. Such an assessment needs to address the entire lower Willamette River and not just be limited to the dredging projects that are limited in material and time. Most of the material routinely dredged is material transported into the system and are not as contaminated as other areas in the river.

5. The Corps proposes to implement Option 1: Complete the HEP analysis by collecting data to represent all habitat types and reanalyze current and future conditions based on changes in individual habitat parameters. This re-analysis would be completed during the preconstruction, engineering and design (PED) phase of the project. Please see the addendum prepared for the wildlife mitigation plan (Appendix G) for further information.

Offshore Disposal

Candidate offshore disposal sites, i.e., expanded site E, site North, and site South, have been selected by the Corps to accommodate present and future dredged material disposal from the mouth of the Columbia River (MCR) and from the proposed channel deepening project (new construction and maintenance dredging material). The Service is in general agreement with the selection of these sites. We believe that they are the most practical based on the Corps' need for additional disposal areas and the need (from the Service's perspective) to select disposal areas that minimize impacts to fish and wildlife resources.

The candidate offshore disposal site selection process occurred over a period of many months and attempted to garner as much input as possible from resource agencies, fishing groups, and the general public on what areas would be acceptable in terms of impacts to biological resources as well as economic use of those resources. Bearing in mind that the final decision on disposal sites rests with the EPA, but, also acknowledging that this decision would necessarily require compromise, the selection of candidate sites for disposal appears reasonable. These candidate sites are located in areas of high energy (decreasing chances for mounding), within the littoral transport zone (increasing the probability for beach nourishment), outside tow lanes, and in areas of low benthic productivity. The configuration of these sites also attempts to avoid areas of high crab concentrations, fish rearing, and fisheries use.

6. The candidate sites do cover a large area but this is to provide for the opportunity to dispose of material without causing mounding or permanent losses of habitats and organisms occasioned by disposal in the same area year after year. A portion of the proposed disposal site South does contain an area mapped as having high importance for Oregon crab fishing. To mitigate for possible detrimental impacts to the Oregon crab fishery, this area could be eliminated from the disposal site or it could be designated as a site which would only be used when crab fishing activity was minimal.

As far as impacts to soft-shell and hard-shell crabs are concerned, the Corps' study indicates that most crabs survive if they move into the water column during disposal. Experiments with adult hard-shell crabs in aquarium tanks showed that this avoidance behavior is what occurred under most disposal conditions. Most young-of-the year (0+) and juvenile (1+) soft-shell crabs also moved (or were floated) into the water column upon disposal and survived. Mortality was more severe for soft-shell adult crabs which were buried by 6-10 inches of sand under worst-case disposal conditions. Most of these crabs failed to dig themselves out after disposal and died. However, experiments on this subset of crabs involved the fewest numbers of crabs and the fewest number of replicate tests. Also, these larger adult crabs were confined spatially in buckets rather than in an aquarium (as occurred with tests on adult hard-shell crabs). It may be that the adult soft-shell crabs were not afforded the same opportunity to escape the disposal conditions as the adult hard-shell crabs. We would recommend that these experiments on adult and juvenile soft-shell crabs be continued using aquarium tanks to determine if survival changes under these more natural conditions. The data from such an extended study would be more statistically valid and would provide information needed to finalize selection of new offshore disposal sites.

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6. Comments noted. See our response #3 to the NMFS letter. The EPA and Corps have agreed to convene a taskforce to provide input on management and monitoring of the ocean dredged material disposal sites. Pre- and post-assessment surveys may include additional tests on soft shell crabs.

6.(con't) Several studies relating to sturgeon impacts, ecological risk assessment, and, possibly, a modified HEP are being recommended by the Service for areas in the Columbia and/or Willamette River prior to project initiation. When a selected alternative is chosen for the final EIS, it may be necessary to reevaluate this alternative in light of the results of these studies before a final judgement can be made by the Service regarding impacts of the project. Therefore, the Service reserves the right to provide comments and recommendations regarding impacts of the selected alternative and appropriate mitigation for such impacts in a supplementary Coordination Act Report.

Specific Comments:

7. Page 2, Executive Summary, last paragraph. The reference to in water disposal of 2.5 million cubic yards (mcy) of dredged material between Columbia river miles (CRM) 27 and 42 during construction should indicate whether this figure includes maintenance (O&M) dredging from the 40-foot channel. The 2.5 mcy figure does not match construction figures referred to later in the EIS of only 2.0 mcy for the entire Columbia River (page 4-36).

Page 3, Executive Summary, first paragraph. The statement that in water disposal could raise 400 acres of riverbed in and around the disposal areas by as much as 20 feet should be clarified. It is not clear whether the area effected is only between CRM 27-42 or spread out over all the in water/flowlane disposal sites. The Service has concerns about this potential cumulative impact, especially if it is confined primarily to the estuary.

8. Page 4, Executive Summary, fifth paragraph. Land use, particularly at port-owned disposal sites, would, in many cases, change from agricultural/open space to industrial development.

9. Page 2-5, Section 2.3.1, Traffic Volume, first paragraph. It would be helpful if the traffic volume data were updated in the final EIS with the most recent data available. This would provide further clarification of channel deepening needs.

10. Page 2-15, Section 2.5.1, Water and Sediment Quality, third paragraph. This section should indicate how many samples from outside the channel were sampled so it is clear to the reviewer how many of the total number of samples were found to exceed the screening standards for unconfined in water disposal.

11. Page 2-16, Section 2.5.2, Aquatic Resources, second paragraph. Distribution of benthic and epibenthic organisms is also related to the amount of available food in an area.

Page 2-16, Section 2.5.2, Aquatic Resources, fourth paragraph. The squaw fish is now more commonly referenced as pikeminnow.

12. Page 3-2, Section 3.2.1, Containers, second paragraph. The average annual rate of increase for container traffic should be updated for the final EIS, using the latest year that data are available. Export projections should be similarly updated.

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7. In-water disposal could occur at numerous locations in the reach between river miles 27 and 42. This reach has been used in the past for in-water disposal during maintenance dredging. The 2.5 mcy of construction disposal is a one-time action that is much larger than the annual O&M disposal in this reach. The 12 mcy of O&M equates to an average of 600,000 cy/yr, which is only a one third increase over the 1990-96 O&M average of nearly 450,000 cy/yr. Nearly half of the proposed in-water disposal in this reach would occur between CRMs 29 and 32 with the remainder spread throughout the reach. The actual change in bed elevations that occur will depend on factors such as the total area used for disposal, the volumes disposed, and the amount of material transported away from the sites. If the 14.5 mcy of disposal were concentrated on 400 acres and no material was transported away, the bed elevation would be raised by about 20 feet. This depth of fill is only likely to occur between CRMs 29 and 32 as the flowlane disposal can be moved around to avoid large changes in bed elevations.

8. Gateway 3 is the only port-owned site that contains agricultural lands not previously used for disposal purposes, and is zoned for industrial development. Martin Bar is used for cattle but is a previously used disposal site. Currently five sites with agricultural lands and not in Port ownership are proposed for dredged material disposal. Site W-96.9 lies adjacent to the Fazio Sand and Gravel operation and may probably be used as a borrow site in the future. The Mt. Solo (W-62.0) location is zoned for industrial development. Of the remaining locations, Scappoose Dairy and W-95.7 have been dropped from the recommended disposal plan; Puget Island is far from urban/industrial areas and would be an unlikely location for industrial development. The disposal sites are generally required for the long-term as disposal locations.

9. Comment noted.

10. The Bi-State sampled 54 stations during the 1991 Reconnaissance Study and 15 stations as part of the Backwater Study in 1993. Only two stations were located in the federal channel both in the lower estuary.

11. Concur. Text has been revised.

12. The FEIS and Appendix C have been updated using 1997 and 1998 export data.

13. Page 4-12, Section 4.4.3.2, Maintenance Dredging Forecast, second paragraph. This paragraph should indicate whether the maintenance dredging figure for years 21-50 includes totals from both the Columbia and Willamette Rivers.

Page 4-36, Ocean Disposal. The figures regarding ocean disposal of O&M materials over 20 years for both the 43 -foot channel and MCR needs to be clarified.

14. Page 4-48, Section 4.5.1.1, Physical Impacts, first paragraph. Increased ship traffic associated with the deepened channel would increase the likelihood of erosion impacts from ship wake.

15. Page 4-49, Section 4.5.1.2, Biological Impacts, first paragraph. The habitat at depths greater than 35 feet may not be as productive as at shallower depths, but it is important to sturgeon and other deepwater fish, particularly in the estuary.

16. Page 4-49, Section 4.5.1.2, Biological Impacts, first paragraph. This paragraph states that the channel deepening would have no adverse impact on threatened or endangered species. This statement seems premature given that the Corps is still in consultation with the Fish and Wildlife Service regarding project impacts to listed species, particularly in the Willamette River, where there is concern that dredging and in water disposal of dredged material could have bioaccumulative contaminant impacts on aquatic resources, and, consequently, on some threatened and endangered species. Clarification of these biological consultation issues should be included in this section. The dredging activity and in water disposal of material contaminated with PCBs and DDE, as well as other chemicals, would be contributing additional toxins to an area that is already classified as "Water Quality Limited" under the Clean Water Act. Fish and wildlife in these areas already carry loads of bioaccumulative contaminants which could be detrimental to some species. Specific information should be added or studies should be referenced to support the Corp's contention that bioaccumulation will not occur after material is dredged and disposed of in the manner proposed.

17. Page 4-58, Section 4.6.1, Turning Basins. This section should provide information on any shallow water habitat, fines, or previously undredged areas that may be associated with those turning basins that will need to be dredged. This information is particularly important for the proposed deepening of turning basins in the Willamette River.

18. Page 4-64, Section 4.8, Ecosystem Restoration Plan, second paragraph, last line. This sentence needs to be completed.

19. Page 4-69, Section 4.8.3, Improved Embayment Circulation, first paragraph. It should be noted here that, at least in the initial phases of restoring flows through the embayments, there is the possibility of some increased predation on juvenile salmonids by warm water fish inhabiting these areas. This would occur until an equilibrium in terms of flow and colder water temperatures is established.

20. Page 4-70, Section 4.8.4, Restore Shallow Water Habitat, second paragraph. Recent studies in the estuary (Lyons personal communication) have indicated that cormorants, terns, and other

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13. Report text for the maintenance dredging forecast and ocean disposal has been clarified.

14. Sections 5.1.5.3, 6.2.2, and 6.2.3.1 discuss ship wake caused erosion.

15. Concur. The importance of deep water habitat to sturgeon is discussed in the EIS. We are unaware of other deep water fish in the river or estuary that would find this habitat important.

16. The referenced text will be modified as follows. "The Corps forwarded a biological assessment (BA) to the U.S. Fish and Wildlife Service on September 24, 1998. The BA and the Service response letters are found in Appendix I. Exhibit D of the BA provides a tabular reference for Corps determinations for 12 species at 46 disposal sites, 4 ecosystem restoration locations, and 5 mitigation sites. A total of 660 determinations were made for the proposed actions within the overall project (602-'no effect;' 39-'may affect but not likely to adversely affect;' 3-'may adversely affect;' and 16-'may beneficially affect'). The Service, in their letter of October 26, 1998, stated their concern that resuspension of contaminated sediments from the Willamette River is likely to adversely affect peregrine falcons. Subsequently, the Corps has proposed to seek authorization for CRCIP construction but delay implementation of the Willamette River portion of the channel improvement efforts until the contaminated sediments issue is resolved. This allows all interested parties to address contaminated sediment concerns, including the Service's concern over Willamette River sediments."

17. The FEIS has been revised to reflect additional information on turning basins and to include sediment analysis of berthing areas which could be deepened. The local sponsor has requested that dredging of the Willamette River be delayed in order to allow coordination with the ODEQ investigation and remediation planning for the Portland Harbor. No further Corps studies of Willamette River sediments are anticipated prior to completion of the remediation plan. Further sediment quality evaluations will be required and conducted prior to any dredging and disposal activities. The Corps has and will continue to participate in EPA's and ODEQ's efforts to clean up the Willamette River.

18. The completed sentence, as follows, has been incorporated into the FEIS. "This awareness, in conjunction with the knowledge that ecosystem restoration measures can be easily coupled with an ongoing feasibility study prompted the Corps and local sponsors to incorporate ecosystem restoration into the feasibility effort."

19. The opportune time to construct channels through the old disposal sites which close off these embayments would be in September/October during low flow periods in the Columbia River. This also corresponds to a low abundance of out-migrants in the river. Consequently, any adjustments in embayment water temperatures and flow should occur by the beginning of the next out-migrant period.

20. (con't) piscivorous birds frequently use pile dikes as roosting and foraging sites. Therefore, pile dikes may be contributing to increased foraging opportunities on juvenile salmonids in the estuary, with possibly significant impacts on salmonid mortality. Because of these possible predation impacts associated with pile dike fields, this restoration project should be re-examined. It may be possible to construct the pile dikes using methods that would discourage use of the pilings by cormorants. Pointed, metal caps (cones), wires, or spikes could be placed on top of the pilings to make them inhospitable to bird use.

21. Page 6-9, Section 6.2.5.1, In water Disposal, second paragraph. There is a discrepancy between the 2.5 mcy listed for in water disposal during construction in the area between CRM 27 and 42 and the 2.0 mcy figure that represents the total amount of disposal in the Columbia River during construction. These figures need to be reconciled. In addition, impacts on benthic organisms, sturgeon, and other deepwater fish from disposing in deepwater areas and raising the bottom by 20 feet need to be thoroughly examined and explained.

22. Page 6-11, Section 6.4.1, Navigation Channel, second paragraph. There is a need for discussion of bioaccumulative impacts associated with dredging and disposal of contaminated sediments, even of sediments meeting screening criteria. Data from previous studies have shown elevated concentrations of PCBs, DDE, dioxin, and furans in great blue herons and their prey in the lower Willamette River, and in fish, river otters, bald eagles, double-crested cormorants and other wildlife in the lower Columbia River. Specific evidence is needed in this section or in Section 4.5.1.2 (Biological Impacts) to support the contention that the activity of dredging and disposal of materials with any detectable concentrations of lipophilic contaminants will not bioaccumulate in these biota.

Page 6-11, Section 6.4.1, Navigation Channel, third paragraph, last line. The Service disagrees with the statement that, overall, the "sediment quality impact to the Willamette River would be beneficial, by removal and isolation of contaminated sediments . . ." This section should discuss the possibility of resuspending contaminants during dredging and creating a negative impact to the river system. We understand that regulations apply to the disposal activity and not the dredging activity. However, biological organisms will respond to the dredging activity and could be harmed by resuspension of contaminants. The impacts on biota should be evaluated in an ecological risk assessment prior to dredging contaminated sediments, and a monitoring plan should be developed to sample and evaluate biota during the dredging operation.

23. Page 6-13, Section 6.5.3, 41-foot, 42-foot, and 43-foot Channel Deepening Alternatives, first paragraph. Additional information should be listed regarding the presence of disulfoton. This is an organophosphorus pesticide and could be extremely harmful to aquatic organisms (especially salmonids) if it is present in the sediment and is disturbed by dredging. The concentrations and location of this chemical should be identified in this section, as well as a description of how the substance will be handled if dredged.

24. Page 6-13, Section 6.5.4, Least Cost and Sponsor Disposal Alternatives, first paragraph. The number of disposal sites should be changed to 31.

Corps of Engineers Response

20. The ecosystem restoration project at Miller-Pillar has been dropped from further consideration.

21. See response #5 to the NMFS letter. Additional information on the impact to sturgeon by flowlane disposal has been added to the FEIS.

22. See our response #17.

23. Disulfoton is not on the list of chemicals for which routine dredged material chemical analyses are conducted. The draft DEQ Portland Harbor Sediment Management Plan, dated April 19, 1999 does not list this chemical in their list of chemicals of interest in the Willamette River. The chemical could be added to any dredged material analyses if a "reason to believe" is established that the chemical is likely to be present.

24. Disposal site information has been revised in the FEIS.

25. Page 6-18, Section 6.6.1.3, 41 -foot, 42-foot, and 43-foot Channel Deepening Alternatives, first paragraph. The issue of possible contaminants in sediments deeper than -40 feet (actually deeper than –45 feet with overdraft included) needs to be discussed here. This is particularly important for the Willamette River. Any sediment testing done by the Corps in the deeper levels of the channel (below –45 feet) should be included in this section.

26. Page 6-19, Section 6.6.1.3, 41-foot, 42-foot, and 43-foot Channel Deepening Alternatives, second paragraph. Larval and juvenile smelt would be particularly susceptible to entrainment by pipeline dredges and, to a lesser extent, by hopper dredges. Since smelt populations have been declining in recent years, additional losses due to dredging must be avoided or minimized as much as possible. Seasonally restricted clamshell dredging in areas of the Columbia River where smelt larvae and juveniles are known to be present would help to reduce detrimental impacts to this species.

27. Page 6-22, Dredged Material Disposal, fourth paragraph. According to previously stated figures, flowlane disposal would generally occur in depths of 45-65 feet, not 50-65 feet as discussed in this section. Disposal at depths greater than 65 feet may have negative impacts on sturgeon populations, particularly juvenile sturgeon, since they use the deepwater areas of the river to feed and rear. Since flowlane disposal would occur at many sites along the river, including some sites over 65 feet in depth, the long-term impacts could be significant. The Service believes a study is needed to determine the impacts of flowlane disposal on sturgeon and sturgeon habitat, particularly in those areas of the river where the bottom would be raised by 20 feet over 20 years.

28. Page 6-27, Section 6.6.2.5, Least Cost Alternatives, 0- 105.0, West Hayden Island. This paragraph indicates that the West Hayden Island disposal site would be impacted by Port of Portland disposal actions prior to project implementation. This statement is true only if Hayden Island development as a port industrial site is approved.

29. Page 6-29, Section 6.6.2.5, Least Cost Disposal Alternative, 0-77.0, Lower Deer Island. Bald eagles may forage in the vicinity of this disposal site, i.e., there are several bald eagle nests located at sites on both sides of the river near Deer Island.

30. Page 6-37, Section 6.7.1, Aquatic Species, second paragraph. Flowlane disposal could also take place in shallower areas along the channel margins in some areas. This could have an impact on migrating juvenile salmonids which are known to use the channel margins.

31. Page 6-40, Section 6.7.2, Wildlife Species, second paragraph. The new candidate sites for offshore disposal include areas within the near shore littoral zone. Disposal of those sediments that meet contaminant screening criteria may still have bioaccumulative effects on prey species of marbled murrelets located in the near shore feeding areas. The possibility of impacting the long term health of murrelets should be evaluated and discussed.

32. Page 6-43, Section 6.8.1, Economic Impacts, first paragraph. The statement that the dredging and disposal "alternatives are not expected to. . . result in a shift in the type or size of vessels on the river" is confusing in light of the fact that the supposed goal of the deepening project is to

Corps of Engineers Response

25. In areas where the exposed sediment is anticipated to be contaminated above the *in situ* sediment, a sample from the first foot below the dredging overdepth is collected and archived. This will allow possible future analysis to evaluate chemical concentrations in the newly exposed sediment if necessary (November 1998 Lower Columbia River Management Area Dredged Material Evaluation Framework, Chapter 7). The present study conducted only physical analyses on these lower samples. A "Z" in the sample designation (i.e. WR-GC-35Z) identifies these samples.

26. See response #12 to the National Marine Fisheries Service letter.

27. See response #5 to the National Marine Fisheries Service letter.

28. Disposal site O-105.0 is an existing upland disposal site used frequently for disposal of dredged material by the Corps. The 102-acre footprint envisioned for use as a dredged material disposal site will have been impacted by on-going disposal activities, including existing channel maintenance dredging, prior to its use for the proposed channel improvement project. Approval of the Hayden Island site for industrial development has no bearing on impacts to O-105.0.

29. Bald eagle presence was addressed in the biological assessment (Appendix I). Bald eagle territories are located at river miles 80.5 (WA), 81 (OR) and 73 (OR). While bald eagles may forage near O-77.0, the majority of their activities would occur much closer to their nests which are 3+ miles from this site.

30. Flowlane disposal will not occur in depths less than 35 feet. Since juvenile salmon do not occur to any extent at this depth, impacts are not anticipated.

31. Hunt (1995) in Ralph et al. (1995) states, "Murrelets are probably at low risk from global food web bioaccumulation of pollutants because of their foraging habits, prey size and the distribution of prey in coastal habitats. Most fish eaten by murrelets are juveniles of commercial species, or ground fish without a wide pelagic distribution. The background global organochlorine input into the seabirds of the North Pacific has resulted in a modest increase in organochlorine pollutants in seabird eggs over the past two decades (Elliott and others 1989), but the levels remain below those generally considered to be of threshold biological significance."

32. The projections of traffic levels and export levels are assumed to occur with or without any channel improvement. The number of vessels expected to call on the river in the base condition does not represent an impact caused by any channel improvement alternative. The size of vessels in the future is also expected to be independent of any channel improvement activity.

32. (con't) provide for increased use of the channel by larger, deep-draft ships. Even if the immediate goal were to provide for improved passage of the present ships utilizing the channel, the availability of a deepened channel would eventually encourage future use by larger ships.

33. Page 6-44, Section 6.8.1, Economic Impacts, first paragraph. This paragraph should reiterate that expanded Area B, a productive and economically important crabbing area, is avoided as a disposal site under the candidate offshore disposal site process, as requested by crab fishermen.

34. Page 6-51, Section 6.9, Secondary Impacts, first paragraph. It seems the availability of a deeper channel would, in time, be taken advantage of by more deep-draft ships and, consequently, over time, there would be an increased possibility for exotic species to become established.

Page 6-51, Section 6.9, Secondary Impacts, third paragraph. We disagree with this outlook on secondary development associated with the channel deepening. It would seem more appropriate to recognize that if a deepened channel is provided, more ships will use the channel and secondary development of port facilities and shoreline industrial sites will follow. The possible negative environmental impacts associated with such development should be identified and discussed.

35. Page 6-53, Section 6.10, Mitigation. Late in the HEP process, it was discovered that, in certain instances, habitat suitability indices (HSIs) were assigned rather than calculated. This misinterpretation of how HSIs are utilized in the HEP process has resulted in the generation of some unreliable data in terms of average annual habitat units (AAHUs) lost and gained for both disposal and mitigation sites. The resource agencies on the HEP team have determined that, to resolve this issue, either portions of the HEP should be redone or additional mitigation sites should be added to the Government and Sponsor disposal plans (see General Comments).

36. Page 6-59, Section 6.12, Cumulative Impacts, third paragraph. Cumulative losses of lower Columbia River riparian forests over the last century has been very high. It should be noted here that any additional loss of the remaining riparian habitat in the lower Columbia River could have serious impacts on fish and wildlife.

Page 6-59, Section 6.12, Cumulative Impacts, fourth paragraph, last line. The accuracy of this statement is dependent on successful mitigation and considerable attention to strict monitoring of the implementation and success of the mitigation plans for each of the mitigation sites, with necessary follow-up actions as appropriate.

Appendix H, Volume I.

37. Page 16, Phase 1, Defining a Zone of Siting Feasibility. This page should be edited; it appears to be a repeat of what is discussed on pages 13 and 14.

Page 20, Biological (Living) Resource (Exhibit A), first paragraph. It should be emphasized that the majority of the crab fishing occurs during the winter (December -February) and that the major portions of the catch also occur during this period.

Corps of Engineers Response

32. (continued). Currently, there are vessels moving on the river with design drafts greater than 40 feet, and that is expected to continue with or without a channel improvement. Any impacts related to the amount of cargo shipped out of the Columbia are expected to occur regardless of channel improvement. In order for the number of vessels moving on the river to stay the same after a channel improvement, there would need to be additional exports of over 2 million tons in 2004 in response to a channel improvement. By 2014, the response would have to be over 2.7 million tons.

33. Concur. The final EIS has been revised.

34. Ship traffic volume is dependent upon the market for commodities at any given time. Channel depth does not in itself induce more ship traffic and consequently, would not potentially increase the introduction of exotic species. Deeper draft vessels are now calling at Columbia River ports which cannot be fully loaded due to the 40-foot depth limitation. The primary benefit attributed to a deeper channel is that these vessels would be allowed to fully load. This creates much higher cost efficiency for both shippers and commodities. Likewise, the market for commodities determines the extent of port development required. A deeper channel would not affect the demand, but would increase cost effectiveness of shipping. The final EIS includes additional discussion of this point.

35. The Corps proposes to implement Option 1: Complete the HEP analysis by collecting data to represent all habitat types and reanalyze current and future conditions based on changes in individual habitat parameters. This re-analysis could be completed during the preconstruction, engineering and design (PED) phase of the project. Please see the addendum to the wildlife mitigation plan (Appendix G) for further clarification.

36. The Corps identified the importance of riparian habitat and historical losses in Section 2.5.3 of the draft EIS. The 66 acres of riparian habitat loss would occur over 8 sites ranging from 2.7 to 20 acres, and represent about 3 percent of the remaining cottonwood-ash forest downstream of Portland. All 8 disposal sites are former dredged material disposal sites. About 32 acres (3 sites) are early stage riparian habitat, e.g., cottonwood trees pioneering onto disposal sites. Eight acres (3 sites) are riparian areas on agricultural land where cattle grazing has degraded the habitat. Two sites totaling 26 acres support mature riparian stands. To characterize the loss of these 66 acres as leading to serious impacts to fish and wildlife is an overstatement. The sites are generally small, non-contiguous with other riparian habitat, have been impacted by human activities and/or are established on dredged material. They have value for fish and wildlife but to a lesser extent than large, contiguous blocks of mature riparian forest established on native soils with a full complement of understory species. Establishment of 424 acres of riparian forest was identified in the wildlife mitigation plan and is about six times the acreage being impacted. The emphasis on riparian habitat in the mitigation plan reflects its importance and the desire of the interagency team to emphasize it. Implementation, operation and maintenance, and monitoring actions have been detailed in the current wildlife mitigation plan. Further refinement of the mitigation plan will occur during the PED phase.

