

## **CHAPTER 1**

### **GOALS, DESCRIPTION, AND ORGANIZATION**

#### **1.1 INTRODUCTION**

Dredging is necessary to maintain waterways and harbors used for waterborne commerce and water-related industry shipping, and for new port and marina construction in the Pacific Northwest. In addition to federal navigation project-related dredging (which is performed by the Corps of Engineers), a number of ports, maritime industries, and private interests perform dredging and dredged material disposal. Commercial navigation and recreational boating are important factors to the economic well-being of the Pacific Northwest. Consequently, dredging in the region has been a commonplace activity historically and will be an ongoing necessity for the foreseeable future.

Five basic dredged material disposal options are possible. These include: unconfined aquatic (including nearshore); unconfined upland; confined aquatic; confined nearshore; and confined upland. Of these options, this manual study focused primarily on unconfined aquatic disposal of materials dredged from Federal and non-Federal navigation projects. Unconfined aquatic disposal occurs when material is allowed to free fall from barges or hoppers to the bottom, or is placed via pipeline discharge. Aquatic disposal sites are located in areas which minimize conflicts with other aquatic land uses.

Cost-effective disposal of dredged material is essential to the economy of the region. Periodic dredging, including maintenance dredging of Federal navigation channels, is necessary to maintain the navigability of our waterways. For relatively clean dredged material, without significant levels of chemicals of concern, disposal at unconfined aquatic sites is often the least costly and most convenient alternative. Beneficial uses of the material, including erosion control and use as fill material, are an attractive, if somewhat more expensive, option for disposal. This dredged material evaluation framework will be the basis for determining what materials will continue to be acceptable for unconfined aquatic disposal.

This document addresses the development of a comprehensive evaluation framework governing sampling, sediment testing, and test interpretation (disposal guidelines) for determining the suitability of dredged material. This framework will ensure adequate regulatory controls and public accountability for disposal of sediment placed at dredged material disposal sites. It has been developed pursuant to the Clean Water Act of 1977 (Public Law 92-500), as amended, to the Marine Protection, Research, and Sanctuaries Act of 1972 (Public Law 92-532), as amended, and to the national level dredging and disposal guidance developed subsequent to the passage of these laws (40 CFR 230-233; 40 CFR 220-229). Applicable national guidance documents include the jointly prepared Environmental

Protection Agency/Corps of Engineers national ocean disposal testing manual, entitled *Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Manual*, dated February 1991 (referred to as the Ocean Testing Manual and also known as the "Green Book"), and the jointly prepared EPA/Corps inland testing manual, entitled *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual*, dated February 1998 (referred to as the "Inland Testing Manual").

The framework planning group attempted to identify the most reliable, recognized and cost effective sampling and analysis procedures for appropriately characterizing dredged material, and to incorporate these procedures into this document for application to the region. Chemical and biological tests and interpretation guidelines were developed for assessing the acceptability of dredged material for unconfined aquatic disposal. Application of these tests and guidelines will also provide preliminary information on the need for other disposal or management options, such as confined aquatic, nearshore, or upland disposal.

This framework document distills the accumulated knowledge and experience with dredged material management in the Pacific Northwest over the last 25 years. It describes stepwise procedures for dredged material assessment and is intended for use by the regulatory community in the Lower Columbia River Management Area (LCRMA). Documents containing justification for the guidelines and procedures in this framework are contained in the reference section. Full consideration was made of all pertinent State and Federal laws, regulations, and guidance, including other regional dredged material management programs. The framework is consistent with the guidelines of the two national-level manuals.

