

FINAL DMMP Clarification Paper – October 2, 2015

Debris Screening Requirements for Dredged Material Disposed at Open-Water Sites

Prepared by Erika Hoffman (U.S. Environmental Protection Agency), Celia Barton (Washington State Department of Natural Resources), and David Fox (U.S. Army Corps of Engineers) for the DMMP agencies.

Introduction

Providing affordable and environmentally protective options for open-water disposal of dredged material is the primary goal of the Dredged Material Management Program (DMMP). A key element of the program is the rigorous evaluation of the suitability of dredged material for open-water disposal. Suitability determinations are based largely on chemical and biological testing of sediment; however, management of debris in dredged material is also an important consideration. Proper management of debris is needed to avoid creating hazards to commercial fishing and navigation; altering habitat quality; and jeopardizing public acceptance of the continued use of open-water disposal sites.

Current Restrictions on Disposal of Debris at Open-Water Sites

The Puget Sound Dredged Disposal Analysis (PSDDA) Management Plan Report (MPR) – Phase I (PSDDA, 1988) provided the following guidance regarding debris management:

“Dredging site inspections will be made by the Corps and Ecology to ensure that contractors are removing identifiable nonfloatable debris prior to discharge at unconfined open-water disposal sites. Floatable debris will be either removed at the dredging site or picked out of the water at the disposal sites. The size of debris which must be removed will be specified in Corps 404 permits and contracts.”

The PSDDA agencies provided further clarification in MPR – Phase II (PSDDA, 1989):

“Debris is defined by the PSDDA agencies as material that could cause interference with particular uses. Floatable debris comprises material, such as logs, that could cause navigation hazards or solids, such as plastic or wood chunks, that could foul beaches. Nonfloatable debris comprises material that could reasonably be expected to cause conflicts with bottom-net or trawl fishing. Because functional definitions of debris are used, dredged material, if consolidated into large chunks, could itself be considered debris if, for example, it could snag nets and thus interfere with fishing activities. The contractor must include with the proposed dredging operations and disposal operations plans, the method (or methods) that will be used to remove debris or, if needed, to break

large chunks of dredged material up, and this could include physically forcing material through a sieve or screen.”

“Pre-dredging testing of dredged material shall include an assessment of floatable and non-floatable debris hazards (defined as hazards to navigation or other significant beneficial uses) likely to result from dredging. The assessment may be based on the following types of information:

- a) Interviews with dock owners and users familiar with types of cargo handled that could have spilled in the dredging area.*
- b) Test dredging to confirm presence of log debris.*
- c) Side-scan sonar of dredge area to confirm presence and aerial extent of log debris.*
- d) Diver observations of dredging area.*
- e) Review of previous dredging records in the area which may be representative of types and relative amounts of log debris encountered.*

If the [dredge] site assessment indicates the presence of log debris or other debris hazards, the contractor’s dredging plan shall include methods of separating debris before open-water disposal. Screening may be accomplished by a clamshell dredge operator retrieving debris from the barge hopper. If this cannot be done effectively, the contractor shall propose other methods, such as passing material through a steel grid (e.g., 24” x 24” mesh).”

The DMMP User Manual (DMMP, 2014) provides the following additional guidance:

“In general, debris is not allowed to be disposed at the DMMP open-water sites. This includes all floatable debris and large non-floatable debris such as logs, piling, rip-rap and concrete. Occasionally it [dredged material] may include smaller non-floatable woody debris such as sawdust, bark or wood chips, if these are inseparable from the sediment and are present in small enough proportion (less than 50% by volume). Large woody debris is most often segregated from sediment using a clamshell bucket during the dredging operation. In cases where a heterogeneous mix of smaller woody debris and sediment exists, which otherwise meets DMMP disposal guidelines, open-water disposal may occur as long as none of the debris measures more than two feet in its longest dimension. Occasionally, a relatively small quantity of rip-rap may be approved for open-water disposal. However, a 2-ft by 2-ft steel mesh must be used during the dredging operation to remove larger pieces of rip rap. Pre- and post-disposal monitoring

may be required at the disposal site, on a case-by-case basis, to verify the absence of problem debris.”

DMMP guidance with regard to debris management has been focused primarily on larger debris, such as logs and rip rap. Barge-mounted steel grids or mesh are rarely used in Washington State dredging projects to meet the debris removal requirement. Instead, a visual approach has been used whereby large debris and solid waste (e.g., tires, rebar, garbage) are removed only when observed in the dredge bucket (e.g., bucket will not close) or when identified on the surface of the sediment barge (Exhibit 1). Debris is removed from the sediment barge using the clamshell bucket and placed in a separate debris barge or containment area for later disposal at an upland facility. Since 1993, there have been only two dredging projects (Port of Seattle – T30, 1994; Port of Everett – Pacific Terminal, 2012) where a screening apparatus was used.