37. Comments noted. The report will be revised.

Page 52, Sites Proposed for Designation, second paragraph. The discussion of Peacock Spit in this section should be rewritten since candidate sites 6 and 7 do not appear to include disposal on Peacock Spit.

38. Page 52, Sites Proposed for Designation, fourth paragraph. It appears that site South does include some areas with high concentrations of crabfishing activity. Perhaps, it would be possible to eliminate the latter sections from the disposal area or to schedule disposal when crabfishing in the area is minimal.

We appreciate the opportunity to comment.

Sincerely,

Preston A Sleeger
Regional Environmental Officer

Corps of Engineers Response

38. Both candidate sites 6 and 7 included a disposal on Benson Beach which has also been referred to as disposal on Peacock Spit. The South site is no longer proposed for ocean disposal.

REFERENCES

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JOHN A. KITZHABER
GOVERNOR

February 3, 1999

Colonel Robert T. Slusar
US Army Corps of Engineers, Portland District
CENWP-PE-E Attn: Steven J. Stevens
PO Box 2946
Portland OR 97208-2946

Dear Colonel Slusar:

Thank you for the opportunity to comment on the *US Army Corps of Engineers' Draft Integrated Feasibility Report for Channel Improvements and Environmental Impact Statement: Columbia and Lower Willamette River Federal Navigation Channel (DEIS).* I continue to support moving forward with the Columbia and Lower Willamette Channel Deepening Project as long as environmental concerns raised by the state and others are adequately addressed by the Corps in the Final Environmental Impact Statement (FEIS).

The Columbia River navigation channel is vital to the state's economic health, which is dependent on international trade. However, in considering deepening the channel, we need to maintain our region's rigorous environmental protections. Decisions regarding project design, construction and maintenance must be rooted in an understanding of the potential impacts to river and
1. nearshore ecosystems and the overall sediment budget of the Columbia River system with the goal of minimizing environmental impacts. With both Endangered Species Act listings and Clean Water Act concerns in both the Columbia and Willamette Rivers, making sure the project is done in a way that minimizes and mitigates potential impacts to water quality and native salmonids becomes all the more important.

I am pleased that ecosystem restoration proposals are included in the DEIS. These projects would support the work the state has begun under the Oregon Plan for Salmon and Watersheds.

Attached you will find comments from several state agencies and the Oregon Office of the Northwest Power Planning Council. There are several overarching concerns raised by these comments which need to be addressed in the FEIS.

2. First, the project must be implemented in a way that is consistent with local, state and federal requirements, including those federal requirements implemented by the State. The attached comments highlight the topics and policies requiring further analysis prior to the FEIS to ensure compliance.

STATE CAPITOL, SALEM 97310-0370 (503) 378-3111 FAX (503) 378-4863 TDD (503) 378-4859

Corps of Engineers Response

1. Comments noted.

2. Comments noted. Specific responses are provided to these concerns and the agency comments provided in your attachment.

Corps of Engineers Response

Second, the Corps must look at ways to maximize the beneficial uses of dredged sand and minimize disposal on farmlands, riparian areas and wetlands by considering other alternatives for disposal sites such as those in the sponsors' plan. Ocean disposal of dredged material, both in relation to the navigation channel and the federal project to maintain the river's mouth, is also of concern to the State. We must work cooperatively to ensure navigational safety but with the goal of selecting disposal sites and practices that will not substantially interfere with Oregon's commercial fisheries or the long-term protection of ocean resources. Legal and environmental concerns are raised by all of the Corps' alternatives for disposing of dredge materials.

2 (con't)

Third, given the concerns that have arisen about contamination and disposal of Willamette River sediments, consideration must be given to lengthening the proposed project schedule for the Willamette portion of the project so that these concerns can be addressed. Disposal of contaminated sediments by deep placement and capping with clean materials is one option for addressing these concerns but other alternatives should be examined in detail in the FEIS. The DEIS itself suggests a strategy of phased construction for the Willamette and I recommend the Corps adopt that strategy in the FEIS.

Finally, specific agency concerns need to be addressed in the FEIS. Oregon's agencies stand ready and willing to work with the Corps to resolve these issues.

Again, I want to thank you for the opportunity to comment on the DEIS and look forward to working with the Corps to make this project one that not only provides economic benefits for the state and region, but one that also maintains or improves the ecological health of these two important river systems.

Sincerely,

John A. Kitzhaber, M.D.

JAK/NR/sm

Attachment

Oregon Department of Land Conservation and Development (DLCD)

SUMMARY OF COMMENTS

COASTAL ZONE COMPLIANCE- OVERALL

DLCD will conduct the official Coastal Zone (CZ) Consistency review when the FEIS and associated final consistency determination are available from the Corps of Engineers but prior to a final federal decision on the project.

The federal Coastal Zone Management Act (CZMA) mandates that federal agencies comprehensively consider the effects of their proposed actions on the CZ, regardless of whether the action would occur in or outside of CZ boundaries. The Corps acknowledges that ocean disposal of dredged material is subject to CZ review even
3. though partially outside the territorial sea because of the potential for CZ impacts. Given the magnitude of the channel deepening proposal, the Corps will also need to address the potential effects of actions upstream of Oregon's coastal zone boundary on resources and land and water uses within the coastal zone.

The Corps must address the effects of the project in light of all applicable CZ policies. There are several CZ policies that are not acknowledged in the DEIS.

The Corps must consult with all affected local governments to ensure compliance with local land use programs at all project stages.

CZ EFFECTS - RIVER AND ESTUARINE RESOURCES

4. The FEIS and Final CZ Consistency determination must address the different standards for maintenance and new dredging in the Columbia River estuary and present an analysis that responds to the different requirements.

5. It is unclear whether the estuarine disposal sites truly have adequate capacity to handle the predicted volumes.

6. In the FEIS, the Corps must address whether "upland" dredged material disposal in the estuary will result in habitat changes and, if so, what the long-term implications of such habitat changes would be for the lower river and estuary.

7. The FEIS must both address the impacts of flow-lane disposal at CRM 27-42 and compliance with the applicable Oregon CZ policies.

8. The Corps must include mitigation for impacts within the estuary due to dredged material disposal.

Corps of Engineers Response

3. Comments noted.

4. The CZ Consistency Determination has been revised to address the different standards for new work and maintenance.

5. See our response #31.

6. The proposed upland disposal sites in the estuary downstream of Puget Island are all existing dredged material disposal sites. Their footprints are not targeted for enlargement, rather, the existing sites will be built to higher elevations. These existing disposal sites are principally bare sand or very early successional grass-forb communities. Narrow bands of riparian habitat occur on the perimeter of portions of the proposed disposal areas. These disposal sites have been used for dredged material disposal for decades and future use will maintain the status quo.

7. The CZ Consistency Determination has been revised to specifically address flowlane disposal between river miles 27 and 42.

8. We have worked with both the Federal and State Resource Agencies to reduce the aquatic impacts of the project such that they will be commensurate with the level currently occurring with the existing maintenance dredging program. We are also proposing to conduct studies of the deeper flowlane disposal sites to determine their productivity and what fish populations are present. This information will be used to manage the disposal actions to avoid productive areas or time the disposal to minimize impacts to a species. Additionally, we have included several ecosystem restoration projects to provide additional aquatic habitat that would be of value to several aquatic species. Also see our responses #34 and #35.

9. To ensure that adverse project impacts are minimized, the Corps must obtain agreement from federal and state resource agencies on appropriate dredging and disposal measures to protect salmonids, sturgeon, smelt, and other aquatic species.

CZ EFFECTS - OCEAN DISPOSAL OF DREDGED MATERIALS

10. The Corps must demonstrate that ocean disposal complies with the standards of Goal 19 to give clear priority to the long-term protection of renewable ocean resources over the use of non-renewable resources (Goal 19 and ORS 196).

The FEIS must make clear how and where the proposed ocean disposal sites would be used in actual yearly operations, how sediment compatibility within these areas will be achieved, and how monitoring will occur.

11. Oregon will not issue a CZ approval for a 50 year period based on lack of information and analysis to determine compliance with Oregon's ocean policies.

12. The DEIS does not present adequate biological resource information and analysis to address our concerns about long-term biological impacts of broad based disposal, particularly for much of the south site, and does not provide sufficient information and analysis to support statements and conclusions that thin-layer disposal will have minimal biological impacts.

13. DLCD supports ODFW's recommendations for a more comprehensive study to better understand the effects of dredged material disposal on Dungeness crab and other species, including sub-lethal effects.

14. The Department suggests that the Corps, EPA, the coastal states, and other interested parties work cooperatively to identify long-term research and monitoring needs, develop a research plan, and work cooperatively to obtain funds to implement needed studies.

15. The DEIS does not adequately state the impacts of proposed ocean disposal on Oregon's commercial fisheries. The FEIS must fully address the potential effects on Oregon's commercial fisheries and propose measures or alternatives to avoid, reduce, or minimize these effects.

16. For the South disposal site, DLCD finds that there is minimal potential for littoral contribution from dredged material disposal while there is a high likelihood of impacts to biological resources and commercial fisheries.

17. Pursuant to the Coastal Zone Management Act and Oregon Coastal Management Program, DLCD will require a site-management coordination process that includes the state and affected parties in monitoring, review of monitoring results, discussion of modifications or alternatives, revision of disposal practices, resolution of use conflicts, and other needed project changes.

Corps of Engineers Response

9. See our response #8.

10. Concur with comments. A site management an monitoring plan for ocean disposal has been prepared and included in Appendix H, Exhibit H. The Management and Monitoring Plan states the Corps/EPA preference to first place material in Site E and the North Jetty site. These two near-shore sites will be used to their maximum extent. Any additional material will be places in the agreed upon deep water site.

11. The footprint of the disposal sites have been revised to minimize the impact. We have existing data and have agreed to do pre- and post-assessment surveys, as well as agreed to the formation of a task force to provide input on site management. We would expect that your agency's participation on the task force would satisfy your concerns with CZMA consistency.

12. Thin layer disposal is no longer being considered. The south site is no longer being considered as a disposal site.

13. Deciding on the need for additional studies on Dungeness crab will depend on input from the task force.

14. This project cannot fund basic research. We have agreed to pre- and post-construction assessment studies. Input for these studies will be obtained from the Ocean Management and Monitoring Task Force. Some of these efforts may dovetail into studies you agency may wish to fund.

15. Additional information has been added to Chapters 4 and 6, and Appendix H on Oregon's commercial fisheries and impacts to these fisheries. The size and location of the deep water site has specifically taken into account potential impacts to the commercial fishery.

16. The south site has been eliminated.

17. See our response #11.

18. The Oregon Coastal Management Program must take a conservative position on ocean disposal of dredged materials because of the serious implications for Oregon's renewable ocean resources if widespread disposal in the Columbia River offshore region does have significant impacts.

19. The Corps must develop and assess a range of options for meeting multiple management needs including minimizing the geographic extent of impacts, restricting the quantity of marine habitat and resources potentially at risk, contributing to littoral transport, reducing potential conflicts with fisheries and other ocean users, and facilitating pre-disposal studies and post-disposal monitoring.

OTHER ISSUES

20. DLCD fully supports the DEQ in its requests for information related to water quality effects of the project and will rely on the expertise and authority of the DEQ to determine whether the project complies with state water pollution-control policies and standards.

21. The Final EIS must address the consequences of omitting or deferring the Willamette River portion of the proposed project due to the presence of contaminated sediments in this portion of the river, including an assessment of the need for, benefits from, and viability of the entire project if this river segment were omitted.

22. The FEIS must respond to DSL's concerns and where these concerns relate to coastal zone uses and resources, the FEIS must address compliance with these state statues in the final coastal zone management consistency determination.

23. Although the Corps cannot predict the exact uses that might be proposed for upland DMD sites, the FEIS must acknowledge the potential for land use conversion effects from upland disposal and coordinate with local jurisdictions and DLCD on the eventual 'retirement' of sites from DMD use.

24. DLCD supports the "sponsor's alternative" over the "least-cost alternative" to protect farmland.

The Corps must coordinate with affected local jurisdictions to obtain and use relevant land use information in the FEIS and to ensure the local comprehensive plan and zoning ordinances reflect the long-term management goals for these sites.

Corps of Engineers Response

18. Comment noted.

19. Concur. These concerns have been addressed through the Ocean Disposal Working Group. Sites have been selected to minimize the impacts to the resources and to include pre- and post disposal assessment monitoring.

20. Comment noted. Prior to project implementation, State Water Quality certification will be obtained.

21. The final EIS has been revised with a recommendation that the Willamette River segment be deferred. Incremental analysis has been done. On of the increments assessed was the Willamette River (see Appendix C, Economics). The Willamette River is economically justified as both a stand alone portion of the project, or in combination with the rest of the project. When more is known about the Portland Harbor Remediation Plan, the Willamette River portion will be evaluated again to determine if this reach is still economically justified.

22. The majority of DSL issues would be addressed by the sponsoring ports during the disposal site acquisition phase. This would also apply to resolution of specific land use issues. This would occur following project authorization. Also see our responses #55 to 57. The CZM Consistency Determination prepared for the proposed action concludes that it is consistent with state and local plans to the maximum practicable extent.

23. Section 6.8.2 of the report acknowledges that there is a potential for land use conversion for upland disposal sites used during the course of the project. These changes are not predictable. Implementation of site Management and Monitoring Plans under Article 230.80 of the CWA will address DLCD's desire for coordination on the eventual "retirement" of disposal sites.

24. The sponsor's preferred alternative now represents the proposed disposal plan. The DEIS has been reviewed by local jurisdictions and their comments reviewed. Also see our response #23.

25. More discussion of alternatives like the LOADMAX system or the use of LOADMAX with a tiered channel seems warranted to determine if these can meet project goals while minimizing environmental impacts.

SPECIFIC COMMENTS

I. BACKGROUND:

The Department of Land Conservation and Development Coastal Management Program (DLCD) has reviewed the Draft Integrated Feasibility Report for Channel Improvements and Environmental Impact Statement, Columbia and Lower Willamette River Federal Navigation Channel (DEIS), including the appendices, prepared by the US Army Corps of Engineers Portland District, October 1998. DLCD has specifically focused on compliance with the federally-approved Oregon Coastal Management Program (OCMP). Pursuant to the state's federal consistency authority under the Coastal Zone Management Act (CZMA), the Corps must assess the direct, secondary, and cumulative impacts of the federal project on Oregon's coastal zone resources and land and water uses and conduct the project in a manner consistent with the policies of the OCMP, which include state agency programs as well as coastal city and county land use plans and implementing measures. DLCD has also reviewed general land use information included in the documents in relation to our role administering the statewide land use program.

26. The DEIS documents contain a significant amount of information about the project and its area and we recognize the large amount of work behind such an effort. We believe the DEIS has helped agencies and others to better understand the complex project. The Department's review of the DEIS has helped focus our attention on particular topics that we believe require further analysis. The purposes of these comments are to explain the Department's concerns, to serve as a basis for continuing dialogue between our agencies regarding the project, and to provide a preliminary assessment of coastal zone (CZ) consistency to assist the Corps with the preparation of a final consistency determination at the FEIS stage. Please note that DLCD is willing to coordinate meetings with the Corps and other parties to discuss our concerns and work towards resolution of outstanding issues.

DLCD's comments focus on the "least cost" and "sponsor's preferred" build-alternatives for the project. Under these alternatives, the navigation channel would be deepened by 3 ft. (plus standard 5 ft. over dredging) from Columbia River Mile (CRM) 3 to 106.5 (near Vancouver) and 11.6 miles up the Willamette River. Dredging for construction would remove 19.1 mcy, with 90 mcy of maintenance dredging over the following 20 years (p 2, DEIS). Construction would occur in 2002 -2003. The biggest difference between the two build-alternatives appears to be that the sponsor's preferred alternative maximizes the use of port-owned property and existing sand and gravel pits for upland (i.e., not in-river or ocean) dredged material disposal (DMD) sites. In-river and ocean disposal volumes would be the same for these two build-alternatives. (App. D, p. 6)

Corps of Engineers Response

25. See response #2 to the US Department of Interior letter concerning LoadMax.

26. Comments noted.

II. COASTAL ZONE COMPLIANCE

A. Timing of CZ Review

The study/DEIS includes a section titled "Coastal Zone Management Act Consistency Determination" to elicit comments from DLCD and others on whether the project, as described in the DEIS, appears to comply with Oregon's CZ policies. These comments
27. provide the Corps with a preliminary, detailed assessment regarding project compliance with the OCMP. However, the Corps and DLCD agree that a final decision by the State on the Corps' consistency determination for the project would not be appropriate at this stage (per 12/2/98 letter, Corps to DLCD). DLCD will conduct the official CZ review when the FEIS and associated final consistency determination are available from the Corps of Engineers but prior to a final federal decision about the project.

B. Scope of CZ Review

The draft consistency determination in the DEIS describes the proposed federal action subject to CZ review as the use of new ocean DMD sites and construction of pile-dikes with associated dredged material disposal near Miller Sands within the estuary. DLCD agrees that both actions are subject to CZ review but disagrees with the Corps that its responsibility to ensure CZ compliance is limited to these two actions. The Corps' final CZ determination must also address all aspects of the project that are likely to affect the state's coastal zone, such as dredging for channel deepening, in-water disposal, upland disposal, and wildlife mitigation.

It is our position that the entire project will affect Oregon's coastal zone due to its scope and complexity. The federal Coastal Zone Management Act (CZMA) mandates that federal agencies comprehensively consider the effects of their proposed actions on the CZ, regardless of whether the action would occur in or outside of CZ boundaries. The DEIS addresses ocean disposal outside of the territorial sea. Given the magnitude of the channel deepening proposal, the Corps will also need to address the potential effects of
28. actions upstream of Oregon's coastal zone boundary on resources and land and water uses within the coastal zone. Essentially, the Corps' CZ assessment must take into account effects on the overall ecosystem as well to individual resources and uses. The assessment must consider reasonably foreseeable secondary and cumulative effects that are indirectly caused by the project even though these impacts may be later in time and farther removed in distance from direct project work. For example, how will upstream actions impact water quality, various fish species, marine mammals, or other resources that are not bound by a jurisdictional line? The final consistency determination needs to detail the assessment supporting the Corps determination of CZ consistency.

In addition to addressing a broader project scope in the final CZ determination the Corps must address the effects of the project in light of all applicable CZ policies. The draft consistency determination discusses some CZ policies, such as certain policies in the Columbia River Estuary Management Plan and statewide planning Goal 19. But other CZ policies, such as estuarine policies for new dredging and flow-lane disposal and state agency authorities incorporated in the OCMP are not mentioned (please refer to DLCD's

Corps of Engineers Response

27. Comment noted.

28. The final EIS and Consistency Determination have been revised to address the full range of actions affecting the coastal zone. We have determined that the proposed action outside the coastal zone would have some effect on resources within the coastal zone. However, we have concluded, based on the results of sediment testing and salinity intrusion analysis, that these effects would not be significant.

August 4, 1997 letter to the Corps that outlines the CZ policies applicable to the channel deepening project).

28. (con't)

As a reminder, the CZMA and associated federal regulations mandate that federal projects must be fully consistent with state coastal programs unless specifically prohibited by other federal law or if found by the President of the United States to be in the paramount interest of the nation. If the Corps believes other federal law in any case precludes full consistency with the OCMP, then the Corps must specifically explain to DLCD those legal requirements and how full consistency is precluded. Please note that a lack of appropriations is not an acceptable reason for non-compliance with the OCMP. The CZMA specifically limits even the President's ability to exempt a federal agency from CZ compliance based on funding.

C. Local Government Coordination and Consistency

29. The Corps must consult with all affected local governments to ensure compliance with local land use programs at all project stages. The Department finds no evidence that the Corps consulted with Clatsop County or other local jurisdictions in the CZ. Coordination with local governments is essential.

III. EFFECTS ON RIVER AND ESTUARINE RESOURCES

A. Dredging for Channel Deepening - Estuarine Resources

30. Oregon's CZ policies for the Columbia River estuary distinguish between maintenance dredging of the existing channel and new dredging for channel deepening. Maintenance dredging of the navigational channel is generally permitted outright, although subject to certain environmental standards. New dredging, defined to include channel deepening, can be conditionally approved after local review but is not permitted outright. DLCD previously explained the standards that new dredging would need to meet (p. 5, DLCD's 8/6/97 letter). For example, new dredging must avoid erosion, sedimentation, circulation changes or other potential adverse impacts to the estuary, and any unavoidable impacts from new dredging must be mitigated. The FEIS and Final CZ determination must address the different standards for maintenance and new dredging in the Columbia River estuary and present an analysis that responds to the different requirements.

B. Disposal of Dredged Material - Estuarine Resources

31. In general, the channel deepening project emphasizes upland disposal of dredged material. The Corps states that the deepening project would reduce in-water disposal compared to current maintenance of the existing channel (p. 4-64, DEIS). The project proposes to use existing disposal sites within the estuary (with some expansion beyond current boundaries) along with flow-lane disposal. DLCD has three areas of concern with the proposed disposal actions.

1. Many of the identified estuarine disposal sites have been used in the past but not for the volumes anticipated under the channel deepening project and 20 years of maintenance dredging. It is unclear whether the estuarine disposal sites truly have adequate capacity to handle the predicted volumes.

Corps of Engineers Response

29. The Channel Improvement Study/draft EIS has been coordinated with all local jurisdictions within the study area. Comments were received from the counties within the coastal zone. Specific land use issues would be resolved by the Corps and sponsoring ports following project authorization.

30. The final EIS and Consistency Determination have been revised to directly address standards for new dredging.

31. In-water disposal could occur at numerous locations in the reach between RMs 27 and 42. This reach has been used in the past for in-water disposal during maintenance dredging. The 2.5 mcy of construction disposal is a one-time action that is much larger than the annual O&M disposal in this reach. The 12 mcy of O&M equates to an average of 600,000 cy/yr, which is only a one third increase over the 1990-96 O&M average of nearly 450,000 cy/yr. The actual change in bed elevations that occur will depend on factors such as the total area used for disposal, the volumes disposed, and the amount of material transported away from the sites. Flowlane disposal can be moved around to avoid large changes in bed elevations.

2. We have learned from the situation with Caspian terns and salmonid predation at Rice Island that there can be unintended but significant impacts from DMD in the
32. estuary. In the FEIS, the Corps must address whether "upland" dredged material disposal in the estuary will result in habitat changes and, if so, what the long-term implications of such habitat changes would be for the lower river and estuary.

3. A significant amount of flow-lane disposal is proposed within the mid- to upper estuary between Columbia River Miles (CRM) 27 and 42 "because there are few
33. upland disposal options (p. 6-9, DEIS)". A total of 14.5 mcy (million cubic yards) of material (from so-called "construction" or new dredging as well as maintenance dredging) would be disposed of in-water over the course of 20 years impacting about 400 acres. The 400 acres includes new flow-lane sites at Miller-Pillar and site W/O 30.

As stated in DLCD's 1997 letter, flow-lane disposal is considered suitable only in the navigation channel and in a 600 ft. strip along either side of the designated channel (i.e., where designated aquatic development). Certain standards apply to flow-lane disposal including: dredged materials must remain in suspension long enough to move
34. downstream, dredged materials must not be contaminated, adverse estuarine changes must not occur, the biological value of the benthos must be characterized prior to disposal, and the water depth must be 25-60 ft. Monitoring of flow-lane disposal is also required to ensure estuarine impacts are minimized and consistent with the natural resource capabilities of the affected area.

DLCD's analysis of the DEIS description of flow-lane disposal at CRM 27-42 concludes that this action would not, as proposed, comply with the OCMP requirements listed above. First, flow-lane disposal outside the Aquatic Development Zone is proposed. Second, some flow-lane disposal will occur at water depths greater than 60 ft. Third, significant amounts of dredged material will not move downstream but will instead
35. accumulate up to 20 ft. deep over the 400 acres (p. 6-9, DEIS). The DEIS does not fully address effects on the benthic community in flow-lane disposal areas, and we find no mention of monitoring or mitigation of flow-lane disposal impacts. Overall, the DEIS discussion of flow-lane disposal impacts is very minimal despite the fact that the draft USFWS report included in the DEIS indicates adverse impacts are likely (DEIS, Exhibit C, p. 9). The Department also notes that ODFW is concerned about the impacts of flow-lane disposal on sturgeon habitat, particularly for disposal at depths greater than 65 ft.

The FEIS must address the impacts of flow-lane disposal at CRM 27-42 and determine
36. whether such methods are in compliance with the applicable Oregon CZ policies such as the requirements of Statewide Planning Goal 16, Estuarine Resources, as adopted in the Columbia River Estuary Management Plan and associated documents.

C. Mitigation for Estuarine Impacts

Flow-lane and upland disposal in the estuary, dredging for project construction, and pile-dike construction at Miller Sands are activities DLCD judges are reasonably likely to

Corps of Engineers Response

32. See our previous response #6 concerning upland disposal in the estuary.

33. See our previous response #31.

34. As stated earlier, the CZ Consistency Determination has been revised to include additional discussion of proposed flowlane disposal actions, including disposal in areas deeper than 65 feet. We acknowledge that plan amendment review and new site designations would be required prior to disposal at depths greater than 65 feet.

