
CHAPTER NINE

CONCLUSIONS AND

RECOMMENDATIONS

9. CONCLUSIONS AND RECOMMENDATIONS

9.1. Conclusions

- The integrated feasibility report and EIS presents the findings of studies conducted for proposed improvements to the authorized Columbia and lower Willamette Rivers navigation channel in Oregon and Washington.
- The purposes of the proposed project are to improve the deep-draft transport of goods and to provide environmental restoration for fish and wildlife habitats. The need for navigation improvements has been driven by the steady growth in waterborne commerce and the use of larger, more efficient vessels to transport bulk commodities. Navigation limitations posed by the existing channel dimensions now occur with greater frequency.
- The report also includes documentation in support of EPA designation of new ocean disposal sites for maintenance of the Mouth of the Columbia River project, maintenance of the existing navigation channel, and construction/maintenance of proposed channel improvements.
- Planning constraints recognized that channel deepening alternatives were limited to a maximum of 3 feet by the study's authorizing legislation. Also, it was directed that the *Dredged Material Management Plan* (1998) would serve as the no action alternative for the study. This plan evaluated the most efficient way to maintain the authorized 40-foot navigation channel in the future.
- A range of alternatives was considered. Besides the no action alternative, a non-structural alternative to upgrade the existing river stage forecasting system to improve navigation was evaluated and will be fully implemented. Also, regional port concepts also were formulated to locate deep-draft facilities closer to the mouth of the Columbia River. These concepts, however, were dropped from further consideration because of the high costs associated with construction, transportation, port facility, and environmental needs.
- Three structural channel deepening alternatives were considered that alter the channel's configuration and/or depth by 41, 42, or 43 feet to improve deep-draft vessel transport. These alternatives would be similar and require dredging and disposal alternatives for construction and maintenance. Construction of the 41-, 42-, and 43-foot channels requires dredging 6, 12, and 20 million cubic yards of primarily sand from the channel, respectively.
- Construction of a deeper channel requires the removal of rock in the Columbia and Willamette Rivers. Mechanical methods such as a large clamshell dredge would be tried to see if the rock could be removed. Underwater blasting will be done in areas where mechanical methods are unsuccessful, and would result in short term adverse effects on aquatic organisms and wildlife. Excavated rock will be placed in upland disposal sites.

- Sediment in the Columbia River navigation channel is primarily sand with low a percent of organic content. This sediment would be suitable, based on EPA and Corps criteria, for unconfined in-water and upland disposal.

- The local sponsors for the proposed project have requested that dredging the Willamette River be delayed in order to allow coordination with the ODEQ investigation and remediation planning for the Portland Harbor. This will delay construction of the Willamette River portion to insure that final implementation decisions incorporate both the investigation results and remediation plan. Any deepening of the Willamette River channel will consider the remediation plan.

- Dredging of the Willamette River channel will require full compliance with all laws including the Clean Water Act, Endangered Species Act, and the National Environmental Policy Act. In addition, ODEQ will be asked to certify compliance with water quality standards for the Oregon portion of the project separately from certification of the Willamette River portion. Certification of the Willamette River portion will not occur until after the ODEQ remediation plan has been completed.

- Two disposal alternatives were considered in the study. The least cost disposal alternative would use a total of 30 upland disposal sites, with a total land area of 1,897 acres. Fifteen of these sites are included in the no action alternative. Eight upland sites have not been previously used for disposal and 23 were used in the past. The least cost disposal alternative results in the direct loss of about 285 acres of agricultural lands, 67 acres of riparian habitat, and 28 acres of wetland habitat.

- The sponsor's preferred disposal alternative is similar to the least cost disposal alternative, and was selected as the proposed disposal alternative in the final EIS. It would use a total of 29 upland disposal sites plus one gravel pit. The proposed disposal alternative would result in the direct loss of about 200 acres of agricultural lands, 67 acres of riparian habitat, and 20 acres of wetland habitat. Mitigation actions are recommended to offset these habitat losses.

- The channel deepening alternatives result in incrementally greater physical impacts with increasing depth. Maintenance dredging would shift dramatically from in-water to upland disposal. Dredging a deeper channel would lead to very slight increases in estuarine salinity under low river flow conditions. Estuarine circulation would essentially be unchanged. Overall sediment budget or sedimentation patterns would not change to any perceptible degree. Water quality impacts would increase in the short term from dredging a deeper channel. Long term water quality impacts may actually decrease as less material would be disposed of in in-water locations. Shoreline erosion from currents, wind waves, and ship wake is expected to remain near current levels.

- Three salinity workshops were held with state and federal resource agencies to determine the effects of channel deepening on salinity and estuarine organisms. It was concluded at the workshops that no significant biological impact would result from salinity changes predicted for the proposed channel deepening.

- Biological impacts from dredging a deeper channel would include impacting more benthic habitat. However, most of this habitat is at depths greater than 35 feet and is not considered highly productive. Reducing the amount of in-water disposal would result in less impact to aquatic organisms. Ocean disposal of dredged material would result in increased impacts to marine organisms. Based on studies evaluating the effects of current ocean disposal practices, these impacts are not expected to be significant. Increased use of upland disposal would result in additional impacts to wildlife habitat. A mitigation plan is proposed to offset any habitat losses.

- Twenty-two federally listed threatened and endangered wildlife species may occur in the study area. The proposed channel improvement project is not expected to adversely impact most of these species. For Columbian white-tailed deer, however, conservation measures are recommended to offset potential impacts to this species.

- Prior to 1999, the listed stocks of salmonids in the Columbia River included the Snake River fall and spring/summer runs of chinook, Snake River run of sockeye, and the upper and lower Columbia and Snake River runs of steelhead. In March 1999, the NMFS also listed chinook salmon as threatened in the lower Columbia River and upper Willamette River, and the spring run as endangered in the upper Columbia River. Columbia River chum salmon was listed as threatened. Middle Columbia and upper Willamette steelhead were listed as threatened. Proposed stocks include lower Columbia coho salmon and Columbia coastal cutthroat trout. The proposed stocks may be listed during the life of the proposed project. Deepening the navigation channel and related disposal actions would not be expected to have greater impacts to these salmonids than the existing maintenance dredging program.

- The deepening alternatives would result in minor impacts to aesthetics, recreation, and land use. Using more upland disposal would modify aesthetic values from primarily a rural farm condition to mounds of bare sand. Recreation impacts would result from increased upland disposal, adversely affecting activities such as wildlife viewing. Land use at new disposal sites would change from agricultural/open space to dredged material disposal. No cultural resources would be impacted by dredging or disposal actions.

- The channel deepening alternatives were found to have benefit-to-cost ratios above unity. Deepening the channel to 43-feet and using the least cost disposal plan was found to maximize net benefits. However, the sponsor's preferred disposal plan was selected for the proposed action since it would provide more beneficial use and have less wetland impacts. The fully funded cost estimate for the proposed action, including the environmental restoration component, is \$195,930,000.

- In conjunction with the proposed action, channel optimization measures were investigated to increase navigation safety or reduce the amount of construction and maintenance dredging. Turning basins, anchorages, and berthing areas were also analyzed in terms of adequacy of dimension and usefulness.

