

when a number of dredged material disposal alternatives are being considered. Furthermore, consistent testing helps ensure that decisions regarding disposal are not driven by an artifact of different regulations which were envisioned to acquire similar effects information.

Definition of Reference Sediment

Today's proposed rule addresses the problem of using the disposal site as a point of comparison for proposed discharges of dredged material by providing for those comparisons to be made to reference sediment instead. The term "reference sediment" is defined as:

sediment that reflects the conditions at the disposal site had no dredged material disposal ever occurred there. Reference sediment serves as a point of comparison to identify potential environmental effects of a discharge of dredged material. Reference sediment shall be collected taking into account the following considerations: (1) to obtain physical characteristics, including grain size, as similar as practicable as the dredged material proposed for discharge, (2) to avoid areas in the immediate vicinity of, including depositional zones of, spills, outfalls, or other significant sources of contaminants, and (3) to be as close as practicable to, and subject to the same hydrologic influences as, the disposal site, but removed from areas which are subject to sediment migration of previous dredged material discharges. If existing information that provides an easy-to-interpret indication of the presence of bioavailable contaminants in the reference sediment and in the sediment from the disposal site waterbody is not available, sediment testing (e.g., toxicity testing) is necessary to ensure that the reference sediment accurately reflects the conditions of the sediment from the disposal site waterbody.

Specifically, § 230.3 of the Guidelines would be amended by adding the above definition of "reference sediment" as paragraph (u), and § 230.61(c) of the Guidelines would be amended by changing two applications of the term "disposal site" to reflect incorporation of the reference sediment approach.

Selection of Reference Sediment

The three considerations listed in the definition are designed to ensure that the reference sediment selected has appropriate physical characteristics and accurately reflects the sediment from the disposal site waterbody, absent the influence of previous dredged material discharges. Evaluation of each of these factors is necessary in the selection of an appropriate reference sediment. In light of the many factors that may affect it, the selection of appropriate reference sediment must be identified in the proposed sampling plan for testing associated with a proposed discharge

and approved by the relevant Corps of Engineers District (or State, if they are the permitting authority) in coordination with the EPA Region.

First, the dredged material proposed for discharge and the reference sediment should possess similar physical characteristics, including grain size, which is important from both chemical and biological standpoints. For example, substrate preference of benthic organisms, larval settlement, and contaminant partitioning are specific to geophysical characteristics of the sediment. The presence of contaminants, and their bioavailability to the organisms that come into contact with them, are a direct function of characteristics (e.g., organic carbon in the surrounding sediment) which are often influenced by the grain size of the surrounding sediment.

Second, in selecting reference sediment, efforts should be made to avoid areas in the immediate vicinity of, including depositional zones of, spills, outfalls, or other significant sources of contaminants, in addition to areas that are subject to sediment migration of previous dredged material discharges, to prevent the selection of reference sediment that reflects either an area of increased contamination in a waterbody or reflects the impacts of previous dredged material discharges. In this regard, reference sediments should be substantially free of contaminants. However, it is recognized that a particular waterbody may be influenced by, and its sediments may therefore contain, a variety of chemical constituents or other characteristics, that are the result of natural or non-dredged material disposal influences. Therefore, "substantially free of contaminants" does not equate to "pristine" or "absence of contaminants."

The reference sediment comparison is designed to assess the potential impacts of a proposed discharge relative to the ambient conditions of the waterbody of the proposed disposal site (i.e., "dredged or fill material should not be discharged into the aquatic ecosystem unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact * * * [on] the ecosystems of concern." 40 CFR 230.1(c)). The reference sediment comparison yields data on the proposed discharge's impact at the disposal site, in light of any contaminants already present as the result of non-point runoff, point source discharges, air deposition, and various other sources outside the influence of the dredged material discharger. Thus, a "pristine" standard may not reflect the ambient conditions

of the disposal site, the impacts upon which are to be evaluated under the Guidelines.

Third, selection of reference sediment should be in as close proximity as practicable to the disposal site sediment, while best reflecting the other considerations listed. This helps to maintain control for variables such as hydrologic influences that might otherwise differ between the disposal site and the location from which reference sediment is obtained.

An evaluation of the presence of contaminants is part of the overall evaluation to affirm that the reference sediment is similar to sediment in the disposal site waterbody (absent the impacts of any previous dredged material discharge). In circumstances where existing information that provides an easy-to-interpret indication of the presence of bioavailable contaminants in the reference sediment and in the sediment from the disposal site waterbody is not available, sediment testing (e.g., toxicity testing) is necessary to ensure that the reference sediment accurately reflects the conditions of the sediment from the disposal site waterbody. The evaluation of an appropriate reference sediment provides the basis for a valid demonstration that the reference sediment accurately reflects the characteristics of the sediment at the disposal site waterbody, including specifically an evaluation of the potential presence of contaminants, while providing the necessary flexibility for determining when additional information must be collected to support this demonstration.

A wide variety of site specific circumstances exist that affect what method or methods are appropriate or necessary for demonstrating the selection of suitable reference sediment. For example, in a particular circumstance, the information value of benthic bioassay results may be more useful in affirming an accurate reference sediment in cases where the suite of potential contaminants in the disposal site waterbody is very large, whereas information on several chemical contaminants of concern may be sufficient in other cases. Guidance on recommended methods will be described in the testing manual for proposed discharges of dredged material into waters of the U.S., and will be revised as necessary to ensure that these methods are current and sound. These procedures are intended to ensure that appropriate flexibility is provided to the Corps, or State that has assumed the Section 404 permit program, to require testing on a case-by-case basis where it