35. We have discussed these concerns with the resource agencies and have agreed to do a study of flowlane disposal areas in this reach to determine the productivity of the benthic invertebrate populations and the use of the area by larval and juvenile sturgeon. This information will help design the disposal plan for these sites such that impacts to the sites can be minimized to the extent possible. Once the results of the study are complete and it has been determined that the use of these sites will not significantly impact estuarine resources, we will move ahead to ensure consistency with the Coastal Zone Management Act.

36. See our previous responses #31 and #35.

impact estuarine resources. Disposal on the islands of the lower river may also affect estuarine resources over the long-term. The Corps has proposed mitigation for impacts to wildlife habitat that will be caused by upland disposal of dredged material but has not proposed mitigation for effects within the estuary. Local government elements of the
37. OCMP contain a requirement for compensatory mitigation for certain unavoidable estuarine impacts by creation, restoration, or enhancement of estuarine areas (Columbia River Dredged Material Management Plan, Section 2.2.1-2.2.3 and associated Clatsop County review standards). DLCD and the Corps must discuss ways to ensure compliance with the estuarine mitigation requirements of the OCMP prior to completion of the FEIS. Any costs for estuarine mitigation must be considered as a project cost

D. Dredging and Disposal Methods

The Corps could minimize the impacts of channel deepening construction and channel maintenance both in the estuary and elsewhere by following dredging and disposal methods designed to minimize project impacts. Yet, we did not find any discussion in the DEIS of alternative dredging techniques such as when to use a clamshell vs. hydraulic dredge, the use of silt curtains or other techniques to limit migration of suspended sediments, or specific techniques to minimize blasting impacts. In addition, the Corps
38. asserts that in-water work for dredging and disposal must occur year round to accommodate a two year construction schedule (DEIS, Exhibit C) but does not indicate why dredging must be completed in two years. Such a tight schedule, in the Department's opinion, increases the potential for adverse environmental effects on aquatic resources. To ensure that adverse project impacts are minimized, the Corps must obtain agreement from federal and state resource agencies on appropriate dredging and disposal measures to protect salmonids, sturgeon, smelt, and other aquatic species (per Columbia River Dredged Material Management Plan Section 2.2.1-2.2.3 and Clatsop County review standards at S4.232).

IV. OCEAN DISPOSAL OF DREDGED MATERIALS

A. Ocean Disposal Site Designations

1. *Standards for Review*

DLCD's review of the proposed ocean disposal sites focuses on compliance with Oregon's ocean management policies: the mandatory standards of Goal 19- Ocean Resources and the requirements of Part Two of the Oregon Territorial Sea Plan (TSP). Goal 19 recognizes the importance of maintaining safe navigation, as well as maintaining Oregon's recreational and commercial fishing industries, and allows ocean disposal of materials dredged for a navigation project provided that disposal
39. sites and practices do not substantially interfere with commercial and recreational fishing, navigation, or the long-term protection of renewable ocean resources. Goal 19 places strong emphasis on ensuring that agencies have adequate information to analyze and understand the effects of the proposed action on ocean resource and other uses. Part Two of the Territorial Sea Plan includes detailed requirements for providing that information and developing the analysis. The Corps must demonstrate that ocean disposal complies with the standards of Goal 19 and the paramount ocean policy of the State to give clear priority to the long-term protection of renewable ocean resources over the use of non-renewable resources (Goal 19 and ORS 196).

Corps of Engineers Response

37. See our responses #8 and #35.

38. Alternative dredging methods are discussed in the EIS. The final dredging plan for construction will be developed to minimize impacts to species of concern. Turbidity is not considered to be a problem during hydraulic dredging consequently no silt curtain will be required. Deployment of silt curtains in the mainstem Columbia River is not feasible given it current, tidal action, and waves. A detailed blasting plan was developed with both state and Federal resource agencies. This plan is discussed in the EIS. In regards to mitigation, see response #8.

The two main reasons for the two year construction schedule are: 1) from a least cost perspective, minimizing the construction costs reduces the overall cost of the project, and 2) the quicker the 43-foot channel is constructed, the sooner the National Economic Benefits are realized. The Corps, through the Coordination Act Report and numerous meetings, has coordinated extensively with state and federal resource agencies.

39. Comments noted.

2. *New Sites for Ocean Disposal*

DLCD and other state and federal agencies have worked with the Corps in recent years on interim designation of ocean dredged material disposal (ODMD) sites needed to alleviate an existing problem of mounding caused by an accumulation of sediments from maintenance dredging disposed onto small disposal sites off the mouth of the Columbia River. DLCD also participated in the Corps process for developing candidate sites for ocean disposal. In working with the Corps, DLCD and other Oregon and Washington agencies requested that the use of site B be discontinued and made it clear that conflicts with commercial fishermen at Expanded Site E (also known as Candidate Site 2) needed to be avoided. Oregon did not, however, object to the careful use of Site E (i.e. adopt measures to avoid mounding and limit conflicts with the fishery). Site B will no longer be used. Expanded Site E was recently designated by the CORPS as an interim disposal site.

40.

Now, as part of the channel deepening DEIS, the Corps is seeking US EPA designation for three ocean disposal sites (Expanded E, South site, North site) because some materials dredged for channel deepening, as well as future maintenance downstream of CRM 30, would be disposed offshore (estimated to be 20 mcy for channel deepening and 17 mcy for channel maintenance over 50 years). A large majority of offshore disposal (191 mcy over 50 years), however, will be generated by another federal dredging project at the mouth of the Columbia River (App.. H, Vol. I, p. 1). Two of these new sites are quite large: the North site on the Washington side of the channel is approximately 19,000 acres and includes portions of interim candidate sites 6 and 7; the "South" site offshore Clatsop Spit on the Oregon side is approximately 33,000 acres and includes portions of interim candidate sites 1, 5, 6, 7, and.10 Together, these proposed sites cover approximately 81 square miles of ocean floor.

This DEIS review is the first opportunity for DLCD and others that participated in the ocean disposal site committee to see, evaluate and respond to the proposed very large 'North" and "South" sites. We had understood that any proposed new sites would be subsets of interim candidate sites and expected proposed sites to be mostly limited to areas discussed under the candidate site process. The lack of discussion by all concerned parties of the North and South sites is evident in the problems with these proposed sites discussed below.

3. *Thin-layer Disposal*

The ODMD site committee thoroughly discussed the use of "thin-layer" disposal, which is defined as anywhere form 2.5 to 10 inches accumulation per each disposal event, because of the Corp's desire to use this method to avoid mounding height problems. So-called "pin-point" disposal, on the other hand, is the targeted disposal of a sediment load onto a particular spot on the ocean floor. The Corps estimates that, based on an average yearly estimate of 4.6 mcy of ocean disposal, a disposal area of 4.4 square miles would be necessary to ensure 10" or less accumulation per year on the ocean bottom (App.. H, Vol. II, Physical Processes Report, p. 52).

41.

The DEIS is ambiguous and confusing as to the extent of either thin-layer disposal or pin-point disposal. The option of mounding dredged spoils through pin-point disposal in the deeper portions of the north and south sites is alluded to in App.. H, Vol. I, Tech. Ex. G. The DEIS also discusses an equal distribution of materials

Corps of Engineers Response

40. Comments noted. The North and South sites have been eliminated.

41. Noted. Thin layer disposal is no longer being considered. An Ocean Disposal Management and Monitoring Plan has been developed for the proposed sites; see Appendix H, Exhibit H.

between the north and south sites because of uncertainties about sediment transport at the mouth of the river but confuses matters by stating that disposal of materials from the mouth of the Columbia River (MCR) is operationally limited to a 4.5-mile "zone of siting feasibility" (ZSF). The ZSF description for the MCR project suggests that materials would be concentrated very close to the channel entrance and mostly in the portion of the south site within the 4.5 mile ZSF (App.. H, Vol. I, p. 11, 13-14). The estuarine dredged materials (not the mouth), which are given a 13-mile ZSF, are a small portion of the total ODMD volume proposed for these sites.

41. (con't)

The use of these sites is further compounded by the issue of "sediment compatibility." The DEIS states that like-on-like disposal is a goal with coarser material going to the "nearshore" (30-100 ft. depths) and finer materials to the offshore (100-200 ft.), but neither the volumes of "coarse" and "finer" materials nor how this relates to the 4.5 mile ZSF is clear (App. H, Vol. I, 49-50). The DEIS states that a management and monitoring plan will be developed by the Corps and EPA for the new sites to ensure that "no unacceptable harm to the ecosystem or resources" occurs and that "conditions that will lead to an unacceptable impact are not developing" (App.. H, Vol. 1, Tech. Ex. G). A key assumption in this plan is that "dredged material is similar to existing substrate [and thus] no significant impact to the habitat is anticipated (Tech. Ex. G, Section 2, p. 2-6). Given this basic assumption, the Corps explains that disposal practices will only be revised and biological monitoring will only occur if unacceptable mounding occurs.

The FEIS must make clear how and where the proposed ocean disposal sites would be used in actual yearly operations, how sediment compatibility within these areas will be achieved, and how monitoring will occur.

B. Effects of Ocean Disposal

42. The DLCD, ODFW, and others have serious concerns about the large North and South disposal sites because of. (1.) site-management time-frame; (2.) potential for significant adverse effects on marine resources; (3.) potential for adverse effects on commercial fisheries; (4.) inadequate information for selecting sites, assessing impacts, determining alternatives; (5.) effects on nearshore littoral drift; (6.) lack of biological monitoring and responsive site management; and (7.) availability of alternatives.

1. *Site Management Time Frame*

43. Although, the Corps and EPA may be required to plan for a 50-year ocean disposal period, DLCD cannot concur with the concept of a 50-year designation period. The lack of available information presented in DEIS and the low likelihood that sufficient additional information will be forthcoming make predictions of 50-year or even 20-year cumulative effects of ocean disposal virtually meaningless. Both the 50 year designation period as well as the Corps' interest in thin-layer disposal methods sites directly affect the size of the proposed north and south sites. The DEIS explains that the north and south sites each would have a capacity of 230 mcy of dredged material, i.e. the predicted 50 year disposal volume. The rationale for doubling the estimated 50 yr. disposal capacity is unclear. Oregon will not issue a CZ approval for a 50 year period based on lack of information and analysis to determine compliance with Oregon's ocean policies.

Corps of Engineers Response

42. Comments noted. Both the North and South sites have been eliminated from further consideration. See responses provided below.

43. All sites are designated for perpetuity and the North and South sites have been eliminated. We would expect that your participation on the Ocean Disposal Sites Management and Monitoring Task Force would satisfy you concerns with CZMA consistency.

2. *Effects on Biological Resources*

The biological effects of ocean disposal of dredged materials, especially over wide ocean-bottom areas, over long periods of time, and in biologically-productive marine environments are of serious and significant concern to DLCD, ODFW, and other state agencies. During the candidate site process, Oregon agencies and others expressed questions about the feasibility and impacts of thin-layer methods in the nearshore ocean area off the mouth of the Columbia River. The DEIS does not present
44. adequate biological resource information and analysis to address our concerns about long-term biological impacts of broad based disposal particularly for much of the south site, and does not provide sufficient information and analysis to support statements and conclusions that thin-layer disposal will have minimal biological impacts. These conclusions are based on review of thin-layer studies conducted in the Gulf of Mexico, a region physically and biologically very different from the Columbia and on a pilot study of the effects of thin-layer disposal on Dungeness crab, discussed below (see also ODFW comments).

Battelle Laboratories conducted a pilot study to assess the impacts of thin-layer disposal on crab and juvenile flatfish. While DLCD believes the study was an important step in increasing our knowledge of thin-layer disposal impacts, we disagree with the Corps' conclusion that the study demonstrates no significant effects
45. on crab. ODFW has explained its concerns with the study and with the Corps' interpretation of the results in great detail. We note ODFW's concerns about the high mortality shown for the two larger class sizes at disposal depths over 4 inches; this is a significant impact to crab. DLCD supports ODFW's recommendations for a more comprehensive study to better understand the effects of dredged material disposal on Dungeness crab and other species, including sub-lethal effects.

The ability of the state to approve ocean disposal sites proposed by the Corps will be limited by the information available to assess the effects of these actions. The DEIS discusses the increasing difficulty of finding environmentally-acceptable disposal sites in upland, riparian, and in-river areas and, consequently, the increasing shift to disposal of dredged sediments in the ocean. In relation to the Columbia River, DLCD finds that the trend towards increased ocean disposal over a larger offshore area is
46. likely to continue. The Department suggest that the Corps, EPA, the coastal states, and other interested parties work cooperatively to identify long-term research and monitoring needs, develop a research plan, and obtain funds to implement needed studies. Initial candidates could be a more comprehensive crab study, a nearshore disposal study, and field tests of thin-layer disposal. Funding some offshore studies as part of the channel deepening project is reasonable since the construction and maintenance of the project will impact ocean resources.

3. *Effects on Commercial Fisheries*

Potential effects of dredged material disposal operations on Oregon's commercial
47. fisheries are discussed in detail within ODFW's comments. In particular, the proposed sites coincide with prime crabbing grounds inshore of 200 ft. depth and

Corps of Engineers Response

44. Comments noted. Thin layer disposal is no longer being considered. See the Ocean Dredged Material Management and Monitoring Plan in Appendix H, Exhibit H, for a discussion of these issues.

45. The need for additional studies on Dungeness crab will be considered by the task force.

46. This project cannot fund basic research. We have agreed to pre- and post-construction assessment studies for the ocean disposal sites; some of these efforts may dovetail into studies your agency may wish to fund.

47. The proposed sites have been located in areas that minimize impacts to commercial fishing; in addition, the size of the deep water site has been reduced. The percent by income has been revised and included in Appendix H, Volume III.

close to the river mouth. ODFW surveys of Oregon fishermen indicate that more than 40% of their crab catch comes from the south site, and 15% of the catch from the north site. Astoria has the highest crab landings for Oregon over the last decade. The economic overlay used in the candidate site evaluation process did not accurately reflect Oregon crabbing or trawling efforts because it was based on interviews with only a few Oregon fishermen. As a result, the DEIS does not adequately state the impacts of proposed ocean disposal on Oregon commercial fisheries.

47. (con't)

In addition to adverse effects on the biological resources that support commercial fisheries, the proposed offshore disposal has the potential to conflict with these fishing operations in a variety of ways, including burial of gear in dredged spoils, loss of set gear, direct conflicts between dredge and fishing boat operations, and reduced catch due to impacts to commercial species. The DEIS does not indicate how the Corps would work to minimize conflicts with the fishing industry. DLCD understands that, given the estimated number of annual dredge trips, the large dump sites proposed, the timing of dredging which coincides with fishing seasons, and the logistics of operating dredges around weather and other variables, there may be few reasonable measures for avoiding conflicts. But we propose that the most obvious way to avoid conflicts with fishing efforts would be to minimize the size of the proposed disposal sites and concentrate disposal operations in discrete areas that are known to and can be avoided by fishermen. The FEIS must fully address the potential effects on Oregon's commercial fisheries and propose measures or alternatives to avoid, reduce, or minimize these effects.

C. Littoral Contribution from DMD

Nearshore disposal would likely provide some sediment to the littoral drift, a highly dynamic oceanographic zone that could disperse sediments in a way that mimics natural along-shore transport of sediments from river mouths and beaches. These sediments would then be available for beach nourishment and could provide, at least in the case of Long Beach Peninsula to the north of the river, an important contribution to the supply of sand to maintain the beach against erosion. A major drawback to nearshore disposal is the potential conflict with shallow-water commercial fisheries in the area.

48.

The Corps explains that to provide a littoral contribution, disposal would need to occur in <60 ft. water (App. H, Vol. I, p. 52-53 & Tech. Ex. G). Both the proposed North and South sites include depths inshore to approximately the 30 ft. contour. Approximately half of the North site falls between 30 and 60 ft. water depth contours which makes possible significant littoral contribution of material to Washington. But very little of the South site is within the 30 to 60 ft. depth zone so the majority of materials placed there would not be available for the nearshore sediment supply. In addition, disposal between the 30 and 60 ft. depths, where contribution to littoral transport is most likely, is problematic because disposal operations require calm ocean conditions which are generally not present during much of the year. For the South disposal site, DLCD finds that there is minimal potential for littoral contribution from dredged material disposal while there is an high likelihood of impacts to biological resources and commercial fisheries.

Corps of Engineers Response

48. The North and South sites have been eliminated from further consideration.

D. Site Management

1. *On-going Process Needed*

The Corps and EPA recognize a need for on-going evaluation of the new ocean disposal sites to provide for appropriate site-management. But the role of state agencies and other interested parties, such as commercial fishermen, in the on-going evaluation process is not clear. Pursuant to the Coastal Zone Management Act and

49. Oregon Coastal Management Program, DLCD will require a site-management coordination process that includes the state and affected parties in monitoring, review of monitoring results, discussion of modifications or alternatives, revision of disposal practices, resolution of use conflicts, and other needed project changes. We suggest data-sharing of monitoring results on a yearly basis with formal site reviews every five years.

2. *Justifying Assumptions*

DLCD disagrees with the basic assumption that disposal will not impact ocean resources and that therefore biological monitoring is generally not necessary. Ocean resource data is limited, and DLCD believes the jury is still out on the long-term impacts of disposal on ocean resources. The resistance to biological monitoring pre-

50. and post-disposal greatly limits the feasibility of taking an adaptive management approach to ODMD sites because no new information on disposal impacts to biological resources would become available over the years. The FEIS must either include adequate biological information and analysis of the effects of dredged materials on marine resources to support a conclusion of no impacts to ocean resources, or build in a biological monitoring program.

E. Alternatives

1. *Minimizing Impacts*

For the reasons cited above and expressed in ODFW and DEQ's comments, the OCMP must take a conservative position on ocean disposal of dredged materials because of the serious implications for Oregon's renewable ocean resources if widespread disposal in the Columbia River offshore region does have significant impacts. In addition to lethal and sublethal effects on crabs, ODFW describes potential effects on other marine biota caused by changes in sediment characteristics and bathymetric structure over the long-term, alteration of the benthic and epibenthic community structure, burial of woody debris, shells and other structure that provides shelter and refuge for adult and juvenile marine organisms, including flatfish. Oregon is unwilling to gamble with 81 square miles of offshore habitat without rigorous substantiation that disposal will not adversely impact ocean resources.

51.

While no ocean disposal site will be without impacts on ocean resources, we believe that carefully located, confined disposal sites would greatly limit adverse effects of disposal on navigation, commercial fishing, and renewable ocean resources. The DEIS does not adequately address alternatives for more confined or targeted disposal operations. Oregon has not objected to careful use of Site E, as mentioned previously. And although not acoean sites, direct beach placement at Benson Beach and the north jetty hole are other confined disposal options that need to be address in the FEIS. As a third option, we suggest small sites at 250-300 ft. depths, for example something like candidate site 8. A fourth option might be to test confined nearshore disposal, for example targeted at addressing WA's erosion problems. Agreement for the fishing community would be imperative in establishing such a nearshore site, and

Corps of Engineers Response

49. We have agreed to form a task force to provide input on management and monitoring of the ocean disposal sites.

50. Concur with comment; pre- and post-construction assessment studies will be conducted for the ocean disposal sites.

51. Comments noted. The proposed deep water site has been modified to address these concerns. Appendix H documents the Ocean Disposal Working Group process that was implemented to attain the ocean disposal siting plan. The agreed upon ocean disposal sites were located to minimize the impacts to the commercial fishing industry. The Corps gives special thanks to DLCD, ODFW, CREST, and CRCFA for bringing the Ocean Dredged Material Working Group to this consensus position.

The Ocean Disposal Working Group has evaluated all options identified to this point. Some of the options, such as direct placement on Benson Beach will be evaluated through other programs. Additional information concerning Benson Beach has been added to Appendix A.

of course, Benson Beach seems to provide a more direct option for addressing the erosion problems. Any site other than Benson Beach or the north jetty hole would require pre-disposal assessments to confirm that potential impacts from disposal are correctly understood.

2. *Assessing Other Options*

52. We believe that designation of confined disposal sites would be compatible with several site-management concerns raised during the ODMD site committee processes. The Corps' primary concern with pin-point disposal was mounding, which is not a concern if the disposal site is of sufficient depth (as can be determined with the Corps' modeling program). Oregon and Washington agencies were concerned with widespread effects on marine resources and fisheries. Washington agencies expressed concern that sediments disposed offshore were unavailable for littoral drift. Because littoral contribution is not likely at the South site (see discussion in previous section) or from disposal in the offshore portion of the north site, disposal in confined nearshore portions of the North site, along with direct beach placement, are potential options to address Washington beach erosion concerns. The Corps must develop and assess a range of options for meeting multiple management needs including minimizing the geographic extent of impacts, restricting the quantity of marine habitat and resources potentially at risk, contributing to littoral transport, reducing potential conflicts with fisheries and other ocean users, and facilitating pre-disposal studies and post-disposal monitoring.

V. OTHER ISSUES

A. Water Quality

1. *Additional Information and Analysis*

53. Pursuant to the Coastal Zone Management Act, state water quality requirements established under the Clean Water Act have been incorporated into the OCMP as the primary water pollution-control policies for the CZ. DLCD thus relies on the expertise of the Oregon Department of Environmental Quality (DEQ) to evaluate compliance with state water quality requirements. DEQ's concerns about this project's compliance with water quality standards and protection of beneficial uses are attached. Briefly, DEQ has expressed concerns for adverse effects on the Willamette and Columbia rivers by dredging and disposal of contaminated sediments and flow-lane disposal in deep water sites, adverse effects of offshore disposal, loss of wetlands from upland disposal, water quality effects on endangered and threatened species, and the need for pre- and post-disposal monitoring. In its comments, DEQ requests additional information to address these and other water quality concerns. DLCD fully supports DEQ in its requests for information related to water quality effects of the project and will rely on the expertise and authority of DEQ to determine whether the project complies with state water pollution-control policies and standards.

2. *Willamette River Segment*

54. In addition, significant, serious issues have recently been raised by the US EPA and DEQ about the widespread presence of contaminated sediments in the lower Willamette River and Portland harbor, contamination that could preclude dredging under this plan, at least for the foreseeable future. The FEIS must address the consequences of omitting or deferring the Willamette River portion of the proposed project due to the presence of contaminated sediments in this portion of the river,

Corps of Engineers Response

52. The Corps and EPA, with extensive input from the Ocean Dredged Material Working Group, have developed a Management and Monitoring Plan that addresses your concerns.

53. Comment is noted that DLCD will rely on DEQ concerning compliance with water quality requirements. See Corps responses to DEQ comments.

54. Contamination would not preclude dredging under this plan unless EPA lists the Portland Harbor as a Superfund site. The material can be dredged under the CWA with equivalent protection of the environment and human health. See our response #21 concerning incremental analysis of the Willamette River segment. Dredging of the Willamette River has been delayed in order to allow coordination with the ODEQ investigation and remediation planning for the Portland Harbor.

including an assessment of the need for, benefits from, and viability of the entire project if this river segment were omitted.

B. Removal-Fill Law and State Ownership

55. Oregon laws regarding removal-fill and management of state lands, including submerged and submersible lands, are enforceable components of the OCMP. The Division of State Lands (DSL), which has authority for these components, has identified several issues regarding the applicability of these statutes to the channel deepening project. While the Removal-Fill Law does not apply to dredging for navigational purposes or ocean disposal of dredged materials, DSL has determined that upland (i.e., not in-river or ocean) disposal can be subject to the Removal-Fill Law if dredged material is ultimately used as fill. This must be addressed in the FEIS. In addition, DSL may collect state royalty fees for certain uses of dredged material. DSL also has serious concerns about placing dredged material in wetlands and the completeness of the wetlands data presented in the DEIS. The FEIS must respond to DSL's concerns and where these concerns relate to CZ uses and resources, the FEIS must address compliance with these state statues in the final CZ management consistency determination.

C. Land Use

1. *Land Use Conversion*

56. The channel deepening project raises several concerns about the effects and implications of upland DMD on existing and ftiture land uses along the Columbia River. The Corps concludes that the deepening project will have only minor effects on land use by changing some agricultural and open space areas to DMD sites (p. 9-3, DEIS). The DEIS explains that these disposal sites will be used for various time periods up to 20 years, which is the planning period for this project. However, DLCD is concerned that future conversion of these sites to other land uses must be compatible with Oregon's land use program, including local comprehensive plans and implementing regulations. Dredged materials from the proposed project would fill what are now rural resource lands and could result in pressures for conversion to industrial or commercial sites or urban-level residential development without adequate public facilities and services to support such development. Although the Corps cannot predict the exact uses that might be proposed for DMD sites, the FEIS must acknowledge the potential for land use conversion effects from upland disposal and address coordination with local jurisdictions and DLCD on the eventual 'retirement' of sites from DMD use.

2. *Farmlands*

57. The Department previously notified the Corps of specific concerns about the potential for upland DMD to affect farmlands protected under Oregon's land use program, and the Corps has been responsive to those concerns. Under the least-cost alternative, only one site, the Scappoose Dairy (107 acres), would be converted to a disposal site. The least-cost alternative would convert 400 acres of farmland for wildlife mitigation at three sites (Westport and two Sauvie Island sites). The sponsor's-preferred alternative would reduce the effects on farmland from wildlife mitigation to only a 100-acre conversion at Westport and would not use the Scappoose Dairy site as a disposal site (p. 6-46, DEIS). DLCD supports the "sponsor's alternative" over the "least-cost alternative" to protect farmland.

Corps of Engineers Response

55. General land use issues and requirements are described in the final EIS. Resolution of site-specific issues such as State removal-fill requirements would be addressed by the sponsoring ports during the site acquisition phase. See response #4 and #10 to the US Environmental Protection Agency letter concerning wetlands.