## **1.2 DREDGED MATERIAL EVALUATION FRAMEWORK - LOWER COLUMBIA RIVER**

The dredged material evaluation framework for the Lower Columbia River is the result of a cooperative interagency/intergovernmental program established by the U.S. Army Corps of Engineers (Corps); Region 10, U.S. Environmental Protection Agency (EPA); Washington Department of Ecology (Ecology); Washington Department of Natural Resources (DNR); and Oregon Department of Environmental Quality (DEQ) as principal agencies. These five agencies have regulatory and proprietary responsibilities for dredged material evaluation and disposal in the region, and constitute the Regional Management Team (RMT). The Lower Columbia River Dredged Material Evaluation Framework represents an expansion toward a broader dredged material management program throughout the region. The procedures used in development of the manual were derived from, and inspired by, similar regional programs, including the successful Puget Sound Dredged Disposal Analysis (PSDDA) program for the Puget Sound region of the state of Washington, the Grays

Harbor/Willapa Bay Dredged Material Evaluation Procedures Manual, and Portland District Corps of Engineers dredged material tiered testing procedures.

The goal of the manual is to provide the basis for publicly acceptable guidelines governing environmentally safe unconfined aquatic disposal of dredged material, thereby improving consistency and predictability in dredged material management. The establishment of evaluation procedures is necessary to ensure continued operation and maintenance of navigation facilities in the region, to minimize delays in scheduled maintenance dredging, and to reduce uncertainties in regulatory activities. The framework guidelines ensure consistency in evaluation between Corps and non-Corps dredging projects.

### **1.3 FRAMEWORK OBJECTIVES**

This manual satisfies several objectives.

- (1) It establishes a uniform framework for evaluating sediment quality for unconfined aquatic disposal in the Lower Columbia River.

The Lower Columbia River (LCR) is a contiguous bi-state coastal water body lying within Oregon and Washington. Dredging and aquatic dredged material disposal occur on both the Oregon and Washington sides of the river. Projects may involve dredging in one state with disposal in the other state. Potential problems associated with disposal of dredged material can affect both states equally. Because dredging, disposal, and associated impacts affect both states, regulation of these activities must be consistent between Oregon and Washington.

States have statutory control over water quality impacts resulting from a neighboring state. Section 401 (a)(2) of the Clean Water Act requires that a neighboring state be notified of actions that may affect its water quality. In order to work efficiently under this regulation, water quality requirements in a bi-state waterway must be uniform. Without uniform requirements, the implementation of water quality programs in shared water bodies may not be consistent or predictable. Section 103 of the Clean Water Act encourages states to develop uniform laws for the prevention, reduction and elimination of pollution and to negotiate and enter into agreements or compacts not contrary to any laws or treaties of the United States.

- (2) It establishes a uniform framework under which the Corps of Engineers will carry out federal requirements in conducting the dredging and disposal program for the LCR.

This document is the result of a cooperative effort involving Washington Department of Ecology, Washington Department of Natural Resources, Oregon Department of Environmental Quality, U.S. Environmental Protection Agency, Corps of Engineers, and other interested parties. A cooperative effort was necessary to ensure that each agency's mandates and regulations were incorporated into a single manual to the extent possible. The laws and regulations under which the Corps operates require the Corps, to the maximum extent practicable, to predict dredged material types, contaminant levels, and biological effects, both in water and sediments, before dredging and disposal actions can be considered environmentally acceptable. This document provides the regulatory framework that will facilitate a consistent application of regional criteria and guidelines.

- (3) It establishes an appropriate sediment characterization framework agreeable to the public, stakeholders and resource agencies.

This regional manual establishes a sediment sampling and testing framework acceptable to stakeholders, such as ports and private industries that maintain navigation access in the study area, and to resource agencies having an interest in, concern for, or some form of permit authority in the LCR area. These are resource agencies that did not participate in the development of the manual but have expertise related to the natural resource values of the river. Such a framework will provide clarity, maximize consistency and, allow informed discussions to take place on the need for and extent of sediment characterization for dredging projects.

- (4) It establishes appropriate databases to track the long-term trends in sediment quality of specific dredging projects/locations and the river in general.

Management of dredging and disposal program requires the collection and maintenance of data about projects and their characteristics. This objective includes the establishment of appropriate databases which will track sediment quality trends over time at specific locations and for the river in general. Systematic database development

will provide useful input into larger planning efforts, such as the Dredged Material Management Plan (DMMP) for disposal of sediment dredged in the estuary. The DMMP includes plans and alternatives developed to address the future needs and availability of disposal sites in the estuary. Implementation of the framework will generate regular reporting on sediment quality in the study area and thus raise the information level available to the Corps and resource agencies when making decisions on dredging and disposal.