56. The planning period for this project is actually 50 years. Most of the upland disposal sites are expected to be used at least through that time period and beyond. A few sites are expected to be converted to port and industrial use at some time in the future. These are noted in the final EIS. The disposal plan has been revised with a new combination of least cost and sponsor's preferred alternatives. The proposed disposal plan no longer includes Scappoose Dairy.

We are aware of land use and/or zoning restrictions that may preclude or impair use of the sites for disposal. Any specific land use amendments, if required, would be addressed by the sponsoring ports during the site acquisition phase.

Also see previous response #23 concerning the potential for land use conversion effects.

57. Comment noted. See our response #56.

DLCD continues to request that the Corps clearly explain to land owners and the public that the purpose of disposing of dredged material on farmlands is not to
58. convert rural lands to urban-type uses. Also, if the Scappoose Dairy site is used, the Corps must justify an exception to Oregon's Statewide Planning Goal 3, Agricultural Lands (see p. 2 of DLCD's 8/6/97 letter) and would also need to address ODFW concerns about effects on wildlife from converting the dairy site to a dredged material disposal site.

3. *Local Land Use Information and Coordination*

DLCD cannot determine from review of the DEIS whether the Corps contacted affected local jurisdictions for land use data such as base zoning, overlay zoning, public facilities, or the presence of protected natural resources at DMD and wildlife
59. mitigation sites. The Corps must coordinate with affected local jurisdictions to obtain and use relevant land use information in the FEIS and to ensure the local comprehensive plan and zoning ordinances reflect the long-term management goals for these sites.

4. *Alternatives to the Project's "43 ft. Build-Alternative"*

DLCD recognizes that the primary objective of the current study was to examine the 43 ft. build-alternative. However, this build-alternative would come at significant financial cost and would have widespread effects on the river environment, adjacent uplands, the estuary and nearshore ocean. We believe that, overall, the FEIS must
60. consider a wider range of alternatives that might be used to meet the overall objective of improving the navigability and safety of the river for deep draft vessels. Therefore, the FEIS should further assess other non-construction alternatives such as use of the LOADMAX system or LOADMAX with a tiered channel to determine if project goals can be met. The Corps should look at how the LOADMAX system is being used elsewhere, particularly at other west coast ports.

5. *Future Need*

Last, we are concerned that even if this project proceeds, on-going changes in the maritime industry will yield bigger ships and eventually result in calls to deepen the
61. shipping channel yet again. Is there a point at which continued deepening of the Columbia River is neither feasible or justified? The FEIS should clearly address this question.

Oregon Department of Environmental Quality (DEQ)

The sponsors have forwarded a proposal for deepening the Columbia and Willamette River shipping channel. Given its nature the project is likely to be very controversial. Clearly, by law and regulation, the sponsors bear the burden of responsibility for proving
62. and ensuring that the project has minimal long-term impacts to the environment and natural resources of the effected areas of Oregon and Washington. The role of the natural resource agencies, both federal and state, is to ensure that the project sponsors live up to their mandated responsibilities. In view of this, the following document contains comments on inconsistencies, shortcomings and omissions of the DEIS, in terms of

Corps of Engineers Response

58. The Corps has held three series of public workshops during the course of the feasibility study, the last occurring after release of the DEIS. In addition, we have met with individual landowners whose lands are proposed for use as upland disposal or wildlife mitigation sites. We have consistently identified that our purpose for utilization of their lands dealt with dredge material disposal or wildlife mitigation. Also see our response #56. The Scappoose Dariy site is not part of the proposed disposal plan in the FEIS.

59. The Channel Improvement Study/draft EIS has been coordinated with all local jurisdictions within the study area. Comments were received from the counties within the coastal zone. Specific land use issues would be resolved by the Corps and sponsoring ports following project authorization.

60. See response #2 to the US Department of the Interior letter concerning LoadMax.

61. Our analysis was limited by statute to study deepening no greater than 43 feet. There is a point at which continued deepening would not be justified, and it is something deeper than 43 feet.

62. Comment noted.

project effects on water quality and the ability of the sponsors to secure a 401 water quality certificate from ODEQ.

I. Contaminated sediments:

A. Willamette Basin-

1. Needs additional sediment testing in specific areas to be identified.
2. Flowlane disposal of contaminated sediments even below screening level is imprudent given widespread and panoramic nature of contaminants due to Bioaccumulation, Biomagnification, Synergistic potential which is unknown and needs to be documented. Downstream "fallout" of contaminated spoils is unacceptable.

63.

3. Turbidity in dredge areas resuspends contaminants to migrate in the water column, exposing more organisms to risk.
4. Project will trigger a cascade of dredge applications from Port users who wish to have their berthing areas deepened to accommodate deepdraft vessels. It is well documented that shallower nearshore areas contain higher concentrations of contaminants.
5. The use of silt curtains or other new technology is not discussed for limiting migration of suspended sediments during dredging.

B. Columbia Channel-

1. The Lower Columbia River is already listed on the 303(d) list as Water Quality Limited for toxics. Some fish currently exceed health criteria for human consumption.
2. The Bi-States study appears to disagree with Corps data on CR contaminants, which suggests that more testing is needed, particularly in past disposal sites that will be re-used. More disposal at these sites will cause old sediments to slump into channels, potentially freeing contaminants to migrate. Dredging a deeper channel will also encourage "slumping" with the potential to re-suspend silts and contaminants.

64.

3. Migration of re-suspended silts and their associated contaminants into the water column make them available for uptake by organisms which salmonid smolts require for rearing. This will endanger T&E smolts as well as other endemic fishes and will work its way up the food web. Elevated levels of contaminants in top predators such as eagles and otters is well documented, and is affecting reproductive success, Where is it coming from? The Corps needs to document that it WILL NOT be coming from their activities.
4. In-river work- Timing of work, equipment used, processes, can minimize impacts to fish and also minimize resuspension and redistribution of contaminated sediments. This issue is not properly discussed.

Corps of Engineers Response

63. ODEQ Cmt #1: Concur with comment.

ODEQ Cmt. #2: This is in conflict with the Lower Columbia River Management Area Dredged Material Evaluation Framework, November 1998 signed by Langdon Marsh and other state and federal agencies. This document provides a consistent technical framework to follow in identifying environmentally acceptable alternatives for the management of dredged material. The framework is consistent with and meets the substantive and procedural requirements of NEPA, CWA, and MPRSA and is applicable to dredged material management alternatives.

ODEQ Cmt. #3: Special dredging equipment may be required for the Willamette River to minimize suspended sediments in highly contaminated areas.

ODEQ Cmt. #4: Although higher concentrations of contaminants have been found in nearshore areas of the Willamette River, the number of such applications and the degree of contamination of specific sites that would be dredged under those applications cannot be determined at this time. Sediment data on the berthing areas which would benefit from a deepened project has been added to the FEIS.

ODEQ Cmt. #5: Silt curtains do not work in any system with a current such as the Willamette River but may be effective in certain backwater areas with limited flow. Special dredging equipment may be required such as closed clam buckets. There is existing dredging technology developed to dredge highly contaminated sediments.

64. ODEQ Cmt. #1: Comment noted.

ODEQ Cmt. #2: The Bi-State study only sampled 2 stations in the federal channel both in the estuary and both sand. Contamination levels were below detection limits for all constituents analyzed except for metals. No constituent exceeded the established screening levels for the evaluation of dredged material in the Columbia River Federal Navigation Channel. This is in agreement with the data collected under this feasibility study. (See general discussion regarding Columbia River Sediments and the Bi-State study.)

ODEQ Cmt. #3: The evaluations conducted under the feasibility study have shown that the material to be dredged from the Columbia River is primarily sand, low in fines (1%), and low in organics (<1% TOC). These sediments meet the exclusionary criteria of both the CWA and MPRSA and are considered suitable for unconfined in-water disposal without testing. This is further discussed in the Lower Columbia River Management Area Dredged Material Evaluation Framework, November 1998 (DMEF).

ODEQ Cmt. #4: Sediments in the mainstem of the river have been found to be acceptable for unconfined in-water disposal and are considered suitable for upland in accordance with the guidance provided in the DMEF. A discussion of construction and disposal timing is included in the Biological Assessment; the NMFS is preparing a biological opinion based upon the assessment. See also our response #6 to the NMFS letter.

64. (con't) 5. Cumulative impacts of multiple dredges operating simultaneously at several sites over time will lead to undesirable cumulative impacts to resident and migratory fish and wildlife.

II. Disposal of materials in deep in-river sites:

65.
- A. Turbidity Issues
- B. Sturgeon habitat loss
- C. Potential contamination
- D. Direct loss by burial of juvenile fish, benthos, and other organisms.

III. Off-shore disposal:

66.
- A. Concern for crabs, crabbing industry. Crab study funded by Corps inadequate to address loss of organisms. More research needed.
- B. Widespread habitat loss/disruption, species displacement.
- C. Turbidity concerns not addressed.
- D. Thin layer disposal not tested adequately.
- E. Fishermen issue not adequately addressed.
- F. Mounding and its impacts to maritime safety, trawl fishermen.
- G. Beach nourishment issue on WA side not properly addressed. WA wants the material but Corps won't go the extra yard to create a win-win solution.

IV. Upland Disposal:

67.
- A. Potential for contaminated sediments to re-enter river through runoff, either at time of disposal or later due to stormwater dispersal as surface water or groundwater.
- B. Potential for toxins to enter groundwater aquifers.

V. Wetland Loss:

68.
- A. Fill of estuary, wetlands, farmland, leads to degraded water quality. Not addressed.
- B. Land-use Conversion- Productive habitat is filled, becomes industrial site, WQ loss. Irreversible loss of estuarine/riverine habitat.
- C. Potential to contaminate wetlands with contaminated sediments.

VI. ESA considerations relative to water quality issues:

69.
- A. Contaminants and their effects, particularly but not limited to T&E spp.
- B. Turbidity
- C. Direct habitat loss
- D. Incidental "Taking"

VII. Monitoring Protocols-NOT DISCUSSED

70.
- A. Areas containing elevated contaminant levels will need sampling concurrent with dredging as well as post-dredging sampling to

Corps of Engineers Response

ODEQ Cmt. #5: See our previous response.

65. Additional discussion has been provided in the report on these issues.

66. See previous responses #40 to #47.

67. Columbia River sand meets the exclusionary criteria of the CWA and has been found suitable for both in-water and upland disposal. Since the sand is not considered contaminated, runoff or ground water contamination will not occur. Material from the Willamette River is not posed to be placed upland. Dredging of the Willamette River is delayed until supported by the local sponsor.

68. No estuarine fills that would create fast land are proposed. Open water, unrestrained placement of dredged material at water depths of 50-65 feet in or adjacent to the channel or deep water sites and Harrington Sump, would place medium-grained sandy material with low percent fines onto like material. This material is considered clean and meets guidelines for in-water disposal. Thus, no degradation of water quality would occur nor would wetland contamination occur. Improvement of the Willamette River navigation channel has been deferred until all parties reach a mutual agreement on handling of the contaminated sediments. Wetland fill has been minimized to the extent practicable. Those wetlands subject to filling lie behind dikes, their waters are directed to drainage ditches and exhausted through pumps to the river, are subject to agricultural activities, and exist in a degraded condition. Their ability to filter water of sediments and contaminants has already been lessened by man's activities. Further, the mitigation plan emphasizes wetland habitat development which would more than offset the anticipated loss of wetland habitat or any perceived loss of wetland capability to address water quality. Industrial site development would be contingent upon land use zoning changes and the Corps no longer needing the site for disposal. We anticipate many sites will be required for the 20-year period and beyond.

69. ESA consultations with the NMFS and USFWS are underway for listed species.

70. Testing is conducted prior to dredging, not during or after. Dredged material evaluation must be consistent with the DMEF jointly prepared by the ODEQ, DOE, DNR, EPA, and Corps.

70. (con't) determine dredging effects. This sampling must include biological testing to determine levels of resuspension and uptake by organisms.

In order to make a determination whether the proposed project would meet State and Federal Water Quality Standards and the requirements of the CWA, the following additional information is needed:

71.
- Provide a copy of the sediment sampling plan to compare with DEQ and EPA approved sampling methodologies and protocols.

- Conduct additional sediment sampling in both the Willamette and Columbia River particularly in the proposed turning areas near the Ports of Longview, Kalama and Astoria. In the Willamette fill in data gaps on the west bank areas between River Miles 4 through 11.

72.
- Conduct biological sampling in areas that exceed threshold values including the collection of fish tissue using the EPA Human Health Risk Methodology consistent with that used by the Lower Columbia River Bi-State and Willamette River Studies, and the EPA and CRITFC study. Biological sampling should also be conducted to identify potential bioaccumulation, biomagnification, and synergistic impacts by the proposed project given the numerous studies showing impacts to human, fish and wildlife health.

73.
- Identify the water quality impacts during dredging and disposal both in-water and upland areas. The Port of Portland has previously collected water quality samples during their dredging and in-water disposal activities at Ross Island. In addition, develop for approval a proposed water quality and ecological sampling and mitigation plan to be completed during all proposed dredging, in-water and upland disposal activities and a monitoring plan for the duration of the life of the project. For upland site disposal, also develop a surface water and groundwater sampling and mitigation plan. If needed, identify measures to collect and treat run-off to meet surface and groundwater CWA and Drinking Water Act standards.

74.
- For the Willamette River, identify cooperative actions the CORPS will take with EPA and DEQ to clean up and properly dispose of the contaminated sediments within the proposed dredging areas.

75.
- It is important to recognize ODEQ's efforts to lead the development of a sediment management plan for Portland Harbor and a 5.5 mile stretch of the Willamette between Swan Island and Sauvie Island. This section of the river is being considered by the EPA as a potential addition to the National Priorities List (Superfund Site). The sediment management plan is being developed as a cooperative effort between State, Federal, and, local agencies and entities doing business in this section of the Willamette River. The management plan, to be released in May 1999 will include sediment sampling and analytic methodologies and protocol for developing fresh

Corps of Engineers Response

71. The sediment sampling plan developed and used for the feasibility study sediment quality evaluation will be added to Appendix B. The local sponsors have completed sediment sampling of the berthing areas. Their general report will be added to Appendix B. Deepening of the Willamette River is to be deferred, no additional sampling or evaluation is scheduled.

72. Testing of material to be dredged shall be consistent with the DMEF. No additional sediment evaluations or biological testing is anticipated at this time.

73. Based upon existing information, dredged material proposed for upland disposal would not require collection and treatment. No further testing or monitoring is required. The Willamette River material is not proposed for upland disposal in addition the deepening of the Willamette River will be deferred at the request of the local sponsor.

74. The local sponsor has requested that dredging of the Willamette River be delayed in order to allow coordination with the ODEQ investigation and remedition planning for the Portland Harbor. No further Corps studies of Willamette River sediments are anticipated prior to completion of the remediation plan. Further sediment quality evaluations will be required and conducted prior to any dredging and disposal activities. This includes the development and design of appropriate management strategies to assure the biological integrity of the system consistent with all state and federal laws and regulations. The Corps has and will continue to participate in USEPA's and ODEQ's efforts to clean up the Willamette River.

75. Comment noted. See previous response.

75. (con't) water sediment screening levels and risk determination. The outcome will result in a Department-led effort to address necessary cleanup of contaminated sediments in an efficient manner.

76. • Identify the impacts to water quality and beneficial uses for in-water shelf/bank slumping and erosion of potential contaminated sediment areas within and adjacent to proposed channel dredge areas.

General DEIS Comments:

77. 1. Provide table(s) and text identifying screening levels of contaminants and how they protect fish, wildlife and human health with particular regard to impacts from bioaccumulation, biomagnification, and synergy.

78. 2. Air Quality Impacts need to be better defined with data. The following comments are provided by the DEQ Air Quality Division:

"The proposed channel improvement project is subject to the general conformity requirements of OAR 340-20-1500 through 340-20-1600 Determining Conformity of General Federal Actions to State and Federal Implementation Plans. Documentation must be provided to determine if total direct and indirect emissions from the project are above or below applicability threshold limits. For projects with emission increases in excess of the applicability threshold, the conformity analysis must demonstrate that the proposed activity will not cause or contribute to any new violation of air quality standards, and that anticipated emission increases are consistent with increases accounted for in air quality plans. The conformity analysis should be made part of the Environmental Impact Statement so that air quality impacts from this project can be adequately assessed.

The conformity analysis must consider both direct and indirect emission increases resulting from the proposed action. The EIS should quantify and evaluate emission increases from dredging, disposal and increased ship engine exhaust as well as increased truck travel associated with the movement of goods that are delivered by the increased commercial activity in the channel. Where mitigation measures such as stabilization of dredge disposal sites are relied upon these should be clearly identified."

79. 3. The DEIS should identify the potential for upland disposal sites impacts to water quality.

80. 4. In Appendix B, the sediment data tables need to identify the measurement values, e.g., in parts per million (ppm) or parts per billion (ppb).

81. 5. Need to identify in DEIS whether any of the possible future berthing and port dredging and maintenance activities are being covered by this EIS and what process will be followed to meet NEPA, 401 Certification or other CWA requirements

Corps of Engineers Response

76. See our response #74.

77. A discussion of screening levels is presented in the DMEF. Screening levels for various chemicals are provided in the chemical data tables presented in Appendix B.

78. Discussion with DEQ Air Quality Division staff further clarified this comment as follows: The General Conformity requirement in OAR 340-20-1500 applies to emissions within the Portland area. Portland is classified as a "maintenance area" under Section 175A of the Oregon Clean Air Act. A conformity determination is required if direct and indirect emissions equal or exceed 100 tons per year for ozone precursors, carbon monoxide, and particulate matter. Direct emissions would apply to exhaust from dredging required to deepen the navigation channel. Using emissions data from the Corps dredge *Essayons* and estimating dredging time for channel deepening in the Portland area, total direct emissions are estimated at 40 tons per year for ozone precursors, 4 tons per year for carbon monoxide and 1.2 tons per year for particulate matter. This is well below the emission thresholds. As previously stated, shipping increases and port and industrial expansion are the result of commodity demands. A deeper channel primarily allows existing deep draft vessels to fully load, increasing transportation efficiency.

79. There are no upland sites in the Willamette River. There are no identified adverse impacts for the dredging of mainstem sediments to water quality.

80. Comment noted. Metals are in ppm and all organic analyses were conducted at the ppb level. Units will be added to the tables as suggested.

81. Dredging requirements for port berthing areas are addressed in section 4.6 of the EIS.

Oregon Department of Transportation (ODOT)

ODOT has concerns on how the dredged materials will be transported to proposed upland disposal sites: if by truck, ODOT has concerns about increased traffic, access, sifting loads and unsecured leaking loads. Coordination with ODOT district offices regarding the transport of materials needs to occur prior to transport.

82.

There is an interstate study group reviewing options to replace or add a second bridge over the Columbia River at Ranier/Longview. Coordination with this study group needs to occur during the planning and final design of the proposed dredging operation.

Proposed disposal site: 0-65.9: ODOT owns, or may have property that abuts the proposed disposal site. ODOT is concerned that any disposal would alter drainage to and from the ODOT property, which could negatively impact ODOT roads. Any disposal would need to be coordinated with the ODOT District 2A office.

83.

Proposed disposal site: 0-82.6- Reichold Chemical. Coordination with the ODOT District 2A office will be required on the plan and permit requirements for the pipe relocation.

Proposed disposal site: Morse Brothers Quarry: ODOT may have concerns regarding this site depending on how, and if the site is to be used. Coordination with the ODOT District 2A office should occur if the upland portion of this site is selected.

ODOT has concerns that contaminated disposal materials will be placed adjacent to ODOT properties.

Oregon Department of Fish and Wildlife (ODFW)

SUMMARY OF COMMENTS

The Oregon Department of Fish and Wildlife's (ODFW) Northwest Region, Habitat Division, and Marine Resources Program have reviewed the US Army Corps of Engineers' (USACE) Draft Integrated Feasibility Report for Channel Improvements and Environmental Impact Statement for the Columbia River (DEIS). These comments serve as ODFW's response to the DEIS concerning both river dredging and disposal options and ocean disposal issues.

84.

We understand this project intends to dredge Columbia and Willamette River sediments to increase the channel depth from -40 to -43 feet deep. An estimated 115 million cubic yards (MCY) of river sediments will be removed (24.4 MCY in deepening and 90.6 MCY in maintenance dredging). Dredging will extend from RM 3.0 upstream on the Columbia River to RM 105.5 near the I-5 Interstate Bridge crossing at Vancouver. Dredging is also proposed to occur up the

Corps of Engineers Response

82. Material will be placed on upland disposal sites by a hydraulic dredge. Please furnish us with a point of contact and what is the envisioned outcome from coordination with this interstate study group.

83. Site O-65.9 is not being used for the proposed project. We will coordinate with you on site O-82.6. The Morse Brothers site has been dropped. No contaminated material is being dredged from the Columbia River. Dredging of the Willamette River has been deferred; see our response #74.

84. Comments noted.

Willamette River to the Broadway Bridge. Channel deepening will be completed in 2003 and channel maintenance under this proposed project will continue for 50 years. This $189 million project proposes to add $39 million annually to the economy by increasing shipping tonnage capacity by deeper draft vessels.

84. (con't)

Dredge disposal in marine offshore areas will cover 75 square miles (the equivalent of 16,000 football fields) of ocean floor. Dredge spoils will cover some 400 acres of farmland including 38 acres of wetland and 66 acres of streamside forests. The project area is situated within federally designated critical habitat for Snake River sockeye and chinook salmon. Dredging will occur in the Lower Columbia River where steelhead are also listed as threatened under the federal Endangered Species Act. There are also a number of state-sensitive species in the project area.

While the USACE has undertaken to write a comprehensive DEIS to address project impacts, ODFW continues to have a number of serious concerns with the proposal. For river impacts, we are generally satisfied with the efforts of USACE and believe that project impacts will be adequately mitigated if properly implemented by USACE so that fish and wildlife are protected. We do, however, have some specific concerns and comments about the channel deepening and disposal options that are discussed in the attachment, section D. In addition, we have serious concerns with the proposed offshore management of dredged material disposal (DMD). We summarize the ocean disposal issues below. Specific comments on the offshore and riverine portions of the DEIS are addressed in sections A-D of the attachment.

Off-Shore Disposal Issues

ODFW recognizes the obligation of the EPA and USACE to find long-term disposal sites for Columbia River dredged material and the agencies' obligations to ensure navigational safety and economic savings in site selection. EPA and USACE are also obligated to ensure that dredged material disposal does not degrade marine resources or economic potentials of the state. In the process of proposing new ocean disposal sites, we believe that the EPA and USACE have underestimated the adverse environmental and economic consequences of ocean dredged material disposal.

85.

After review and consideration of the DEIS with respect to the proposed ocean disposal sites and supporting information, ODFW is opposed to the designation of the USACE proposed sites, referred to as the "North Site" and the "South Site". Reasons for our position are listed below. Further discussion on the proposed disposal sites is presented in section A of the attachment:

1) Direct conflicts with the commercial crab fishery in this productive and important fishing ground would be unacceptably high;
2) Adverse impacts to Dungeness crab, especially juveniles and molting soft-shell crab, would be too great;

Corps of Engineers Response

85. Comments noted. These concerns and the concerns expressed at the Ocean Disposal Working Group have resulted in the selection of the revised proposed deep water disposal site.

3) The size of the proposed sites (75 square miles total) is unprecedented, and would result in degradation of too much marine habitat;
4) The ability to place disposal in a dispersive or "thin-layer" manner to reduce environmental impacts is unproven in the ocean off the Columbia River.

85. (con't)

Continuous ocean disposal in the same location results in long-term loss of biological resources. Although some disposal is necessary, the loss of productive capacity of up to 75 square miles of prime nearshore ocean habitat is unacceptable. ODFW supports the following alternatives to the proposed sites (contingent upon the conditions described for site alternatives in section B of the attachment):

1) Placement of material on Benson Beach for beach nourishment,
2) Continued disposal in Area E, providing that navigation hazards can be avoided and crab loss mitigated, and
3) Utilization of a deepwater (250-300ft.) confined disposal area at or near candidate site #8, as proposed by the Ocean Disposal Working Group, as a fallback site to (1) and (2) above.

86. Prior to the final designation of new ocean disposal sites, comprehensive biological surveys will be needed to determine potential impacts to marine resources. Needed information will include identifying unique habitats and identifying concentrations of biological resources. This will provide baseline biological information from which periodic biological monitoring of the sites may occur. The monitoring plan presented in the DEIS for ocean disposal sites monitors primarily physical changes at the disposal sites, and does not adequately monitor for biological impacts. A biological monitoring plan will need to be developed for the FEIS. This is further discussed in section C of the attachment.

87. Mitigation is a component of the Channel Deepening Project for freshwater and wildlife species but has not been addressed for marine species in either the dredging or ocean disposal projects. ODFW's mitigation policy (OAR 635-415-0020) does not differentiate between marine and freshwater, all fish and wildlife species and habitats are covered under this Rule. The commercially important Dungeness crab will require mitigation for entrainment mortality due to dredging and direct burial mortality due to disposal. ODFW's primary recommendation is avoidance of impacts through alternative disposal sites, and secondarily, habitat enhancement or recovery. The Gray's Harbor Crab Mitigation Program can provide a framework for developing a mitigation plan for Dungeness crab in and off the mouth of the Columbia River (MCR). The USACE should work with ODFW and other resource agencies to develop the mitigation plan.

The attached document provides expanded discussions on the above-listed concerns and recommended alternate disposal sites. The attachment is in 4 sections; section A discusses the proposed ocean disposal sites, section B discusses alternate disposal sites, section C discusses other ocean disposal issues in the DEIS, and Section 4 covers river dredging and disposal issues. ODFW

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86. In addition to the biological data known about these sites, we will conduct pre- and post-construction assessment surveys. These surveys will be established in cooperation with the management and monitoring task force who will aid the Corps and EPA in the management of these sites.

87. The location of the proposed deep water disposal site was selected by the Ocean Disposal Working Group to avoid and minimize impacts to important resources. Management and monitoring of the sites would seek to further minimize these impacts. There is no change in dredging of the MCR project; consequently, entrainment will not be increased. There will not be compensatory mitigation for entrainment of crabs which occurs primarily at the existing MCR project.

appreciates the USACE's consideration of our comments and recommendations in the FEIS. We look forward to and support the USACE re-evaluation of potential ocean disposal sites. Thank you for the opportunity to review the draft material.

SPECIFIC COMMENTS

A. Proposed Ocean Disposal Sites

The Ocean Disposal "Working Group" mentioned in this letter, refers to the group of agency and fishing industry representatives who were assembled by the USACE to provide data and knowledge about natural resources off the MCR and to evaluate candidate disposal sites.

1. Crab fishery conflicts

Prime crab fishing grounds are inshore of 200 feet deep and close to the MCR. The 4-mile radius around the MCR that the USACE defines as the Zone of Siting Feasibility (ZSF) incorporates most of the prime inshore crabbing area. Conflicts with the fishery were severely underestimated in the draft EIS, in part due to the under-estimation of the size of the commercial crab fishery in the nearshore area off Oregon. The commercial crab fishery income overlay presented in the draft EIS does not accurately depict the proportion of income by area for the Columbia River crab fleet. While efforts were made to contact Oregon crab fishers, only two of the 15 responses were from Oregon crab fishers, the rest were from Washington. The income overlay showed much higher percentages of catch north of the River than south. To the contrary, crab landings are much higher in Oregon ports than in Washington ports. Additionally, the Port of Astoria has received the most landings of any Oregon port during the current decade. Because we suspected a large-scale
88. error in the percentage income by area, ODFW conducted interviews with 17 Oregon commercial crab fishers using the same area-of-catch cells presented in Appendix H, volume II, "October 1-2, 1997 Interviews". Oregon crab fishers reported that greater than 40% of their combined crab harvest is from the proposed South Site, and at least 15% from the North Site. The commercial crab fishery off MCR is one of the most concentrated and economically important fisheries in Oregon. The crab income overlay in the draft should be replaced by a new overlay with accurate information for the FEIS.

Direct conflicts between the disposal operations and commercial crab fishing will be unavoidable during the time period when the two activities overlap, from May to August 14. According to the predicted disposal schedule in the DEIS, there will be 1,170 dredge disposal events per year during their 40-50 day dredging season from May to October. Impacts to the crab fishery will include: sand burial of crab gear, loss of set crab gear, and reduced catch due to crab mortality and to physiological and behavioral responses that affect movement of crabs into crab pots. The DEIS concluded that dredged material

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88. We have minimized impacts to the crab fishery by locating the deep water site in an area that the commercial crab fishing fleet does not use. The location of the deep water site was agreed to by the Ocean Disposal Working Group.

disposal will have no economic impacts to commercial fishing. This conclusion is contrary to information we obtained from crab fishers and to the available data on direct impacts to crabs. The FEIS will need to accurately reflect all current information.

2. Biological impacts to Dungeness crabs:
Dungeness crabs will be subjected to lethal and sublethal impacts from dredged material disposal. Individuals particularly vulnerable to impacts are adult females as they move through the nearshore areas during summer and crabs in the softshell condition, as the they are highly vulnerable to physiological and physical impacts.

89. The laboratory study designed by the USACE and conducted by Battelle Laboratories in Sequim, WA., provided a preliminary examination of burial impacts from disposal on softshell and juvenile crabs of various size ranges. Crabs that burrowed in the sand prior to a disposal event died. The extent to which softshell crabs burrow naturally in the ocean floor is not known and requires further study prior to proposing or designating disposal sites in prime crab habitat. Mortality was 15% for the smallest size class, and greater than 40% for the 2 larger size classes tested. The combined mortality for all crabs tested was 30%. Mortality for the middle and large size classes was 48% and 75% when burial depth was equal to or greater than 4.2 inches and 6.6 inches, respectively. Although the author concluded that death might be attributed to pre-disposal burrowing activity rather than depth or sand accumulation, results are not conclusive. Several limitations in the study preclude a complete analysis of the latter. Although the Battelle study was only a pilot study, the results do suggest that direct disposal on softshell crabs kills a high percentage of individuals. Further study is needed to determine the dynamics of crab burrowing activities, such as: crab diel activity patterns, behavior in response to predators, ocean currents and storms. Understanding the timing and frequency of burrowing activity would aid USACE in determining areas that should not be utilized for dredged material disposal.

The DEIS concluded that dredged material disposal will have minimal impacts on soft-shell and juvenile crabs. This conclusion was made prior to the completion of the Battelle pilot study and are contrary to the final Battelle study results and to expert scientific opinion (Dr. David Armstrong has conducted numerous research studies on crab ecology and dredging impacts to crabs and provides written testimony of potential impacts in the 1998 lawsuit [CRCFA vs. USACE] over Site B). The statement throughout the DEIS that "most crab" survive implies acceptable levels of survival. ODFW does not consider 30% mortality acceptable. The DEIS also states that impacts to crab population will be "minimal". ODFW does not consider 30% mortality over 52,000 acres of marine habitat, "minimal impacts". The interpretation of the Battelle study results throughout the DEIS is inaccurate and misleading. If no additional studies will be conducted prior to the final EIS, the USACE

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89. Further discussion on Dungeness crab impacts due to disposal have been added to the final EIS. Conducting additional testing on Dungeness crab will depend upon the recommendations of the management task force and availability of funds.

summary of the Battelle study must be rephrased to reflect the actual results and implications of the study.

The Battelle Crab study does not provide information on other adverse impacts. Actual disposal events are likely to cause adverse effects on the respiratory system, mating behavior, feeding behavior, prey availability, and responses to structural habitat changes, e.g., debris used as shelter by small crabs. Furthermore, ocean conditions not reproducible in the lab will likely effect survival for crabs already compromised by the physical impacts of disposal. Further studies are needed to adequately characterize these impacts. Additional comments on the Battelle study are provided under Dungeness Crab and Flatfish Research in this letter.

89. (con't)

The Battelle study was a pilot study designed to test the study design and the ability to induce crab molting in the lab. The USACE committed to following the pilot study with a more complete study once study design issues were resolved. We assume the study will occur as planned. The author of the study concluded that the study had several limitations and results should be considered preliminary. The follow-up, *full* study must include as a partial list, examination of the potential impacts described above, larger sample sizes and *actual* disposal sediment (additional comments are provided under Dungeness Crab and Flatfish Research). In the event that a follow-up study is not conducted, ODFW must rely on the pilot study results which indicate that sediment accumulation of as little as 4 inches results in proportionally high mortality in juvenile and softshell crabs. To understand the total implications of dredged material disposal on crabs, comprehensive field studies are also needed to determine crab distribution and abundance in and around disposal areas and habitat impacts specific to the disposal sites.

3. Marine Habitat Degradation: Disposal of dredged material will effect the quality of bottom habitats in the following ways: (a) changing sediment characteristics (replacing finer-grained sediment with coarser-grained sediment), (b) changing the benthic-epibenthic community structure, (c) burying woody debris, shells and other organic matter that provide shelter and refuge for juvenile crabs, (d) changing the "mud hole" adjacent to the North site, and (e) long-term bathymetric and structural changes. Further discussion of these impacts follows.

90.

(a) The draft EIS states that sediments from the MCR and upriver are similar to sediments at the new ocean disposal sites. This appears to be a main premise on which the new sites were chosen. However, according to data presented in the draft EIS, sediment grain size from MCR and up to rivermile (RM) 29 can be several times coarser than that of the new sites, depending on which page is referenced. The draft EIS contains numerous conflicting statements regarding sediment properties.In Appendix H, Vol. 1, Exhibit B, page 54, the ocean disposal site sediments are 0.09 to 0.15

91.

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90. Comments noted.

91. Although we generally concur with the statement as it related to the North and South sites presented in the draft EIS, the overall sediment characteristics would be compatible with the dredged sediments. Of the currently proposed sites, expanded Site E would follow the like on like principle; sediment grain size at the deep water site will be permanently altered by dredged material.

mm with 0 to 10 percent fines, while the dredged river sediments are 0.19 to 0.37 mm with 1 to 4 percent fines. The average sediment size ranges do not overlap, yet they are described as being similar. Elsewhere, in Exhibit D, the median grain size of disposal sediment is 0.1 to 0.2 mm. The statement in Exhibit B that *"physical properties of the ocean floor will not be changed"* is not substantiated, nor is the statement in the Section 103 Evaluation that *"sediments are similar to bottom materials at disposal sites"*. The final EIS needs to correct these inconsistencies. Also needed is a detailed explanation of the criteria on which sediment types are deemed "similar", and how the physical properties of disposal sites will remain unchanged by disposal sediments, if this is indeed the case.

(b) Changes to the integrity of the benthic community following disposal are probable. Bottom habitats in the deeper portions of the new sites beyond 100 feet are considered stable environments relative to the shallower portions of the sites where waves, currents and circulation patterns naturally disturb the bottom. Bottom dwelling organisms that inhabit the deeper areas are likely adapted to this more stable environment. Disposal of dissimilar, coarser sediment will likely cause a greater impact to the deep-water benthic community than to the shallow water community. Species adapted to finer sediment would be replaced by species adapted to coarser sediment. These species may or may not be suitable prey for fish and other marine predators that inhabit the area. Durkin and Lipovsky (1977) found that some fish were smaller in size after disposal events, and suggested that changes in the food source may be one reason, among others.

92. Recovery of a benthic community after a disturbance takes months. Recovery is not "rapid" as mentioned in the Summary of Benthic Invertebrate Information ("Hancock Report") (Hancock, 1997) in the draft EIS. Previous studies reported that recovery time for invertebrate density takes about 6 months, while species composition takes up to 17 months. It is unclear to what degree species composition would recover if the sediment properties of the habitat were permanently altered, as in the case of dumping coarser sediment on top of finer sediment.

In addition to the physical effects of disposal on benthic recruitment, the enormous size of the disposal site may affect recruitment mechanisms, such as recruitment into the interior sections of the site. Recruitment of benthic organisms into disturbed areas occurs, in part, from neighboring areas. As neighboring areas are disposed on and disturbance spreads over a larger area, recruitment of benthic organisms into the interior areas may decline or slow. As a result, the 75 square miles encompassed in the proposed north and south sites will be subject to widespread disturbances.

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92. Concur with comments. The North and South Sites have been eliminated.

Although there have been several NMFS benthic invertebrate studies off MCR, they do not adequately represent the newly proposed South Site. The draft EIS references past studies as having provided sufficient information to determine that impacts in the new sites will be minimal, yet

92. (con't) since 1975, there have been few benthic infaunal samples taken immediately south of the River, and even fewer from areas south of the 4-mile ZSF. There is not sufficient data on invertebrate communities in the proposed South Site for the determination to have been made that the invertebrate population is less complex and dense, or that impacts to the benthic population will be minimal.

(c) Degradation of juvenile crab habitat may occur by burying or reducing the amount of material available for shelter and refuge. In a study in Grays Harbor and surrounding waters (Pearson, W.H. et al. 1987, Battelle, Pacific Northwest Laboratory), juvenile crabs were found to be dependent upon the presence of debris on the seafloor for shelter from the environment and refuge from predators. Juvenile crab density was

93. significantly correlated with the extent of organic debris. We assume that juvenile crabs off the MCR exhibit a similar adaptation, but this will need to be verified through field studies. Although dredged material may contain some organic debris, it is not clear if the disposal event itself would distribute the debris so that it would come to rest on top of the spoils for habitat utilization. Field studies are needed to determine the availability of naturally occurring habitat structure for juvenile crabs and the amount and fate of organic debris from the disposal operation.

(d) The area defined as the "mud hole" in the nearshore area off Washington has been described as a unique marine habitat with high biological

94. productivity. No ocean disposal should occur in or near the mud hole. Any disposal site designated near the "mud hole" would require a sufficient buffer zone to protect the mud hole from migrating disposal material.

(e) The FATE modeling scenario calls for disposal material to be equally distributed between the nearshore (30-100 ft) and offshore (100-200 ft) portions of the sites. The model assumes that material placed inshore of 100 ft will transport to the littoral zone and aid in beach nourishment. The fate of sediment placed in the nearshore is still under dispute among marine geology experts. The outer depth limit of the littoral zone is not known, but is assumed to be somewhere between 60 and 80 feet, not 100

95. feet. The lack of sediment transport at Disposal Site A (70 ft. deep) is evidence of the lack of sediment transport in relatively shallow water. Some geologists comment that sand placed deeper than 30 feet is not likely to move directly onto the beach. The uncertainties about the actual fate of disposal material raises concerns about alterations to various physical components of marine habitats, such as alterations to depth in a given area and changes in the structure and shape of the bottom. The

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93. Long-term use of the deep water site would likely impact Dungeness crab resources to some extent. Site specific impacts to crabs and other resources may be further evaluated during site monitoring, pending input from the Ocean Dredged Material Management and Monitoring Task Force.

94. This area has been eliminated from consideration.

95. The North and South sites have been eliminated so the comments regarding nearshore transport are no longer applicable.

modeling scenario calls for limiting sediment accumulation in the offshore portion to 5 feet per year. This could result in several feet over the 50-year life cycle of the disposal site. There is no indication what the total vertical

95 (con't) accumulation would be over the 50-year life cycle. Marine habitats in the deeper portions of the sites will likely experience long-term or permanent alterations due to the lack of sediment transport. It has not clear how long-term bathymetric and structural changes over a broad area will effect the biological community.

4. Dispersive or "Thin-layer" disposal concerns:

"Thin-layer" placement of disposal material was promoted by the USACE during Working Group sessions as a means of preventing impacts to crabs. This assumption is based on an earlier lab study in which adult crab in hard-shell condition survived burial up to 20 cm (7.9 inches) of accumulated sediment, and that the resulting layer from a single dump could average 2.5 inches in vertical accumulation. The recent Battelle study demonstrated high percentages of mortality for softshell crabs when buried under 4 or more inches of clean sand, depending on the size of the crab. No field tests have been conducted off MCR to determine if the dredges are capable of delivering the disposal material with such precision that the resulting per dump mound is below the lethal limit for crabs (as determined by the Battelle study). Instead, a computer simulation model is determining the fate of dredge material. According to the FATE computer model, a single disposal can result in mound heights between 2.5 and 9 inches. Attempting to determine the exact amount of sediment accumulation lethal to crabs is irrelevant if it is not possible to control the vertical accumulation of sediment. Even if the model is reproducible in the field, it is still inadequate. Resulting mound heights would have to be consistently small to ensure minimal impacts to softshell and juvenile crabs.

96. The Working Group requested a field test of "thin-layer" application prior to the adoption and initiation of a thin-layer disposal management plan because of concerns for the potential magnitude of resource impacts that could result given the extensive areal coverage required for thin-layer application. To our knowledge, no tests have been conducted off MCR. Yet, according the draft EIS, the USACE has developed a management strategy that includes "thin-layer" placement of dredge material. Although the USACE originally presented "thin-layer" to the Working Group in the context of minimizing impacts to crabs and reducing navigational hazards, there is no reference to the former in the disposal modeling strategy presented in the draft EIS. Instead, the strategy specifically refers to managing mound height for ensuring safe navigation only. If resource impacts are not a primary focus in the disposal management plan, there is no assurance that resource impacts will be avoided.

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96. Thin-layer disposal is no longer being considered for the proposed project.

In general, ODFW finds the Management Practices outlined in the Management Plan (Appendix H, Volume 1, Technical Exhibit G) to be vague and non-committal to a particular disposal regime. As the Plan states, "*it may be possible to regulate vessel speed to control sediment accumulation*", yet, precise control of vessel speed is the main premise on which the FATE model and thin-layer placement is based. There is also mention of allowing mounding as an option in the deeper portions, yet the capacity and enormous size of the sites were precisely calculated and proposed based on thin-layer placement throughout the entire site (Appendix H, Exhibit B, Vol. 1, Section 6). There is also no indication as to what the total per dump vertical accumulation amounts will be. Allowing sediment to accumulate in the deeper portions of the site contradicts the implied management prescriptions stated elsewhere in the DEIS. In addition, ODFW finds that the Management Practices as outlined in the Plan do not support the general Management Goal of *"no unacceptable harm to the ecosystem or resources"* nor the specific goal to "*.... minimize adverse environmental effects during the specific disposal event*".

96. (con't)

Given the lack of supporting evidence for appropriate management of "thin-layer" disposal off Oregon, the lack of a specific management plan, the expected impacts of dredge material disposal on marine habitats, marine resources and economic potentials, plus the huge areal extent of the North and South Sites, ODFW is convinced that "thin-layer" disposal methods are not compatible with the marine environment off Oregon and should not be employed by the USACE.

B. Recommendations for Alternate Sites

1. Benson Beach:

ODFW fully agrees with Washington Department of Fish and Wildlife (WDFW) that the best disposal option for MCR dredged material is placement on Benson Beach, WA. adjacent to the north jetty where severe erosion has occurred. This option is the best example of beneficial use of all sites proposed. Use of the site would either involve pumping material directly from the hopper dredge to Benson Beach or placing dredge material in a temporary in- estuary sump using the hopper dredge and piping the material from the

97. sump to Benson Beach. Rehandling of the dredged material will probably result in additional mortality of crabs, but the loss would likely be offset by the protection of crabs, marine habitats and commercial fisheries from disposal impacts in the nearshore or offshore. ODFW agrees with WDFW that this would be an acceptable trade-off. The actual impacts to crabs in the vicinity would need to be determined through USACE sponsored studies and loss of the crab resource would require some mitigation. The costs of such studies and mitigation for this habitat loss will undoubtedly outweigh the costs of biological studies in the ocean and mitigation for 75 square miles of ocean

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97. Additional information on Benson Beach has been added to Appendix A. Corps guidelines require a non-federal entity to pay the incremental costs associated with direct placement of material onto Benson Beach. The State of Washington, WDNR, or Washington State Parks would all qualify as viable non-federal sponsors.

habitat. In addition, the USACE should consider the economic savings to the hopper dredge by using a site that does not require great hauling distances or time. ODFW recommends that Benson Beach be considered a priority disposal site.

2. Site E:
Expanded Site E as the second priority disposal site. Expanded Site E may have the capacity for 2-4 mcy per year. Portions of the expanded site are said to be highly erosive and facilitate sediment transport. These are desirable
98. features for nearshore disposal. The drawbacks to this site are the inevitable impacts to softshell crabs and conflicts with the commercial crab fishery. ODFW supports the use of Site E provided the following conditions are met: ongoing coordination with commercial crab fishers to avoid gear and vessel conflicts, no disposal in the expanded portion of the site after August 15, and mitigation for loss of crab resource.

3. Offshore Site:
ODFW supports small, confined offshore (250-300 ft. depth) disposal sites as fallback sites to the Benson Beach site and Site E, should capacity at these inshore sites be reached. The offshore candidate site 8 proposed during the Working Group sessions was endorsed by commercial crabbers and bottom fishers as an area of low impact to commercial fisheries. Working Group members were in close agreement in their evaluation of the site that most impact concerns were low, although concern was expressed over the loss of sediment to the littoral zone and potential impacts to the benthic community. Benthic productivity may be higher in this area and would sustain adverse impacts. However, the NMFS benthic invertebrate studies referenced throughout this DEIS did not collect data from beyond depths of about 260 feet, so invertebrate assemblages and densities have not been determined for deeper offshore areas. Potential impacts would need to be determined with field surveys prior to final site designation. Nevertheless, the amount of marine habitat subject to adverse impacts in a small, deep (250-300 ft.) offshore disposal site would be a hundred times less than in the expansive, 75 square miles of marine habitat slated for disposal in the proposed north and south sites. Rejecting potential offshore sites prior to determining impacts is premature.

99.
According to the DEIS, candidate site 8 was removed from further consideration by EPA and USACE because of its apparent close proximity to a shale area, although the exact location of the shale area was not known at the time sites were proposed and is still not known. The Group recommended that a survey be conducted to locate the area before accepting or rejecting the offshore site. No survey was conducted and candidate site 8 was rejected without sufficient information.

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98. The Ocean Disposal Working Group developed a specific management objective for the use of expanded site E. We will manage the site in conjunction with these points. The Ocean Dredged Material Management and Monitoring Plan has been revised to reflect this.

99. The Corps and EPA have fully considered the concerns of the Ocean Disposal Working Group and have reduced the size of the site and moving the deep water site further offshore.

99. (con't) No ocean disposal site will escape impacts. There are trade-offs made by sacrificing one part of the marine environment to protect another. The obvious solution is to choose a site where impacts are minimal and contained in a small, manageable area. Small, deep, offshore sites will minimize the geographic extent of impacts to marine resources, and thus minimize the quantity of marine life sacrificed to disposal. ODFW fully supports the designation of one or two small, confined offshore disposal sites such as candidate site 8 and another site at similar depth and substrate (excluding the Astoria Canyon) where resource and commercial fishing concerns are low. Commercial fishers support the use of candidate site 8 because it is an area of low catch rates and fishers agree that a relatively small disposal mound footprint in this area would be tolerable. The appropriate method of disposal for offshore sites is "pin-point" disposal, allowing material to mound to a height that does not impede safe navigation.

100. In summary, a management plan that relies primarily on Benson Beach and Site E (given the above mentioned conditions) with offshore sites as backup sites, could be economically feasible for the USACE, would minimize total impacts to biological resources, and would provide a beneficial use in the form of beach nourishment to Washington's eroding beaches. Candidate site 8 is beyond the USACE 4-mile ZSF, but is no further from RM 0 than the northern boundary of the north site or the southern boundary of the south site so costs of running the dredge to the site are not unreasonable. Also, costs incurred by travel time of the dredge to an offshore site would likely be offset by the savings accrued from the short travel distance to the temporary sump near Benson Beach and to site E. Although total dredging costs may increase due to rehandling of material, economic constraint should not be a limiting factor in designating offshore sites. The offshore site provides a good fallback site to Benson Beach and Site E if capacity is reached at these sites.

C. Additional comments on Draft EIS, Working Group Process, and Biological Research:

Monitoring Plan (Appendix H, Volume 1, Exhibit G)

101. The Monitoring Plan references studies from 1986 in which it was determined that extensive data gathering did not prove beneficial to the site monitoring process because of difficulties in determining adverse effects. This notion does not necessarily hold true today. New technologies are available that allow for discrete monitoring of disposal sites and have been used successfully by USACE in other regions. Two such technologies are Sediment Profile Technology and Laserline Scanning, both are innovative, effective tools that were developed for accurate and quantifiable measurements of the biota at disposal sites and are ideal for pre-survey and post-survey comparisons. ODFW recommended that USACE consider these monitoring options for evaluating impacts in our May 8, 1998 letter to USACE commenting on 1998 disposal site options. ODFW again, recommends

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100. Benson Beach would not be economical for the Corps to use as a disposal site. Further, it would require a non-federal cost-sharing partner that has not been identified. Use of Benson Beach would not preclude the need for an ocean disposal site. Additional information on Benson Beach has been added to Appendix A. The opportunity for direct placement onto Benson Beach is available to any permit applicant under Section 404 of the Clean Water Act.

101. The Corps and EPA have agreed to pre- and post-construction assessment monitoring in addition to the formation of a task force to aid in management decisions for using the site. The Corps and EPA will consider input from the Task Force on pre- and post-construction assessment studies.

that new technologies, as well as other contemporary field surveys be considered for discrete monitoring of disposal sites.

The tiered monitoring approach adopted by USACE and used primarily to monitor the behavior of disposal material eliminates all monitoring of biological resources until a dramatic change in bathymetry is shown (5 foot bathymetric increase over 50% of the site). Tier 1 only looks at bathymetric changes. If there is no significant mounding (5 feet over 50% of the site), then no additional monitoring would be forthcoming. Under the tiered approach, it is highly unlikely that a biological change would even be noticed and it is unclear if a biological assessment would occur without some other evidence of an impact. In essence, the USACE Management and Monitoring Plan has no mechanism for determining that a biological resource is at risk until the impact is severe enough to be noticed without directed effort.

101. (con't)

The tiered approach also requires that "quantitative changes in the resource or other indicators be predetermined and testable". Obviously, the mechanism required for this is pre-disposal monitoring. Yet, the Monitoring Plan includes no gathering of baseline data, no pre-monitoring to quantify and qualify resources, and no mid and post-monitoring to assess the status of the resources. Under the Plan, not until a resource is in serious jeopardy and discovered through some external mechanism, such as commercial fishing, would an impact even be suspected. ODFW finds the Monitoring Plan unacceptable. A specific pre-, mid- and post-disposal monitoring plan for biological resources must be developed for any and all offshore disposal site regardless of bathymetric changes. USACE should coordinate with resource agencies and academia to develop an effective, comprehensive monitoring plan.

Marine Protection Research and Sanctuaries Act (MPRSA), Section 103 Evaluation

102. ODFW finds the MPRSA, Section 103 Evaluation drafted by the USACE for the new ocean disposal sites inadequate. Contrary to the determinations outlined in the Evaluation, the new sites have not been adequately evaluated for the effects of dredge material disposal, the new sites do not meet the EPA's 11 specific and 5 general evaluation criteria, and adverse impacts on commercial fishing and living marine resources are likely, given available information.