#### **1.4 EVALUATION PROCEDURES PHILOSOPHY**

Evaluation procedures consist of the sampling requirements, tests, and guidelines for test interpretation (i.e., disposal guidelines) that are to be used in assessing the quality of dredged material and its acceptability for disposal. Evaluation procedures identify whether unacceptable adverse effects on biological resources or human health might result from dredged material disposal. A regulatory decision on acceptability of material for disposal is determined from the test results. This manual defines the minimum requirements for evaluation of dredged material for regulatory decision-making under CWA and MPRSA. For example, the maximum volumes of dredged material that can be represented by a single sample or by a single analysis is defined for different categories of material. Application of this requirement to a proposed volume of sediment means that a minimum number of samples or analyses must be conducted and fewer than that number are insufficient for agency decision-making. Similarly, these requirements are considered “minimum” in that the dredging proponent may opt, or regulatory agencies may impose additional samples or analyses if warranted.

As previously noted, this document primarily addresses aquatic disposal issues. However, the broad concept of evaluation goes beyond open-water disposal to include such alternatives as upland, nearshore, and confined aquatic disposal. Depending on the specific circumstances, these disposal options may be characterized as beneficial uses of dredged material as well. From a regional perspective, we have relied upon open-water disposal to a considerable extent, particularly in recent years. This is due, in part, to a collective desire to avoid or minimize wetland filling. With few exceptions, sediments in the region have been deemed suitable for unconfined aquatic disposal. It is recognized that evaluation procedures applicable to upland, nearshore, and confined disposal, particularly as related to contaminated sediments, also need to be established. The necessity for doing so is recognized and efforts are underway to set these procedures in place.

Dredged material containing high chemical concentrations that may result in unacceptable adverse effects must be placed in a confined disposal site (aquatic, upland, or nearshore). Likely effects are determined by conducting chemical and biological tests on the sediment prior to dredging. Material

that is found to be unacceptable for unconfined aquatic disposal may or may not be acceptable for conventional upland/nearshore disposal, because of differing behavior of chemicals in upland and nearshore disposal environments. As a result, testing for disposal at upland and nearshore sites could differ from that for disposal in water, and test results for one environment are not directly transferable to the other.

There is no single best option when confined disposal is required. Although all options may be feasible, not all confined disposal options may be available to every dredging project. Additionally, confined disposal decisions will often revolve around the advantages and disadvantages of specific sites (e.g., proximity to resources). Besides availability and siting, the issues of cost and the necessary degree of chemical isolation must be considered. The joint EPA/Corps manual *Technical Framework for Dredged Material Management* (USACE/EPA 1992) provides a framework for the full continuum of management alternatives, and will be consulted for options whenever material is found unsuitable by this manual for unconfined aquatic disposal.

## 1.5 CHARACTERISTICS OF THE EVALUATION FRAMEWORK

Evaluation procedures comprise the complete process of dredged material assessment and incorporate a range of scientific and administrative factors. Beyond the decision to base dredged material evaluation on avoiding unacceptable adverse biological effects, effective evaluation procedures should also have certain characteristics. The following nine characteristics are inherent in the evaluation process:

- < **Consistent** - Evaluation procedures must be applicable on a uniform basis regardless of project or site variability.
- < **Flexible** - Evaluation procedures must be flexible enough to allow for exceptions due to project and site-specific concerns and be adaptable to projects of any size.
- < **Accountable** - The need for, and cost implications of, evaluation procedures must be justifiable to the individual permittee and to the public.
- < **Cost Effective** - Evaluation procedures must be timely and cost effective.
- < **Objective** - Evaluation procedures are clearly stated and logical, and must be applicable in an objective manner.

- < **Revisable** - Evaluation procedures are based upon best available technical and policy information and will be revised periodically to incorporate new information and management decisions.
- < **Understandable** - Evaluation procedures must be clear and concise.
- < **Technically Sound** - Evaluation procedures must be reproducible, have adequate quality assurance and quality control guidelines and generally have standardized protocols.
- < **Verifiable** - The implementation of the evaluation procedures must be verifiable. One means of judging effectiveness is monitoring at a disposal site.