Overlay and Site Evaluation Process

103. The USACE assembled a Working Group of state, local and federal agencies and local fishers to contribute resource information and to recommend potential candidate disposal sites. It was ODFW's belief that the USACE began this process in good faith by bringing to the process the expertise and knowledge of agencies and user groups in an effort to choose new ocean disposal sites that would minimize environmental and economic impacts. Having reviewed the EPA/USACE proposed disposal sites and DEIS, it is apparent that the relevant information and knowledge brought to the process are not reflected in the DEIS or in the choice of proposed sites. Events relative to this discussion are presented in the following paragraphs (a-c).

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102. The Section 103 Evaluation has been revised and evaluates the sites selected by the Ocean Disposal Working Group using the MPRSA criteria.

103. The final EIS has been revised to better reflect the process that was used in site evaluation and selection. The results of the working group and the information provided by the group have been incorporated into the FEIS and Appendix H.

(a)Candidate Sites and New Site Designation

Working group members were asked to draw candidate disposal sites on a map. Some areas were drawn to symbolize an "idea" of a disposal site, not necessarily to be taken at face value. EPA and USACE assured the group they would have an opportunity to alter or remove candidate sites. EPA also assured the group that the final sites would likely be some area within the candidate sites and would not likely be the whole candidate site. EPA and USACE then created the new sites by combining two or more candidate sites, thus making them larger than the original candidate sites. Additionally, the New South site includes candidate Site 5, a controversial site that was rated highest for actual and potential conflicts by the group. This site should not have passed the EPA site evaluation criteria. The group was informed that once candidate sites were chosen, no new areas would be considered. EPA and USACE then incorporated into their new sites, large areas not previously included in any original candidate site and justified these additions by making the determination of "no known limited resources". This contradiction to the site selection/evaluation rules has undermined the evaluation process and the effort of group participants. Equally disconcerting was that the new sites were proposed prior to the commencement of the *full* crab study and even prior to the completion of the pilot study, which was to be a key piece of information in the site selection process.

103. (con't)

(b)Information not available during Site Selection Process

Throughout the Working Group sessions, a 20-year life cycle for ocean disposal sites was implied. Not until the release of the DEIS was it evident that the sites would have a 50-year life cycle. The Working Group was not informed of the size requirements of the sites for either the 20 or 50-year life cycles during the many months of the Group's participation. The DEIS mentions that the results on site capacity were developed for the Working Group, although this information was never presented to the group. The statement should be removed from the EIS (Appendix H, Vol. 1, Section *5, Hypothetical Capacity for Dredged Material Disposal within the MCR ZSF)*. The group was also not aware that each new site would be expected to accommodate the total volume of disposal material in the event that one site or the other was no longer available. These important site requirements, had they been communicated to the group, might have made a difference during the Group's initial mapping and selection of candidate sites.

(c)Juvenile flatfish nurses areas

The USACE requested that group participants provide information on areas of biological significance. Fishermen and to a lesser extent, ODFW, provided information on juvenile flatfish rearing areas. This information was then removed from further consideration during EPA/USACE

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evaluation under the guise that nursery areas are not a limited resource, disregarding that a specific area off the MCR was mapped for having high concentrations of juvenile flatfish, and that the nursery area off MCR contributes significantly to the local population. Nursery and spawning areas are specifically listed in the EPA/USACE Eleven Specific Factors for Ocean Disposal Site Selection. This biological resource information is crucial to the Site Designation Process and should not be removed from the EPA/USACE evaluation process. The 1978 USACE report on the effects of dredging and disposal (Tech. Report DS-78-5) states "Disposal
103. (con't) sites should be located so as to avoid sensitive or critical habitats such as fish spawning or nursery grounds". ". In addition, new fish habitat provisions under the revised Magnuson-Stevens Fishery Conservation and Management Act consider nursery areas of federally managed commercial fish species "Essential Fish Habitat". The flatfish species that utilize the nursery area off MCR are federally managed. Under the Essential Fish Habitat provisions, federal agencies are required to consult with the Secretary of Commerce for federal actions that may adversely affect essential fish habitat. We have found no record of this consultation within the DEIS. ODFW considers nursery areas as critical habitat, especially the area off the Columbia River that is known as one of the most important flatfish nursery grounds in the region. ODFW is strongly opposed to creating disposal sites in this nursery ground and eliminating its consideration from the disposal site evaluation process.

Lack of sufficient biological data for site selection

A limitation in the site selection process has been the lack of current and accurate biological and physical data for the ocean off MCR. In order to find a disposal area of least biological impact, thorough biological assessments are needed. The only study referenced in the DEIS for impacts to demersal fish is now 24 years old (Durkin and Lipovsky, 1977). Several sampling limitations are noted in the report that limit the interpretation of the results with respect to disposal impacts on fish. Yet even with these limitations, it was determined that dredge disposal
104. caused a reduction in number of species, numbers of individuals, size of fish and prey species consumed. Recovery of fish took several months. This study should be repeated to account for current dynamics in fish populations off MCR and to correct for sampling problems and limitations encountered in the 1974 study. Furthermore, additional biological studies should be conducted to determine the survivability of fish affected by changes in prey species (due to disposal events) off MCR. New studies will provide baseline information that will facilitate biological monitoring in subsequent years that will help mangers to differentiate between environmental factors and ocean disposal impacts, as well as to determine the long-term implications of ocean disposal.

Biological assessments are needed for proposed disposal sites and the surrounding area prior to the designation of sites to ensure dredge disposal will not create unexpected impacts. This should include determining the distribution and density

Corps of Engineers Response

104. We disagree. We believe there is sufficient data to characterize the offshore area biologically. This information combined with the overlay information used in the workshop site evaluation process, aided in selection of suitable sites. We have agreed to conduct pre- and post-construction assessment surveys and seek input from the Ocean Dredged Material Task Force in the Corps/EPA decision-making process on Management and Monitoring of the ocean disposal sites.

of bottom fish, benthic and epibenthic invertebrates, and quantifying marine habitats at a biologically meaningful scale within and around the proposed disposal areas. It is imperative that adequate information on marine resources be gathered prior to the commencement of ocean disposal projects and monitored for changes during the life cycle of the disposal sites.

Appendix H, Vol. 1, Technical Exhibit F: Dungeness Crab/Flatfish Research

Exhibit F describes an effort to investigate methods for conducting laboratory research to examine disposal impacts on Dungeness crabs. The pilot studies alone do not provide sufficient information to evaluate dredge disposal impacts on Dungeness crabs, but does indicate the need for improved studies. Problems encountered while initiating the pilot project were unforeseen. It is to the USACE's credit that a trial project was begun prior to the release of the draft EIS. However, the pilot studies were not consistent with what had been planned and accepted by the ad-hoc crab study design group. The teleconference planning session of the group, in which study criteria were developed, was not included in any documents pertaining to the study, nor were the conference notes distributed to group participants. The draft research plan was also not distributed to the group prior to the commencement of the study, as the USACE indicated. The crab industry representatives originally included in the group were excluded from the study design process. Their experience and knowledge of crab was needed and expected. Some of the comments in the list below refer to recommendations made at that meeting.

105. Comments on Crab / Flatfish Impact Study Design (at Battelle)

The following list includes needed modifications to the study design.

a) four size groups, not three as stated in Exhibit F: < 50mm; 50-100; 100-150; >150.

b) Tank size was too small and needs to be increased. Crabs need the opportunity to move laterally during the dump episode and the sand dumped needs to fall through more distance prior to hitting the bottom to simulate actual disposal.

c) Transparent tanks were not utilized so observing specific behavior was not possible. Transparent tanks are a key element in qualifying the impacts.

d) The pre-dump sediment depth of 3 inches was inadequate, 12 – 18 inches was recommended.

e) The maximum test dump accumulation of 10 inches was inadequate, 12 inches was recommended.

f)Very limited data on the flatfish study was reported. The follow-up study should include more than one dominant species and size group to adequately represent the juvenile population found off MCR. Physiological and behavioral impacts should be determined in addition to physical impacts. Responses in relation to light levels should be included, as this is a key element in avoidance responses.

g) Sediment used in the tests must match that of the dredging areas. MCR sand will behave differently than the dry, clean quartz sand used in the Battelle study. The author of the Battelle study noted the difference between the sand types and described the test sand as "hour-glass" sand that slipped easily through the fingers

Corps of Engineers Response

105. We recognize the limitations of the pilot study. Input on the need for additional crab and flatfish burial studies will come from the management and monitoring task force. The design of any additional studies will be coordinated through the task force.

and should be easily penetrable by crabs. It is imperative that the sediment characteristics in the tests replicate all the characteristics of MCR and upriver sediment. Using dredge disposal sediment for the dump test is the simplest and best solution. The pilot test results indicate the need for designing a wet sand delivery system.

h) Dump times need to be standardized; the delivery system modifications should help.

i) Increases in predation on small crabs moving into the water column in response to disposal needs to be examined, possibly by adding predatory fish to the test tanks.

j) Sample size and numbers of controls per treatment were inadequate and must be increased to meet statistical requirements.

k) At least 3 replicate treatments are needed for variance estimates in statistical analyses (a treatment category is: crab size X disposal depth X duration of dump).

1) Food items offered should be representative of that found off MCR.

1) Cancer gracilis is not a good proxy for Cancer magister. C. gracilis prefer somewhat muddier areas than C. magister and require higher salinities.

m) Quantitative physiological measurements are needed to assess sublethal impacts.

n) Determine conditions that induce burial activity. Do recently molted crabs bury more than hard shell crabs? Do diel cycles affect crab activity? Bottom currents?

105. (con't)

The Scripps Study: The report presented in the draft EIS is very brief and does not provide enough detail to allow for critique of the study. However, some obvious limitations are apparent. The tests at Scripps used the wrong shell condition of crabs and only one size category, therefore, it tells us nothing about disposal impacts on the vulnerable softshell stages of crabs. The Scripps study does suggest that that there are impacts even on large, hard-shelled crabs. The deep tank system is superior for simulating a dump scenario and the facility seems suitable for further tests. The methods description, and possibly the methods themselves are incomplete: e.g. the sand (grain size, etc.) used, number of replicates, acclimation of crabs prior to testing, use of control animals, determination of physiological and behavioral changes due to disposal. A method to deliver a wet sand slurry similar to actual disposal conditions needs to be devised.

Summary and Recommendations of Crab and Flatfish Research

The preliminary write-up of the work at Battelle reflects a competent approach to this type of work, although system modifications would be required of this lab to perform an adequate crab study. The Scripps facility may be easier to modify, but other factors (logistics, crab supply, oversight) may be more difficult.

The two pilot tests suggest significant impacts on Dungeness crabs of all sizes and shell conditions. The usefulness of these tests is to provide direction for a comprehensive study.

Corps of Engineers Response

In addition to lethal impacts, the follow-up study should include examination of biological and ecological impacts, such as, physiological changes, mating disruptions, feeding disruptions, changes in prey dynamics, and changes to habitat structure that provide shelter/refuge for small crabs. The complexity of such a
105. (con't) study and the research expertise needed warrants contracting out the entire study, including the study design, with research biologists familiar with behavioral and physiological research and statistical approaches. State and federal agency biologists should have the opportunity to comment on the study objectives and design prior to commencement of the study, and to interact freely with the contract researchers. A completely independent, peer reviewed study would greatly increase the credibility of the study.

Adequacy of benthic invertebrate summary report.

The Hancock Report in Appendix H, Volume II did not depict the complexity and dynamics of the benthic communities as reported in the several studies that this document summarized. The Report does not include data from the original reports that are relevant to the current disposal project (e.g. the beam trawl data from Richardson and Carey, 1977, and crab density data should be in the epifaunal section 5.2). Other relevant information not included in the report include limitations of the data, data on unique habitats, locations of unusual abundance of a species, potential impacts to resources, and differences between data sets that effect comparisons.

106.

Although we did not have the staff resources to review all reference materials, we noted that the NMFS 1992, 1993, and 1994 benthic infaunal studies (Emmett, et. al., 1994), (Emmett, et. al., 1995) and (Hinton, et. al.,1996), respectively, were inadequately summarized in the Hancock Report. The report did not comment on the shallow water sampling stations north and south of the River had high densities of invertebrates, or the unusually high density of razor clams and other species at some sampling stations. Also not included in the summary were the author's discussion on fluctuations in invertebrate abundance effecting fish and shellfish populations, and comments that variations in the standing crop of invertebrates could be important to juvenile crabs since this is their primary food source. The Hancock Report mentions that physical parameters are important to biological fluctuations, but does not cover the full range of issues reported by the authors, such as the effects of sediment grain size, percent silt/clay, and frequency of disturbance. These points are also important considerations in the assessment of disposal sites. The limitations of this report should be noted the FEIS.

D. Concerns Regarding Channel Dredging and Disposal Options

Habitat Evaluation Procedure (HEP)

ODFW participated on a technical advisory team in a USACE-sponsored HEP along with representatives from Washington Department of Fish and Wildlife, Washington Department of Ecology and the various ports (project sponsors) to

107.

Corps of Engineers Response

106. The Hancock report represents the summation of information of benthic invertebrates as requested by the Ocean Disposal Working Group. The scope of the summary report was designed and agreed to by the working group (see meeting minutes October 22-23, in Volume II, Appendix H). It is recognized that a summary report of this nature would have the limitation noted in your comment. The current proposed sites has been revised and the actual data collected in 1992, 1994, and 1996 sampling was used in the selection process not the summary report.

evaluate wildlife habitats that would be impacted by dredge disposal. HEP analysis provided data that resulted in adjustment of dredge disposal sites to avoid impacts. It also influenced USACE decision to stack dredge spoils versus expanding areas of disposal. Some 13 new dredge disposal sites were added in Oregon including agriculture, wetland and riparian habitat that provide habitat for a number of wildlife species especially Canada geese and waterfowl. These species and habitats required mitigation via the HEP process.

Results

Mitigation analysis using the HEP process shows all species regain or exceed the maximum Habitat Suitability Index (HSI) values associated with the pre-project disposal sites. Replacement ratios were a) 6:1 for agricultural lands, b) 9:1 for wetlands and c) 6:1 for riparian lands impacted by dredge spoils. ODFW believes the HEP process served well to outline amounts and types of habitats that require mitigation. The HEP Team noted, however, some discrepancies in baseline information assumptions made by USACE and agreed to by HEP Team members that should be verified by ground truthing to ensure their validity. These discrepancies arose from USACE shortcuts in the HEP study that unfortunately made the HEP results unreliable. For example values USACE assigned to forested agricultural habitats may be incorrect and may ultimately provide less (or more) habitat mitigation units than are necessary. ODFW believes these discrepancies will be insignificant because USACE predicted rates of habitat recovery are generally conservative. That is, we believe rates of recovery will actually occur more quickly than USACE models predict. However, because mitigation decisions cannot be made with the existing HEP results and to ensure such compensatory mitigation will occur in a timely manner, Washington Department of Fish and Wildlife (WDFW) ODFW, US Fish and Wildlife Service (USFWS) identified two acceptable options that will prevent untimely delay, keep the process moving ahead and protect fish and wildlife:

108.

1. Complete the HEP analysis. Collect data to represent all habitat types and reanalyze current and future conditions based on changes in individual habitat parameters. This can be completed during the preconstruction engineering and design (PED) phase of the project.
2. Without the ability to quantify impacts and mitigation benefits, ODFW could only endorse a mitigation proposal if it clearly provides enough mitigation benefits to offset the probable resource impacts associated with the dredge disposal project. Based on the upland resource impacts expected, ODFW would accept a mitigation proposal that includes Burke Island to the mix of mitigation sites associated with any selected disposal sites. This modified mitigation package will protect wildlife along the lower Columbia River due habitat impacts from the proposed Columbia River Channel Improvement. The final EIS should reflect this change.

Corps of Engineers Response

107. Comments noted.

108. The Corps will complete the HEP analysis in the PED phase (Option 1). Please see the addendum to the wildlife mitigation plan (Appendix G) for further clarification.

Willamette River Sediments (DEIS pg. 2-15, 4-36)

The Willamette River will be deepened approximately three feet from its mouth upstream about 11 miles to near the Broadway Bridge. We understand 1.2 MCY of sediments from the Willamette River will be dredged. All of this material is scheduled to be disposed of in-water with ½ going to the in-lane disposal in the Willamette River and ½ to the Columbia River near its confluence with the mouth of the Willamette vicinity Morgan Bar. This bar is an historical USACE dredge disposal site. The bar already shows elevated levels of contaminants. The DEIS indicates USACE plans to spread more of these contaminated sediments onto the bar. The DEIS fails to adequately address contamination of fauna that could result from dredging Willamette River sediments. The river's sediment health is poorest in the Portland Harbor (the reach between the Broadway Bridge and the mouth). Here, elevated levels of arsenic, DDT, DDE, PCB dioxin, and several trace metals exceed U.S. Environmental Protection Agency draft sediment guidelines. These materials also contain low levels of organochlorine compounds that may pass screening levels and are approved for flow lane disposal in the Willamette River and Columbia Rivers. Based on this data, ODFW remains concerned about disturbing these contaminated sediments, spreading them over a larger area and thereby making them more bioavailable.

109.

In other studies sediments are linked to bioaccumulation. (Biota-Sediment Accumulation and Trophic Transfer Factors for Extremely Hydrophobic Polychlorinated Biphenyls. Keith A. Maruya and Richard F. Lee, Skidaway Institute of Oceanography, April 1998). More locally, heron eggs sampled from Ross Island rookeries showed higher levels of DDE, PCB and Dioxins than elsewhere in the basin. Willamette River sediments are likely the origin for these contaminants. USACE sponsored studies undertaken by USGS to look at bottom material quality and elutriates in the Willamette River. This information was used to determine that sediments in the river, in most cases, do not exceed USACE screening levels. Based on these studies and a Puget Sound sediment model, USACE considers these sediments safe for flowlane disposal. Such studies, however, fail to evaluate effects on fauna. Specifically, these studies are silent on higher trophic levels of contaminant transfer in the food chain.

Most contaminants in the Willamette River attach themselves to sediment particles and are transported wherever the sediment is moved. The Willamette River has much lower water velocity and finer grain sediments than the Columbia River. Thus, Willamette River fine sediments deposited in the Columbia River are rapidly dispersed and transported until they reach slackwater or the ocean. Dredging, as proposed in the Willamette River, is therefore an activity that will disturb streambed sediment, and move attached contaminants into shallow areas, tide flats or other depositional zones along the Columbia River. In these depositional areas contaminants will become available to aquatic food chain organisms. Many of these contaminants will likely bioaccumulate in higher food chain organisms such as fish, otters, herons and eagles where they cause acute

Corps of Engineers Response

109. The local sponsor has requested that dredging of the Willamette River be delayed in order to allow coordination with the ODEQ investigation and remedition planning for the Portland Harbor. No further Corps studies of Willamette River sediments are anticipated prior to completion of the remediation plan. Further sediment quality evaluations will be required and conducted prior to any dredging and disposal activities. This includes the development and design of appropriate management strategies to assure the biological integrity of the system consistent with all state and federal laws and regulations. The Corps has and will continue to participate in USEPA's and ODEQ's efforts to clean up the Willamette River.

(reproductive) abnormalities and chronic more subtle effects endocrine system effects. These very low concentrations could effect fish and wildlife during sensitive life history stages. Such human caused releases of these sediment contaminants clearly threaten immune and endocrine system function and long term survival of smolt salmonids including candidate and listed species such as steelhead, coho salmon and spring chinook salmon.

109. (con't)

Most highly contaminated areas in the Willamette River are in shoal areas outside the proposed dredge channel. USACE proposes to avoid dredging in these most contaminated shoal areas of the river. However, the channel sediments are also contaminated. Deepening the channel will likely accelerate erosion and slumping of contaminated areas into the channel thus exposing contaminants to the environment making them more bioavailable. These contaminants will likely be picked up and immediately mobilized into fauna during initial dredging and during the 50-year life of the project.

Turning Basins (DEIS pg. 4-60 to 4-61)

USACE also proposes deepening vessel turning basins at WRM 4, WRM 10 and creating a new turning basin at WRM 11.7. In order to achieve the benefits of channel deepening, USACE also plans to deepen six wheat, corn and barley exporting facilities in the Portland Harbor. A recently completed DEQ-EPA study of river sediments found contaminated sediments in shoal areas and shipping berths from WRM 3 to WRM 9 at Swan Island. DDT and TBT, PAH and lead were broadly distributed but concentrated near boat moorages and sand blasting areas near boat repair facilities. ODFW is concerned USACE sediment analysis did not fully consider new information derived from the DEQ-EPA study. This study indicates new areas of contamination near the channel which USACE dredging could disturb especially through turning basin creation and maintenance. Specifically, ODFW has the following concerns about USACE analysis of sediments:

110.

1. The DEQ-EPA river mile numbers do not compare directly with those of the USACE. USACE used a different starting point to designated river miles so they do not line up with those of DEQ-EPA. This difference makes comparison of DEQ-EPA and USACE data confusing.
2. DEQ-EPA was looking for source areas for the contaminated sediments so their study was confined to shoal areas and did not extend to the shipping channel. Consequently, there is no indication of how far out into the shipping channel contaminated sediments extend from the shoal and berthing areas.
3. DEQ-EPA study found highest concentrations of contaminated sediments in the shipping berths. This is where USACE plans to dredge.
4. USACE sediment sampling found elevated pesticide levels and lead at WRM 11.5. At this location lead was detected at 489 PPM. This is the location where USACE plans to dredge a new turning basin.

Corps of Engineers Response

110. See response #109.

5. USACE and DEQ-EPA study found heaviest petrochemical contamination near the old coal gasification plant (GASCO) near river mile 6.2 to 7.5. At this location contaminants likely extend into the shipping channel. Contamination is covered by DEQ-EPA at other shoal areas also extend into

110. (con't) the channel, but there is no data to show this shoal-channel contaminant connection.

6. USACE sediment samples in the channel did not have quality assurance so sample quality cannot be substantiated. Therefore, the results are questionable.
7. The DEIS suggests Willamette River sediments could be deposited in the proposed Willamette River sites, then recapped. Disposal in or along the Willamette River corridor does not ensure the material will remain encapsulated. For example, over 5,000 cubic yards of contaminated dredge spoils were recently inadvertently released back into the river at Ross Island disposal site. Floods and such accidental excavation of disposed dredge material may remobilize toxins into the environment and make the bioavailable via the food chain. Therefore, the final EIS should evaluate risks associated with confined in-water disposal at Ross Island.

Flow Lane Disposal in Sturgeon Habitat (DEIS Pg. 4-13, 4-36)

Impacts in the estuary and in the river channel, as proposed, could adversely impact fish and wildlife habitat especially, sturgeon habitat. Flowlane disposal at depths greater than 65 feet could impact benthic invertebrate populations in areas known to be frequented by juvenile sturgeon. These larval and young of the year white sturgeon would probably be most affected by disposal of dredged material in the flowlane disposal areas. Most likely these sturgeon would be buried in the sediments and die.

111.

White sturgeon may use deeper areas of the river for rearing and feeding. In the Columbia River downstream from Bonneville Dam, juvenile white sturgeon less than 800 millimeters in length typically feed on benthic invertebrates, particularly Corophium salmonis. It is uncertain whether these deeper areas of the river contain a greater abundance of benthic invertebrates (food for sturgeon) and therefore attract juvenile sturgeon. However, these young sturgeon do use these deeper areas for feeding and rearing. Such larval and small young-of-the-year sturgeon would probably be most affected by disposal of dredged material in flowlane disposal areas because use of these deep-water areas serves as deep water refugia, feeding and rearing. Filling these holes as proposed in the DEIS could jeopardize sturgeon food source and force juvenile sturgeon into more shallow-water habitats where there are potentially more predators. More laboratory research is needed to determine the mechanical impacts of flowlane disposal on white sturgeon.

Corps of Engineers Response

111. A study is currently proposed to evaluate these areas and sturgeon populations. Results of this study will be used to design disposal in these areas to minimize impacts. Also see response #35.

Scappoose Dairy Disposal Site

This comment reiterates comments ODFW's May 13, 1998 comments to USACE regarding our concern about impact of dredge spoils on the Scappoose Dairy site. The site covers 107 acres in Reach 2 of beneficial waterfowl wintering habitat. We believe the site is undesirable for dredge disposal.

Concern

The Scappoose Dairy site receives some goose use even though it is managed to minimize its attractiveness to waterfowl. It is managed in this manner to keep the site from receiving extreme goose damage. The site would have outstanding potential if managed for waterfowl.

112. If, however, the site is used for a dredge spoil site, it would not only destroy its waterfowl potential, it would substantially reduce the value of the migration portion of the property because the disposal site is the portion of the dairy closest to the ODFW, Sauvie Island Wildlife Management Area and the furthest from disturbance caused by a paved road to the west. Moreover, once spoils inundate the area, it will probably no longer be kept as open space and would likely attract development, further foreclosing its use by wildlife.

The Oregon Farm Bureau consistently opposes taking areas out of forage production for wildlife because of the increased damage to adjacent agricultural crops. Accordingly, to lose this area for goose use would be especially critical because it is an ideal location to be managed to significantly reduce crop damage to other nearby Scapoose flats properties. When geese leave Sauvie Island the dairy is one of the first areas they pass by. The site has too much value as a goose mitigation site to help alleviate serious goose depredation problems in the area to support any thought of wasting it as a spoil site.

Finally, the site remains on the USACE disposal site list because it is part of the "least cost alternative" approach to identifying viable spoil sites. The least cost alternative should not always be chosen especially in a situation like this where proper protection of Oregon wildlife resources is at stake.

Recommendations

ODFW recommends the Lonestar rock pit disposal site in lieu of the Dairy site. Aggregate removal created the pit. It is an ideal disposal site except it is not least costly. USACE should not use the Dairy site for dredge disposal. Setting the site aside would help maintain, not permanently foreclose, on the dairy site's important wildlife values.

113. To evaluate the pathways of contaminant uptake in the food chain, ODFW recommends USACE conduct studies to ascertain the connection between

Corps of Engineers Response

112. Comments noted. The Scappoose Dairy site is not being carried forward as either a mitigation or a disposal site in the proposed disposal plan. In order to avoid wetland and habitat impacts, disposal is now proposed for the Lonestar gravel pit.

Willamette River sediments and resultant biomagnification in Columbia-Willamette basin higher food chain organisms. Particular emphasis should be given to finding endpoints for these contaminants. This study should be completed before any dredging of the Willamette River is undertaken. To do this USACE should 1) conduct further sediment sampling in the Willamette Channel
113. near the contaminated shoal areas DEQ-EPA identified and 2) employ passive sampling devices to look at uptake of dissolved particles using semi-permeable membrane devices (SPMD) or caged bivalve studies or other appropriate passive sampling device to examine bioavailability and bioaccumulation potential. 3) Until such studies are completed and risks associated with in-water disposal of Willamette sediments is better understood, ODFW recommends USACE dredged material from the Willamette River not be deposited inflow lanes of the Willamette and Columbia Rivers. Instead this material should be transported to upland disposal sites, sealed and secured so that it will not leach into ground or surface waters.

In-water Blasting (pg. 6-20)

The DEIS discusses the possiblitiy of the need to do in-water blasting for deepening some stretches of the Columbia and Willamette rivers. Any in-water blasting requires a permit from the Oregon Department of Fish and Wildlife. The Department would expect any in-
114. water blasting permit to follow our "Timing of In-Water Work to Protect Fish and Wildlfe Resources". The in-water work timing for the Columibia River is November 1 - February 28. The timing for the Willamette River from the mouth to Willamette Falls is July 1 - October 31 and December 1 - January 31. The Department would also want to see a detailed explanation of the methods which will be used to scare fish from the blasting sites.

Oregon Department of Agriculture (ODA)

The ODA has reviewed the materials and information provided relating to proposals to dredge the Columbia River. Please accept the following comments.

Upland Dredge Spoil Deposition

The department is concerned that dredged materials deposition sites could convert agricultural lands to nonresource use. The deposit of dredged materials onto agricultural lands can render otherwise suitable lands unsuitable for farm use. If compatible materials are applied in small quantities, deposition can be beneficial to agriculture. As proposed, the quantity of material to be deposited is immense. It will not act as an agricultural enhancement nor would it be subordinate to the primary function of the land as agricultural land. In effect, the deposition as proposed would effectively render lands unsuitable for farm use. Such an action would entail the conversion of agricultural land to a nonfarm use.

115.

Please note that the disposal dredged materials is not identified in ORS 215 or OAR 660,

Corps of Engineers Response

113. See our response #109.

114. Concur. Your agency has been involved in development of the blasting plan. A final plan will be submitted to your agency for approval before the blasting is undertaken.

115. As a result of eliminating the Scappoose Dairy site (see response #112), no agricultural acreage remains under consideration for dredged material use in Oregon. The Sauvie Island site has been dropped from further consideration. Land use change concerns were addressed in the response to the previous ODFW question.

Division 33 as a use permitted in an exclusive farm use zone. As such, the use may not be permitted without first justifying an exception to the statewide planning goals. The exception process would insure that alternatives to converting agriculture and forest lands are analyzed and that resource lands are used only if necessary. The exceptions process would also insure that the proposed uses would be compatible with farm and forest operations in the vicinity.

Mitigation Activities

Mitigation proposals appear to focus on wetland issues and/or wildlife habitat. The creation of wildlife habitat can both convert agricultural lands to a nonfarm use and impact farm uses in the area of the wildlife site. Wildlife that are ultimately attracted to
116. such sites can be a nuisance to the operation of a farm and cause damage to crops. Proposed mitigation sites should be evaluated to determine if other sites are available that do not involve agricultural lands or if agricultural lands are needed, if lesser value lands in terms of soil capability are available. Second, any proposed sites should be evaluated for any potential impacts that the development of the site may have on agricultural operations in the area.

Ocean Disposal Sites

Proposed ocean dredged materials disposal sites include two very large areas of the mouth of the Columbia River. We understand that these areas include productive fishing grounds for several valuable commercial fishing species including Dungeness crab,
117. shrimp and groundfish. We are concerned about the possible impacts that the disposal of dredged materials over such large areas could have on the commercial fishing industry in the area. The department recommends that the following commissions be contacted for their comments: the Oregon Dungeness Crab Commission, the Oregon Salmon Commission and the Oregon Trawl Commission.

Economic Importance of the Port of Portland

Finally, we would like to emphasize the importance of the Port of Portland and the movement of commerce on the Columbia River to agriculture. Last year, the value of of the state's agriculture production exceeded 3.5 billion dollars. Eighty percent (80%) of
118. the state's agricultural production leaves the state. Approximately fifty percent (50%) of the state's agricultural production leaves the country. Sixty percent (60%) of the Port of Portland's total tonnage of exports are agricultural products. Any decision involving Columbia River channel improvements should recognize the importance of moving agricultural products and take into account the needs of agriculture to export it's products from the region.

Thank you for the opportunity to provide these comments. If you have any questions regarding our comments, please don't hesitate to contact us.

Division of State Lands (DSL)

Corps of Engineers Response

116. Agricultural lands were identified as potential mitigation sites as their conversion from agricultural purposes to wildlife habitat provides a greater net gain in wildlife habitat units than other land use categories. The development of Sauvie 94 as a wildlife mitigation site should have negligible impact on adjacent agricultural lands as the site is enclosed on three sides by the Sauvie Island Wildlife Management Area and the Columbia River on the fourth. Joslin Property at the upstream tip of Sauvie Island would be developed for wetlands and riparian habitat. Some minor additional waterfowl use on adjacent lands may occur with its development. Some additional waterfowl and/or Columbian white-tailed deer use may occur on lands adjacent to the Webb mitigation site. Waterfowl concerns on private lands typically arise from Canada goose use. The present wintering population of 350,000 Canada geese along the lower Columbia River and in the Willamette Valley, a greater than magnitude increase in wintering geese since the mid-70s, will result in landowner complaints regardless of whether mitigation sites occur on adjacent lands or not.

117. Comment noted.

118. Comment noted.

The Division of State Lands has seven comments on the U.S. Army Corps of Engineers' Draft EIS on deepening the Columbia and Willamette River navigation channels.

119. 1. Due to the contaminated sediments known to exist in the Lower Willamette River, DSL believes that area should be addressed separately through a coordinated process involving all affected federal, state and local government entities. This would allow full analysis of alternatives for removal and disposal of those sediments.

120. 2. DSL is concerned about cumulative effects of channel deepening not addressed in the DEIS: the number of non-Corps dredging projects that will occur to make side channels as deep as the main navigation channel. DSL has already had several inquiries about the permit requirements for such projects.

121. 3. No dredged material should be disposed of in wetlands, in riparian inclusions, or early successional habitat. Wetlands provide important ecosystem functions beyond wildlife habitat, including stormwater filtration and flood control. Historically most of the riparian wetlands in the Lower Columbia River have been filled, or diked and drained. Current emphasis should be on reversing this trend. Further, DSL does not believe the DEIS provides sufficient information about some disposal sites to make informed judgments about wetland impacts and mitigation requirements. For example, there are potential wetland impacts at Lower Deer Island (0-77.0) and Tensillahe Island (0-38.3) not shown in Table 4-4, *Disposal Site Screening Summary.* We recommend that full wetland delineations be conducted on all sites with potential wetland impacts. In addition, some of the material in the DEIS on wetland impacts is inconsistent. For example, Table 4-4 shows wetland concerns at both Crims Island (0-57.0) and Port Westward (0-54.0), but Table 6-1, *Mitigation Requirements and Site Differences,* shows no mitigation requirements at either site.

122. 4. Removal of material from the bed of the Columbia River is exempt from Oregon Removal-Fill Law permit requirements under the navigational servitude. However, deposition of that material on wetlands in Oregon will require a state permit.

123. 5. The bed and banks of the Lower Columbia River and the lower Willamette River are state property. The sale of any dredged material or other use of that material as an "article of commerce" is subject to royalty payments to the Division. However, the Division is willing to consider alternative royalty approaches such as a credit back against the State of Oregon's cost share for the channel deepening project to encourage utilization of dredge spoils for various mining and industrial land reclamation projects.

124. 6. As shown on the map of Reach 7, RM 3-29, most of Rice Island is within, and owned by, the State of Oregon, and its site designation should reflect that fact. As noted in the DEIS, Rice Island is currently the subject of intergovernmental efforts to address the Caspian tern problem there. To be consistent with those efforts, the Division does not believe any further disposal should occur on Rice Island.

Corps of Engineers Response

119. See our response #109.

120. Port dock areas scheduled for deepening are addressed in the EIS.

121. The Corps went through an extensive exercise, to include numerous meetings with the resource agencies, to minimize to the extent practicable, impacts to wetlands and riparian habitat. Location, nature, and mitigation for wetlands has been discussed in a previous response to DLCD. Riparian inclusions are forest fragments left within the boundaries of existing disposal areas. Riparian early successional habitat represents cottonwood trees pioneering onto disposal sites which have not been used for approximately a decade. Avoiding these areas would require a greater disposal focus on agricultural lands or other lands that have not previously been used for disposal purposes. That was not considered practicable. Regarding DSL site specific concerns, we invite a DSL representative to review aerial photographs with overlays of disposal sites or else a site visit. That would remove any questions on wetland inclusion in the disposal sites. The wildlife mitigation evaluation and proposed mitigation actions will more than address wetland impacts and would provide for wetlands with more functional values than those sites targeted for impacts.

122. Comment noted.

123. Comment noted.

124. The site designation for Rice Island, W-21.0, simply reflects that the site is toward the Washington side of the navigation channel. The Corps is substantially involved in the Caspian tern management efforts in the estuary and is a working member of the Caspian Tern Working Group. Caspian tern use of Rice Island has not been predicated upon their use of new disposal areas for nesting activities. Caspian terns have nested on the downstream tip of Rice Island since 1986; no dredged material has been placed at that location since prior to 1986. A number of management measures to preclude Caspian terns from nesting at Rice Island have been implemented in 1999, plus measures to attract them 15 miles downstream to East Sand Island. These actions are being monitored to determine their success. Further, the National Marine Fisheries Service, in their ESA biological opinions for the Dredged Material Management Plan (existing 40' channel) and for the Columbia River Channel Improvement Study, will require implementation of management practices to preclude Caspian tern nesting at Rice Island. The Corps will adhere to that guidance in order to continue use of Rice Island for disposal actions.

125. 7. The Division has sold 80 acres of the Rainier Industrial site (0-64.8) for industrial development. Therefore much of that site will not be available for dredged material disposal.

Department of Geology and Mineral Industries (DOGAMI)

Regarding dredging of the lower Columbia River the Oregon Department of Geology and Mineral Industries offers the following observations. Regarding upland quarry disposal there may be opportunities to pursue creative partnered solutions to possibly solve a number of interrelated problems, particularly in areas like Columbia or Clatsop counties.

Regarding the actual dredging we note that the removal of the sediment from the natural river and coastal beach system probably could aggravate already serious coastal erosion problems in southwest Washington.

126.

1. Upland rock quarries and sand and gravel pits should be considered as possible repositories for the dredged sediments from the Columbia. The sediments could likely be used beneficially in reclamation. Conceivably sequenced mining at a large site could be coordinated with receipt of dredge spoils. The goal could be to restore the approximate original contour at a site rather than a water filled pit (man made lake). This kind of reclamation avoids the concern of the man made lake attracting waterfowl which is a concern in Columbia County. We offer this as a concept having not discussed the acceptability of this with any parties.

   We would suggest that if the Corps consider such a proposal that it is important to work with local government, major mining companies and local citizens to explore whether or not partnered solutions are viable in the County.

   In a general sense it is clear that use of upland sites presents an additional benefit. Use of upland sites allows the Corps to avoid placement of these materials in more sensitive locations such as wetlands. However, if upland sites are to be used as repositories, then it is important that there be assurance that those sediments do not carry contaminants that would only relocate a problem. This type of fill likely would come in contact with ground water or surface water recharge.

2. In the past dredging of the lower Columbia river has produced of 5-6 million cubic yards/year and future amounts could exceed this volume. This puts the annual volume on the same scale as the general estimated offshore drift rate for southwest Washington. . Long term dredging on this scale might truly be a major factor (not simply dams) in the very high erosion rates noted along the Washington Coast. If this assumption is correct, then strategic placement of dredged sediments in beach nourishment areas could offset the potential negative effects of the drift.

Corps of Engineers Response

125. The Corps has confirmed with the Port of St. Helens that this comment actually refers to 80 acres of lands purchased on disposal site O-65.7. Site O-65.7 is not included in the proposed disposal plan. Site O-64.8 remains in the proposed disposal plan.

126. Comments noted.

It is noteworthy that coastal erosion in southwest Washington has become a very serious regional problem in recent years. Any increased removal of river sediments will farther aggravate the problem. Plans for dredge material disposal should be closely coordinated with policy persons in southwest Washington to minimize the problem.

126. (con't)

Disposal options that emphasize properly designed beach nourishment as a priority can minimize the impact of river dredging on the stability of the northwest Oregon Coast.

We note for your information that the presence of headlands along the Oregon Coast and the general northerly drift of coastal sands at the mouth of the Columbia River greatly redcue the impact of river dredging on the stability of the Oregon Coast. Stability problems of the Oregon Coast have other specific causes.

Oregon Office of Energy (OOE)

We have reviewed the DEIS and have two comments related to Appendix B, Section 7.5 - pp 10-11.

1. The statement as quoted may lead the reader to believe that there is evidence that the sediments contain harmless levels of radionuclides. Though it is true that Oregon Department of Energy has commented that the very short half-life radionuclides (less than 2.5 year half-lives) would be effectively gone, this does not imply that there are not other radio nuclides with longer half-lives which may be a concern. The amount of data gathered deep in the sediments in the Columbia River is not sufficient to reach this conclusion. We do believe based on the limited existing data that the bulk of the hazard from radioactive materials in Columbia River sediments is contained in sediments behind McNary Dam. Two studies we sponsored by graduate students at Oregon State University concluded that if the most contaminated of these sediments are dredged and used for fanning that the radiation dose to the exposed farmer(s) might exceed the annual maximum radiation exposure allowed under Federal law. This is a highly unlikely scenario. The contamination of down river sediments should be much lower, but we do not have data to assure that the levels are safe.

127.

2. Oregon was instrumental in the work of the Technical Steering Panel referenced in this paragraph. As with comment one, the statement is true, but incomplete. The levels of radioactive materials released from the Hanford Nuclear Reservation were very large. The majority of hazard during the years of operation came from very short half-life radioactive materials. However, as these have decayed away into insignificance, other nuclides with longer half-lives are of more concern. Some of these were deposited into the sediments of the Columbia River.

3. As with 1. and 2., the paragraphs comment about the position stated by the Oregon Hanford Waste Board is correct but incomplete and may mislead the reader and the authors. The Oregon Hanford Waste Board was concerned about the potential for harm

Corps of Engineers Response

127. Comments noted. Appendix B and Section 7.5 of the EIS have been revised.

from radioactive materials that remain in the Columbia River. After studying the matter, the Board learned that the bulk of these materials are now located behind McNary Dam and are buried under a significant layer of sediment. So long as this sediment is not disturbed, they pose no significant risk. The same is not necessarily true if this sediment is dredged. Additional data is needed prior to such dredging.

127. (con't)

Based on sedimentation mechanisms and the loading of the radionuclides, the Board expected that the McNary pool represents the worst case in the river. However, the Board did not do a large scale examination of the hazards downstream, as most of the sediment dropped out behind McNary.

Immediately following section 7.5, the report follows with Section 8.0, which begins by concluding that the material to be dredged consists of clean sands. We cannot support this statement without additional testing of the downstream sediments.

Oregon Office of the Northwest Power Planning Council

The Oregon Office of the Northwest Power Planning Council offers the following comments on the US Army Corps of Engineers Draft Integrated Feasibility Report for Channel Improvements and Environmental Impact Statement. The Oregon Office offers these comments in the spirit of improving the study and developing the information needed to adequately assess the environmental impacts and potential costs and benefits of the proposed action.

The Northwest Power Act of 1980 established the Northwest Power Planning Council. The Council is charged with developing a fish and wildlife program to "protect, mitigate and enhance fish and wildlife, including related spawning grounds and habitat, on the Columbia River and its tributaries." The program, to "the greatest extent possible, shall be designed to deal with that river and its tributaries as a system." (Section 4(h)(1)(A)).

128.

Federal hydroelectric operating agencies are instructed to "exercise such responsibilities consistent with the purposes of the Act and other applicable laws, to adequately protect, mitigate and enhance fish and wildlife, including related spawning grounds and habitat, affected by such projects or facilities in a manner that provides equitable treatment for such fish and wildlife with the other purposes for which such system and facilities are managed and operated." (Section 4(h)(11)(A)(I)). Section 4(h)(11)(A)(ii) of the Act requires the operating agencies to take the Council's fish and wildlife program "into account at each relevant stage of decision-making processes to the fullest extent practicable." A recent federal magistrate's opinion has reinforced the mandatory nature of Section 4(h)(11)(A)(ii) of the Northwest Power Act.

One of the purposes of the Federal Columbia River Power System is to improve navigation on the river. In fact, the federal hydrosystem has created a series of deep-water ports up to Lewiston, Idaho, all of which could benefit from the proposed channel

Corps of Engineers Response

128. Comments noted.

deepening action. The Corps is required, under the NPA, to take into account the Council program for fish and wildlife affected by the development of the hydroelectric projects and by the Acts application to "related spawning grounds and habitat" through potential effects to those fish and wildlife species from the proposed action.

129. Section 7.4 of the DEIS lists the environmental laws and executive orders addressed by the DEIS. The Northwest Power Act of 1980 is not listed in Section 7.4. The DEIS also fails to note how the project proponents have taken the Council's Fish and Wildlife program into account at this relevant stage of decision-making.

130. Several Council program measures directly pertain to the study. Measures 5.7B.20-22 of the program relate to avian predation on migrating juvenile salmonids including Caspian tern colonies utilizing man-made dredge spoil islands in the lower Columbia River.

131. Measure 7.1A involves assessing carrying capacity of the river including an evaluation of measures to protect and improve estuary habitat as well as increase the productivity of the estuary. 7.1A.3 requires the identification of federal, state and local management measures to immediately implement in order to "provide better protection and improve estuarine productivity."

132. Council Measure 7.6A states the Council's Habitat Goal. That goal includes "maintaining the present quantity and productivity of salmon and steelhead habitat." Measure 7.7 incorporates Council policy to develop cooperative habitat protection and improvement with private landowners. Included in 7.7 is a large federal role for coordinating watershed activities with states, tribes and private landowners so that actions are consistent to "achieve comprehensive watershed management." Measure 10.2B.1 applies the habitat protection measures of 7.7 to resident fish species such as sturgeon.

133. Although the DEIS has many components in the study that would address the Council program, the document never specifically addresses how the Corps and the other project sponsors have taken the program into account at each relevant stage of the decision-making process. Without some acknowledgment of the Council's program and the measures relevant to the DEIS, it is impossible to determine whether and how the Corps and other project sponsors have addressed the proscriptions of the Council's 1994 Fish and Wildlife Program.

134. The Council has concerns that the continued use of Rice Island as a repository for dredged materials will cause substantial and continuing impacts to salmonid species migrating through the estuary, the last leg of their journey to salt water. The study describes the environmental consequences of dredged material disposal under the environmental consequences section of the DEIS. The DEIS, however, treats Rice Island disposal under the impacts to wildlife resources section and not as an impact to aquatic resources. We feel the sponsors should acknowledge the biological impacts to juvenile salmonids from the creation of these man-made islands by noting them in Section 6.6.1 Aquatic Resources.

Corps of Engineers Response

129. Section 7.4 of the EIS applies only to laws and executive orders which are directly applicable to the proposed action. As such, we are required to describe how we have complied with, or intend to comply with, the applicable statute. Since the Northwest Power Act was enacted to address hydropower facilities, there would not be any compliance requirement for the proposed navigation channel deepening action.

130. See response #124 regarding Caspian terns.

131. See responses #129 and 133.

132. We have worked with the state and federal resource agencies, private groups and individuals during the design of the proposed project. We have minimized the impacts to species of concern to the extent possible and consequently, have incorporated these Council measures into the project design.

133. We acknowledge the efforts of the Council's Fish and Wildlife Program and the efforts to restore anadromous fish runs to the Columbia and Snake River system. In addition to the report recommendations for minimizing impacts of the proposed action on anadromous species, the ecosystem restoration component further recommends measures to increase habitat and productivity for these species. The participation of state and federal resource agencies and environmental groups, from initial scoping to final review, further illustrates the comprehensive review and coordination involved with this planning study.

134. Section 6.6.1 addresses project-related biological impacts. Additional discussion has been provided on fish impacts. The impacts from Caspian terns and other birds are currently being addressed (see response # 124) with NMFS through the biological assessment. Management actions will be in place prior to implementation of this project.

The study in section 6.6.2.5 acknowledges that Caspian terns and cormorants impact migrating juvenile salmonids. It also notes that proposals exist to provide vegetative cover for the island in an effort to discourage tern nesting and that the conduct of future disposal operations would reflect that management parameter.

135. NMFS' PIT tag detection studies on Rice Island indicate that as many as 40,000 tags lie buried in the sand on the island. Half the tags read come from releases of 1998 tagged fish. Most of these fish are tagged from the Snake River and have migrated through the Federal Columbia River Power System. NMFS' "best" estimate was that in 1997 the Caspian tern colonies nesting on Rice Island consume 14.5 million salmonid smolts, with a "maximum" potential of 24.7 million smolts. The combined total of avian predation in the estuary represents around 20% of all salmonid species that reach the estuary. (October 15, 1998 Memorandum from Herb Pollard to John Palensky).

136. The Oregon Office has concerns that both the least cost and preferred disposal alternatives continue to use Rice Island as a disposal site. With the estimated amount of bird predation, continued dredged material deposits could prolong the problem. Even if the management regime for the island accomplishes the objective of removing the terns, the DEIS on page 6-34 states that cormorants will continue to utilize the island's habitat. These birds prefer vegetation for their nesting habitat.

The NMFS' memo notes that the avian predation annual report estimates that cormorant colonies in the estuary consumed several million salmon smolts in 1997, but they lacked data for detailed estimates. (October 15, 1998 Memorandum from Pollard to Palensky). The memo also noted sockeye and coho were more susceptible to avian predation. Considering the endangered listing for Snake River sockeye, predation from this dredge disposal site poses a distinct threat to the continued existence of the species.

The Oregon Office recommends removing Rice Island from the proposed dredged material disposal sites in both the least cost and preferred disposal alternatives. While we do not wish to run afoul of the Migratory Bird Conservation and Migratory Bird Treaty Acts, Rice Island should not become a barrier to salmonid recovery for the entire Columbia River basin.

137. Section 3.2 of the DEIS provides a commodity forecast that indicates the level of commodity growth expected for the Port of Portland and other ports affected by the proposed channel deepening. Much of the data on commodity exports appears to be based on figures derived from 1993. That data for wheat exports and corn exports indicates an increasing Asian market for grains and corn exported from the ports. Projections for wheat and corn exports indicate export growth from 30-75% by the year 2054.

The possible problem in using projections from a boom economic period, such as 1991-1993, could result in an overly rosy expectation for commodity increases. In fact, the chart of wheat exports on page 3-3 indicates that exports decreased in 1996 and decreased dramatically in 1997 as the Asian economic downturn worsened.

Corps of Engineers Response

135. See response #124.

136. Management actions to preclude this concern are presently being implemented and further actions are under consideration. Removing Rice Island from consideration is neither practicable nor necessary.

137. The general consensus among major entities such as the World Bank, the International Monetary Fund, and the United States Department of Agriculture, is that the Asian economies have reached the trough of their downturn, and that those economies (along with the associated trade) are rebounding. The crisis has resulted in a short-term reduction in Columbia River exports, but the crisis does not represent a fundamental change in Asian economies that would result in a long-term decline or even stagnation of exports. Indeed, most forecasts call for Asian recovery to be well underway by 2001, and the first year that a deepened channel would be available is 2004.

Wheat exports were misreported in the draft EIS. In fact, wheat exports have remained above 12 million tons in both 1997 and 1998. If anything, this latest data could indicate that the wheat export projections are too low, given that strength of the numbers even during the last two years.

Historic barley exports indicate that that commodity has actually decreased rather steadily from 1987 highs through 1997, to its lowest level since 1985. Yet the projections call for modest growth during the entire study period. We wonder what
138. information forms the basis for these projections? Does the Asian downturn affect the projections in the analysis based on 1993 figures? Perhaps the Corps should take another look at the projections based on data gathered from the 1996-1998 period and adjust the tables accordingly.

Projections for alumina indicate a continued volume of imports coming from Australia for use in smelters throughout the region. While not wishing to dispute the production needs of this commodity, the 1999 decision on configuration of the hydropower system could have drastic impacts on the future of many of the regions smelters. The potential
139. drawdown or removal of lower Snake River dams to aid fish migration could cause power impacts that would seriously effect aluminum plants in the region. The Corps might wish to review its own lower Snake River Configuration study and its Drawdown Regional Economic Workgroup (DREW) analysis for the analysis of alumina commodity projections.

The Oregon Office has concerns for impacts to white sturgeon from dredging operations. The DEIS indicates that dredging may result in entrainment of fish, particularly white sturgeon since they occupy the depths of the river where dredging will take place and where in river disposal is likely to occur. On page 6-20 of the DEIS, the sponsors note that in the single entrainment study of dredging at 60-80 feet of depth, about 2000 juvenile sturgeon were entrained. The study determined that 3.5 percent mortality would occur for sturgeon passing through the dredge and into the runoff pond.
140.