### **1.5.1 The Need for Consistency in Dredged Material Evaluation**

Regulatory consistency is important to the regulated community, demanded by local government agencies, and needed to obtain public acceptance. Though consistent and "objective" evaluation procedures may somewhat reduce flexibility and reliance on best professional judgement, they achieve agreement among the various regulatory agencies and allow the transfer of knowledge as staffs change. The approach used was to compile the consensus "best judgement" of professionals currently involved in dredged material management in the region and nationally and build this judgement into the procedures and guidelines presented in this manual.

### **1.5.2 The Need for Flexibility in Application of Evaluation Procedures**

Although consistency is an important objective, it is recognized that flexibility must be maintained in the way the evaluation procedures and disposal guidelines are applied. When project-specific technical indications warrant, suitability evaluations or determinations which deviate from those indicated by the guidelines presented in this manual may be made. Consequently, professional judgement is essential in reaching project-specific decisions. The evaluation procedures (including the disposal guidelines) require full consideration of all pertinent project factors. Flexibility will be provided "by exception." The guidelines are expected to apply in the majority of cases. Rather than integrating flexibility into the guideline statements (by showing ranges of values, or by using terms such as "may do"), exceptions to the guidelines are allowed with appropriate technical rationale and documentation, when such rationale warrants a different conclusion. A consensus between the Corps, EPA, and the affected state(s) will be required for use of this management by exception approach. Further, this exception approach will only be used where applicable federal and/or state law does not otherwise preclude its application.

A good example of how flexibility enters into the decision making process using evaluation procedures is the use of statistics and professional judgement in data interpretation. Statistics are primarily applied in the initial data analysis stage of the disposal guidelines. Statistical significance is used to determine if observed differences are "potentially real" when natural variability of the parameters being measured is considered. Ultimate data interpretation requires judgement on the part of a professional who is intimately familiar with the testing procedures, the project specifics, and the initial data analysis conclusions.

Analysis of data consists of a comparison to guideline values that are developed using statistical significance as a clear indicator of toxicity. However, ecological significance cannot be determined by this process. Determination of ecological significance requires both an understanding of the data and evaluation procedures, and evaluation of those test results based on best professional judgment. In addition to data analysis and interpretation, decisions on the acceptability of material for unconfined aquatic disposal may be further influenced by administrative considerations of factors such as magnitude of the proposed discharge, the degree of environmental risk that the discharge may present, and other project-specific features.

## **1.6 FUTURE REGIONAL FRAMEWORKS**

EPA Region 10 and Northwestern Division, Corps of Engineers, will use the experience gained by the development and implementation of this framework to develop a Northwest regional framework. The RMT will work closely with other regional dredging teams to assure that the framework will reflect consistency and advances in testing and evaluation in the Northwest. This future framework is intended for use within the boundaries of Region 10, which includes three of Northwestern Division's Districts, and the states of Washington, Oregon and Idaho. EPA also intends to develop a framework to evaluate dredging projects in Alaska. Details of that process will be developed jointly with Alaska District, Corps of Engineers, and the state of Alaska.

## **1.7 STUDY PARTICIPANTS AND PUBLIC INVOLVEMENT**

As noted above in Section 1.1, a variety of interests participated in the preparation of the LCRMA dredged material evaluation framework. Representatives of the Corps' Seattle District, Portland District, Northwestern Division Corps, EPA Region 10, Washington Department of Ecology, Washington Department of Natural Resources, and Oregon Department of Environmental Quality met as necessary to coordinate the work group activities, and to draft the framework. Participation by affected users was sought via review of this document by representatives of the ports, maritime industries, and other navigation project users. In addition, federal, state and local agencies, Indian tribes, and special interest groups participated in the review of the draft framework. This participation

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ensured that the framework reflects a balance of all appropriate views. A full public interest review was completed, including a public notice, and all comments received from the public were carefully considered during preparation of the final document and prior to agency acceptance.