Though white sturgeon are not a listed species, we are concerned about potential entrainment and possible mortality. Lower Columbia River white sturgeon represent the region's last abundant population of white sturgeon. The FCRPS has caused these fish to lose much of their historic migrating range, becoming essentially resident to particular reservoirs. As a result, the Northwest has witnessed substantial decreases in spawning for sturgeon entrained behind the dams. Maintaining the lower Columbia River stock may represent the best opportunity for sustaining this species.

We recommend the Corps perform additional studies to determine the extent of entrainment and mortality for dredging operations and in river disposals at depths the sturgeon normally inhabit.

The Oregon Office notes the care the sponsors have placed in the blasting plan noted on page 6-20. We agree that the listing of steelhead in the Willamette represents a significant consideration for examining the blasting window in that river. We urge the
141. project sponsors to re-examine that blasting window and shorten its duration to times when steelhead are unlikely to inhabit those sections of the Willamette requiring rock removal. We also would want the DEIS to contain a detailed explanation of the methods the sponsors will employ to scare fish away from the blast area.

Corps of Engineers Response

138. The latest data for barley exports reinforces the analysis in the report. In 1995, exports topped one million short tons and 1997 shows over 980,000 short tons. While 1998 numbers do show an expected decline to 450,000 short tons, it is still reasonable to expect relatively flat barley exports throughout the period of analysis.

139. Since alumina vessels are not projected to take advantage of any channel improvements, potential reductions in import quantities are not relevant.

140. No additional studies are necessary to assess entrainment impacts. We have conducted entrainment studies at two locations in the Columbia River and found entrainment does not occur during normal dredging operations. Additional studies are planned during the design phase to assess the production and sturgeon populations in the deep water disposal site from river miles 27 to 42. These studies will be used to design the disposal plan to minimize impacts to these areas.

141. The blasting plan will incorporate steelhead concerns to the extent possible. A detailed blasting plan, including biological measures, will be developed by the blasting contractor before blasting is allowed to be undertaken. The Willamette River construction has been delayed pending information on the Portland Harbor remediation plan.

Finally, DEIS Section 6.4 notes sediment quality impacts from dredging. The study notes that dredging material from the Columbia River would have no significant impact on sediment quality in the ocean, river or upland disposal sites. The DEIS does note that some sediments from the Willamette in areas that have not been dredged for twenty years have been found to "be potentially unsuitable for unconfined in-water disposal."

Our concerns stem from the possibility that much of the material at the depth of the proposed dredging operations has not been subject to dredging for the past twenty years in either the Willamette or the Columbia. That material may predate the Clean Water Act.

142. The project proponents note that biological testing of dredged material would be conducted. They further note that capping of contaminated dredged material has been successfully accomplished in the Willamette. They also note that the overall sediment quality impact to the Willamette "would be beneficial, by removal and isolation of contaminated sediments harmful to the aquatic environment."

Although we would hope the project would benefit the aquatic environment in this fashion, we wonder about the efficacy of disturbing and dredging material deposited in the river for over twenty years and prior to the effective enforcement of the prescriptions of the Clean Water Act. We certainly would encourage rigorous testing of dredged material. If significant samples indicate contaminated material, then we would ask that the sponsors develop a detailed disposal plan. Such plan should be reviewed by the Oregon and Washington water quality agencies and put out for comment by the public prior to any removal of contaminated sediments.

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement. We look forward to working with you to address our concerns.

Oregon Economic Development Department (OEDD)

The Oregon Economic Development Department has reviewed the US Army Corps of Engineers' Draft Integrated Feasibility Report for Channel Improvements and Environmental Impact Statement: Columbia and Lower Willamette River Federal Navigation Channel (DEIS). The OEDD supports deepening the Columbia River channel to 43 feet as proposed in the DEIS. We offer the following comments concerning the economic impacts of this proposal.

143. Maintaining economically competitive ports on the Columbia River is a key to Oregon's economy remaining competitive in a global market. The Columbia River serves as a vital trade corridor for Oregon's manufactured goods and agricultural commodities as well as a large share of the nation's grain exports. In 1997, approximately 30 million metric tons of cargo valued at $13 billion moved through lower Columbia River ports. This is due in part to the Lower Columbia River providing the shortest route to Asian markets for exports. Asian markets not only receive the majority of waterborne trade from the West

Corps of Engineers Response

142. Comments noted.

143. Comments noted.

Coast, but have also served as a critical component of Oregon's economic growth during this decade. The OEDD believes it is necessary to maintain a strong and direct link to Asian and international markets in order to ensure Oregon's current and future economic health and diversity.

The OEDD supports the analysis and conclusion of the DEIS stating that there has been steady growth in the level of waterborne commerce on the Columbia River. With this growth we have seen an increase in the average vessel size due in part to the efficiency gains for shippers using larger, deeper draft vessels to transport bulk items such as grain
143. (con't) as well as containerized goods. Without deepening the channel, these vessels cannot come into Portland fully loaded, thus making Columbia River ports less competitive. This creates market pressure to utilize California and Puget Sound ports, increasing the cost of shipping cargo from Oregon. If the Columbia River Channel is not deepened, Oregon companies will probably lose business to other locations with lower transportation costs.

Due to the added complexities of potential contaminated sediments within the Willamette River, the OEDD supports the Corps' recommendation contained in the Executive Summary to the DEIS to phase construction of the Willamette River channel. This will allow agencies and the public the appropriate time to study the issue adequately, explore a range of options, and develop a coordinated response.

Finally, there are some very minor corrections that would strengthen the DEIS. First, we recommend defining "DWT" and "TEU" at appropriate places in Appendix C. Second,
144. on page C-9, the socioeconomic profile could use currently available 1998 county and city population data. Finally, on page C-11, the employment data could be currently available 1997 data.

Corps of Engineers Response

144. Definitions have been added to the EIS. Your comments on the socio-economic profile are noted. The latest data, however, has relatively little impact on the benefit calculation, and will not be updated.

STATE OF WASHINGTON

February 4, 1999

Colonel Robert T. Slusar
District Engineer, Portland District
US Army Corps of Engineers, CENWP-PE-E
P.O. Box 2946
Portland, Oregon 97208-2946

Dear Colonel Slusar:

The State of Washington appreciates the opportunity to submit comments on the Corps of Engineers' (Corps') draft environmental impact statement (EIS) on navigation channel improvements for the Columbia and Lower Willamette Rivers. We also appreciate the Corps' extension of the comment period for this document, given the importance of the project and the broad scope of impacts requiring consideration by government agencies and the public.

Our state recognizes the significance of channel modifications to improve the accessibility of several ports in Washington and Oregon to deep-draft vessels. It is obvious that the economic health of the port communities – including Longview, Kalama, Woodland and Vancouver in our state – is closely connected to the ease and volume of shipping; moreover, a wide variety of
1. commodities, particularly agricultural goods, depend on a strong shipping industry reaching our ports. For these reasons, we understand why the Corps has been working cooperatively with the ports and the Environmental Protection Agency (EPA) for several years to complete this feasibility study of navigation improvements and dredged material disposal. We were pleased that the study also recognized the importance of providing ecosystem restoration for fish and wildlife habitat.

However, we have some reservations about this EIS as a decision-making tool in proceeding with the proposed project. The detailed concerns of our departments are described in the attached letters. These are the key points they share:

The draft EIS appears to be incomplete or inadequate on several grounds:

2. ♦ it fails to address the question of the project's long-term viability. That is, how long will the proposed deepening be sufficient when the global shipping fleet is already expanding to include even deeper draft vessels?

3. ♦ it does not give sufficient attention to possible alternatives such as partial deepening up to the Lewis River, use of an improved LOADMAX program to gain similar transportation benefits, or expanded use of vessels to shuttle cargo in the lower reaches of the River.

Corps of Engineers Response

1. Comments noted.

2. Our analysis was limited by statute to study depths no greater than 43 feet. There is a point at which continued deepening would not be justified, and it is something deeper than 43 feet.

3. See response #2 to US Department of Interior letter.

4. ♦ The document inadequately addresses the disposition of dredged materials with respect to both impacts of disposal and the scale and types of mitigation necessary to compensate for those impacts.

5. ♦ There is insufficient attention to the relationship between dredging, dredged material disposal and coastal processes (both accretion and erosion) which have been causing major problems for several coastal communities; the document also neglects the potential for beneficial use of the dredged material (for example, to slow or reverse the erosion of Fort Canby State Park and other areas along the coast).

6. ♦ The EIS is deficient in its attention to many species and their habitats; these include crab, smelt, sturgeon, coho, predatory birds and several species currently or soon to be listed under the Endangered Species Act such as Lower Columbia steelhead, chum, chinook, and cutthroat trout.

7. ♦ Perhaps of greatest concern, the EIS does not demonstrate that the Corps and EPA have evaluated whether the proposed actions are consistent with recommendations of key agencies and programs working on Lower Columbia River issues, such as the National Marine Fisheries Service, the Lower Columbia River Estuary Program and the US Geological Survey/WA Department of Ecology/local government study of Southwest Washington Coastal Erosion.

We consider it essential that these issues be addressed before a final EIS is prepared and a decision is made to implement the project. State agencies are prepared to work with the Corps, the affected ports and the Environmental Protection Agency (with respect to designation of new ocean disposal sites) to provide technical and scientific information that would help remedy some of the problems identified. Please contact Carol Jolly of the Executive Policy Office (360-902-0639) if your staff would like to pursue such discussions.

Sincerely,

Tom Fitzsimmons
Director, Department of Ecology

Charles Baum
Supervisor, Department of Natural Resources

Jeff Koenings
Director, Department of Fish and Wildlife

Cleve Pinnix
Director, Parks and Recreation Commission

cc: Governor John Kitzhaber
Chuck Clarke, US Environmental Protection Agency

Corps of Engineers Response

4. The Corps proposes to complete the HEP analysis by collecting data to represent all habitat types and reanalyze current and future conditions based on changes in individual habitat parameters. This re-analysis could be completed during the preconstruction, engineering and design (PED) phase of the project. Please see the addendum to the wildlife mitigation plan (Appendix G) for further clarification.

5. Comment noted. See our responses to your specific comments.

6. Additional information has been added in the final EIS for many of these species. A discussion of predatory birds, their impacts on juvenile salmonids, and management measures to address these concerns will be addressed in the biological assessment to NMFS and attached to the FEIS.

7. Comment noted. See our responses to your specific comments.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

January 26, 1999

U.S. Army Corps of Engineers, Portland District
CENWP-PE-E ATTN: Steven J. Stevens
PO Box 2946
Portland OR 9/7208-2946

Dear Mr. Stevens:

Thank you for the opportunity to comment on the Draft Integrated Feasibility Report for Channel Improvements and Environmental Impact Statement (EIS) for the Columbia and Lower Willamette River Federal Navigation Channel. We have reviewed the integrated feasibility report and EIS and have the following comments.

Alternatives Considered

There is one alternative and one channel option presented in the report that, together, could provide for improved transit of deeper-draft vessels in the existing navigation channel and that could be less environmentally impacting. The alternative (of a non-structural type) involves a major upgrade to the LoadMax system to facilitate the use of more and better real time data to better schedule the departure of fully loaded vessels to coincide with the most favorable tide and river stage conditions during transit.

The second alternative is a modification to the preferred 43-foot deepening proposal. This alternative is described as the tiered channel option meaning a full channel depth for outgoing vessels (43 feet deep x 400 feet wide) with the remaining width of 200 feet to be maintained at the existing channel depth of 40 feet. Optimistically, this option would significantly reduce dredge volumes and disposal requirements.

1. A combination of the above alternative and option would seem to present a viable alternative to the preferred full 43-foot deepening project. We note, for example, the following points that support further review and analysis of a combined lesser-impacting, but cost effective alternative:

LoadMax System: According to the report, the greatest need for deepening relates to bulk grain carriers since they draw the greatest draft outbound. Yet the report indicates these vessels have the greatest flexibility to delay departure if need be (pg. 2-6, pp. 4) and

Corps of Engineers Response

1. See response #2 to the US Department of Interior letter concerning the Loadmax system. An evaluation of the tiered channel configuration will be performed during the next phase of design.

that the existing LoadMax system has been especially beneficial to bulk grain carriers that can make last minute decisions to add more cargo (pg. 2-8, pp. 3). On page 4-5, pp. 3, the report states that "the benefits of this alternative (system upgrade) could be substantial, relative to the cost".

1. (con't)

Tiered Channel Option: The inbound depth of 40 feet is adequate for current and expected future inbound vessel traffic. Inbound ships rarely exceed 36 feet in draft and ships can ride high tides upriver to increase available water depths, if necessary. (pg. 4-63, pp.1). The tiered channel option was viewed unfavorably by the Columbia River Pilots organization; however, the report indicates that this option has sufficient merit to be carried forward for further design and analysis.

New Ocean Disposal Sites

As a general policy, clean dredged material should be used in an environmentally acceptable manner in the nearshore zone to provide nourishment to public beaches. The use of clean dredged sands is one of the few viable options for rehabilitating beaches and littoral drift already impacted by navigation and hydropower projects. Dredged material
2. should not be disposed in deep water where it is lost to the nearshore system. To provide benefit, dredged material must be placed within the zone of active longshore sediment transport.

We also note that deepening the lower river will likely cause a natural demand by the river for more sediment. The sediment would essentially be taken from the coastal littoral zone and pulled into the Columbia River estuary. Therefore, it is absolutely essential to use all clean dredged material for augmenting the nearshore sediment budget

Ecology participated fully in the interagency workgroup that met regularly to assist the EPA and Corps in selecting new disposal sites in the Pacific Ocean off the mouth of the Columbia River. The last meeting and correspondence with that workgroup did not result in the sites currently presented in the Draft feasibility Report as the preferred locations, except for that of "Expanded Site E". Site E received general concurrence from the
3. workgroup as a proposed site to proceed forward for further consideration and designation. The sites labeled as the North and South sites were chosen by EPA and the Corps without input or concurrence from the workgroup.

While we do not presently have any telling information that indicates the North and South disposal sites are unacceptable, we do not have any information that indicates these are the best sites given what is known about ocean disposal.

Corps of Engineers Response

2. Sediment transport through the mouth of the Columbia River occurs as both suspended and bedload transport. It is likely that most of the estimated 2 mcy per year of total suspended sediment is transported to the ocean during high flows. Hubbell and Glenn (1973) estimated that 30 percent of the fine suspended sediment entering the estuary from up river is retained in the estuary. The percent of the suspended sand retained in the estuary is likely higher than 30 percent.

The amount of sand transport through the estuary has not been determined, but it likely has been quite small during the past 100 years. The size, depth, and hydraulic conditions of the estuary do not suggest a high sand transport potential. During the ebb flow, riverine water leaves the main (South) channel, entering the side channels and spreading over the shallow flats. These areas do not have the transport capacity of the main channel and deposition is likely to occur. Sediment volume changes found by Simenstad et al (1984) support the potential for deposition in the side channels and tidal flats. They found these areas accumulated material between 1868 and 1935, and that they either continued to accumulate material or had small reductions between 1935 and 1958.

In the main channel, at a continuous average velocity of 3 ft/sec, it would take a sand particle nearly 12 hours to move through the estuary. Even during the largest freshet, flow in the estuary will turn slack and reverse with the tide cycle, not allowing a particle to move through the estuary without experiencing at least two slack waters. The sand in suspension has fall velocities of between 0.1 and 0.03 ft/sec, so it would take approximately 8 to 25 minutes of slack water to allow a sand particle in suspension at the surface to fall to the bottom of the navigation channel. While the flow does not remain still for any period of time, it does remain under 0.5 ft/sec for about an hour as the tide reverses, this would allow much of the sand in suspension in the main channel to deposit. This theory is supported by three data points presented by Hubbell et al (1971) that shows no sand in the suspended sediment samples collected at or near the slack water at Astoria.

Bedload transport contributes additional sand to the estuary, but it is not discharged to the ocean. Downstream from Harrington Point (CRM 25) to Desdemona Sands (CRM 10) the sand waves diminish in size and lose the downstream dominance in their movement. The shape of the sand waves indicates downstream transport to about CRM 18. Between CRM's 18 and 10, the sand waves transition from fluvial-dominated to tidal-dominated waves. Bedload transport at the entrance was found by Walter et al. (1979) to have a net inland transport.

3. Comments noted. The North and South sites have been eliminated. The currently proposed sites have been agreed to by the Ocean Disposal Working Group. The EPA and Corps have the responsibility to make the final selection and decision.

Corps of Engineers Response

We do not favor the South Site at all because of two factors:

1. Dredged material placed in the South Site would not serve the beneficial need of replenishing the nearshore littoral drift cell that extends north of the north jetty. Presently the beach at Fort Canby State Park is experiencing severe erosion and is in dire need of beach nourishment. Preliminary results of the Southwest Washington Coastal Erosion Study also point to the need to place dredged material in the northern drift cell to help ensure the continued integrity of the Long Beach Peninsula.

4.

2. The South Site is located much closer to the origin of the dredged material (the navigation channel) and thus, it is possible that most of the dredged material would go to the South Site versus the North Site since it is the most cost effective choice.

The North Site in turn is located too far offshore to achieve the potential benefits to the northern littoral drift cell. While we cannot confirm a specific depth limit at which sand is likely to (eventually) move onto the beaches, 100 feet is probably too deep and dredged material should probably be placed in waters 40 to 60 feet deep at most.

4. The North and South sites have been eliminated.

One of the disposal alternatives that Ecology has repeatedly requested be researched and evaluated by the Corps/EPA is the placement of dredged material directly onto Benson Beach at Fort Canby State Park. Not only would this type of disposal be immediately beneficial but it would eliminate or reduce impacts resulting from standard offshore disposal. As yet, we have not received any information pertaining to the engineering and cost feasibility of such an alternative nor is it included in this Feasibility Report. Furthermore, the above-mentioned siting workgroup recommended and highly endorsed an evaluation of such a disposal alternative for sediments dredged from the entrance channel.

5.

5. Additional information on Benson Beach has been added to Appendix A.

Dungeness Crabs

One of the more difficult issues to be addressed by the siting workgroup was the potential effect, if any, of dredged material disposal on Dungeness crabs found in the ocean environment off the mouth of the river. It was a consensus opinion that crabs in the soft-shell or molting stage could be more susceptible to detrimental effects from disposal, however there were no studies to verify such an occurrence one way or the other.

6.

As a result, the Corps initiated a laboratory pilot study to evaluate the effect of a small-scale disposal event on both soft-shell and hard shell crabs and juvenile flatfish. The results of the study indicated little to no effect on juvenile soft-shell crabs and flatfish but did cause detrimental effects to adult soft-shell crabs. All of the soft-shell adults tested (a

6. Comments noted. A decision on additional studies on Dungeness crab will depend upon input from the management and monitoring task force.

sample size of only three) were buried in the sand at the onset of the disposal event and subsequently perish when covered by only seven to ten inches of sand.

The results of the pilot study indicate the need for further study and cannot be used to make valid predictions of real-world impact because of a small data set and because there were too many variables in the study design. For example, large adult crabs were placed in a small confined space (a bucket 21 inches in diameter by 17 inches deep) which would not provide for natural escape movement and the study had to use dry sand as the disposal medium, versus wet dredged sands.

6. (con't)

The point to this discussion is that in the Feasibility Report there is reference to the pilot crab study. For example, the following statement is contained in the last paragraph on page 6-23: "Results of these tests indicate that both soft and hard shell crabs could survive disposal events up to ten inches (deep) if they moved into the water column during disposal, rather than staying buried in the bottom. Most crabs ... tested moved into the water column during disposal. Consequently, the impacts to these organisms by disposal is expected to be minimal."

Just as the study, in its present status, cannot be used to predict substantial impacts to the crab resource, it cannot be cited as the basis for predicting minimal impacts to the crab resource. The study has indicated the need for further study and refinement, and which if undertaken, may generate valuable information leading to better management of dredged material in the ocean environment.

Spill Concerns

The traffic analysis in inconclusive in identification of the mix of vessels expected to make use of a deeper channel. There are different permutations possible, each of which can have a dramatic impact on the spill response community. If we assume cargo parcels will increase to make use of the new maximum channel depth, the deepening could result in fewer, but larger, vessels. This would seem to decrease the risk of grounding incidents because of fewer transits. However, since these vessels would still be sailing at the maximum manageable draft, those areas of the basin which present grounding risk at low water will still present that same risk even with the deeper channel.

7.

A more likely scenario is that the deepening of the channel will result not in a decrease in the number of "shallow" draft transits but in an increase in "deep" draft transits as the deepening opens the river to vessels that could not previously transit with full loads. This would be a net increase in traffic, which would present a slightly increased risk of groundings.

Corps of Engineers Response

7. The size of the largest ships calling on the Columbia River is not expected to increase with a deeper channel. A 43-ft channel would allow the Panamax class ships currently calling on the river to more fully load, but it is not expected to attract many larger ships due to the draft limitation. Since the fleet is expected to be similar to today's, the risk of accidents and oil spills should be similar to today's. Also see our responses #32 and #34 to the US Department of Interior letter.

Corps of Engineers Response

While the casualty statistics for the Columbia River compare very favorably to other U.S. ports it is important to remember that those figures are measures of past performance and are not predictors of future performance. For example, crossing conditions on the Columbia River bar may negatively impact fully loaded Panamax vessels to a greater extent than presently experienced. Larger vessels may also be at greater risk of grounding than present. Either case increases chance of catastrophic oil discharge.

7. (con't)

The trend in the design and operation of container vessels is toward much larger vessels with much smaller crews, typically in the 11 to 13 man range (as compared to normal manning levels of 22 to 26 for similar sized non-container vessels). This type of manning arrangement presents a very severe fatigue problem, particularly with the 6 to 8-hour river transit and the accelerated cargo handling schedule these vessels must meet. Any increase in the numbers of transits by vessels with these minimal crews presents an increase in the risk of accidents/casualties, which may lead to an oil spill. These include groundings, collisions, allisions, and spills.

Opening the river to larger vessels (container, bulk carrier or tank vessels) will also increase the size of the "worst case spill" used in the development of spill response strategies and response equipment requirements. The EIS does not address these impacts at all.

8. While the subject of "squat" was introduced in the under keel clearance discussion the figures used are not conservative enough. Studies conducted after the grounding of the QE 2 off Cape Cod showed that squat is much greater than the 2.5 feet cited for fast container vessels. This discrepancy will have an impact on the ability of deep draft vessels to make full use of the deepened channel.

9. There are questions about the adequacy of the existing anchorages at Astoria, Longview/Kalama, and Vancouver for handling fully loaded vessels under the current draft restrictions. Increasing allowable drafts will further aggravate this situation.

The existing analysis does not adequately survey the state of the existing bulk terminals to determine if large numbers of Panamax vessels can be safely handled. The final EIS should include this evaluation.

8. The analyses of vessel squat and underkeel clearance are discussed in Appendix A. The squat equations used in this analysis have been field verified in the Columbia River. However, the squat calculations were based on average speed and do not account for all the variations that may occur during a transit. The results of the underkeel analysis were reviewed with the river pilots to confirm that they reflected the actual operating practices in the channel.

9. Section 4.6.2 of the report discusses anchorage for loaded ships; section 4.6.3 describes the safety of terminals for Panamax vessels.

Corps of Engineers Response

Comments Specific to Wetlands and Shoreline Management Jurisdiction

Jurisdiction:

10. The Department of Ecology's jurisdiction over activities that affect waters and shorelines of the state is derived primarily from the state Water Pollution Control Act (WPCA, Chapter 90.48 RCW) and the state Shoreline Management Act (SMA, Chapter 90.58 RCW). Under the Water Pollution Control Act, Ecology is given the responsibility to control and prevent the pollution of state waters and to ensure that there is no degradation of the beneficial uses of those waters. Waters of the state are defined to include wetlands. Under SMA, Ecology is responsible for monitoring the application of local Shoreline Master Programs (SMP) to ensure that development activities conducted within shoreline jurisdiction are consistent with the SMA.

Shorelines of the state are defined as those rivers and streams with a mean annual flow of 20 cubic feet per second (cfs) or greater and lakes with a surface area of 20 acres or greater. At a minimum, SMA jurisdiction includes all aquatic areas and their bedlands, and extends 200 feet landward of the ordinary high water mark (OHWM) of shorelines of the state, including the full extent of any wetlands associated with those waterbodies. SMA jurisdiction can be defined locally to further include all areas within the 100-year floodplain. In addition, the Columbia River is defined as a Shoreline of Statewide Significance (rivers with a mean annual flow greater than 1,000 cfs), making it subject to a set of hierarchical review standards.

The following comments are based on an evaluation of the proposal in relation to these regulations and pertain only to those sites in the state of Washington.

10. Comments noted.

SMA Issues:

11. The Shoreline Permit process is initiated at the local level. The project applicant must contact the Shoreline Administrator at each affected jurisdiction. The Planning Departments of Clark, Cowlitz, and Wahkiakum counties and any affected cities, will require a complete description of the project at all dredging, disposal and mitigation sites within their jurisdiction in order to start the permit process. The U.S. Army Corps of Engineers (Corps), the port sponsors, or the property owners will need to apply for these permits.

All areas within Shoreline jurisdiction have been given a "shoreline environment designation" in the SMP e.g., Rural, Urban, or Conservancy environments. The allowed

11. Your identification of shoreline jurisdictions, permit requirements, and mitigation requirements is appreciated. Specific shoreline permits would be obtained by the sponsoring ports during the site acquisition phase.