Problem statement

Debris Observed at Disposal Sites

The visual observation approach used historically in the majority of DMMP projects may be effective for projects with large debris and relatively small dredge buckets, but it does not appear to be rigorous enough to prevent all large debris from going to the disposal sites. Recent monitoring and inspection events at the Elliott Bay and Anderson-Ketron sites included remotely operated vehicle (ROV) surveys and trawling; large debris (e.g. piling, chunks of concrete) was observed at both sites. Other solid waste was also observed (e.g. PVC pipe, tires). At the Elliott Bay site, debris photographed by the contractor (Exhibit 1) in a bottom-dump barge prior to disposal was subsequently identified in photos from an ROV survey of the disposal site (Exhibit 2). At the Anderson-Ketron site, bottom trawls retrieved debris from the center of the site. The site was subsequently inspected with an ROV, which verified the presence of solid waste at the site. Debris was not found in trawls or by the ROV in areas outside the disposal site boundary, which indicates that the on-site debris was likely from the disposal of dredged material.

Presence of Large Debris May Change Habitat Quality and Impede Monitoring at Open-Water Sites

Disposal of large debris may fundamentally alter the nature of disposal sites, potentially attracting certain species (e.g. rockfish, crab) to areas that were chosen for disposal – in large part – because of their relatively low use by biota. Continued use of the open-water sites is subject to periodic review by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (NMFS) under the Endangered Species Act (ESA) and the Essential Fish Habitat

provisions of the Magnuson-Stevens Fisheries Conservation and Management Act. Attraction of juvenile or adult rockfish to the disposal sites could jeopardize their continued use.

Debris can also interfere with monitoring of the sites by impeding sediment profile imaging (SPI), grab samplers and trawling equipment. Mapping of dredged material deposits and evaluation of benthic community structure requires good penetration by SPI cameras. Similarly, van Veen grab samplers need to achieve sufficient penetration and be unimpeded when closing. Trawl nets can become snagged on, or overloaded with, debris.

For sites with relatively little disposal (e.g., Anderson-Ketron), debris may remain exposed for extended periods of time. Even at sites that are more frequently used (e.g., Elliott Bay), larger debris may remain exposed for years, depending on the proximity to the site center and the timing of disposal events.

Disposal of Solid Waste May Erode Public Acceptance of Disposal Sites

Continued use of multiuser open-water disposal sites is largely dependent on public acceptance. The DMMP agencies have worked extremely hard to engender public trust with over a quarter century of collaborative management of the disposal sites. However, public trust can be easily eroded if reasonable and prudent precautions are not built into the management guidelines for open-water disposal. In addition, every disposal site is permitted under the Shoreline Management Act by local regulatory entities. These permits must be renewed every 5-7 years and are subject to public review and comment. Unintended disposal of solid waste at sites could erode public acceptance of open-water disposal and jeopardize the DMMP's ability to secure permits to keep the disposal sites open and available.

Inconsistent Debris Screening Requirements between West Coast USACE Districts

The DMMP's current requirements for and enforcement of debris removal are inconsistent with the more rigorous approach required of dredgers in California. The USACE San Francisco District has standard permitting conditions requiring use of 12-inch by 12-inch debris screens (Exhibit 3) for the majority of projects using open-water disposal sites in San Francisco Bay. Some maintenance dredging projects are not required to physically screen sediments as long as it can be demonstrated that they are unlikely to contain debris. Open-water disposal of dredged material regulated by the USACE Los Angeles District is primarily at ocean sites designated and managed by EPA. In its Site Management and Monitoring Plans (SMMPs) and concurrence letters, EPA Region 9 routinely includes requirements for physical screening for projects in Los Angeles, San Francisco, and Honolulu Districts (Brian Ross, personal communication, January 7, 2015).

Proposed Clarification

All projects must use a screen to remove debris unless it can be demonstrated that debris is unlikely to be present or that the debris present is large woody debris that can be easily observed and removed by other means during dredging.

Dredging projects will be required to screen sediments through a grid (or equivalent device) prior to open-water disposal at both non-dispersive and dispersive sites, unless the proponent can demonstrate that debris is unlikely to be present or that the debris present is large woody debris that can be easily observed and removed without use of a grid. Examples of project characteristics and/or information that can be provided to demonstrate that debris requiring use of a grid is unlikely to be present in project sediments include:

- Dredging of native sediments, unless it is determined that large consolidated chunks could create problems at the disposal site.
- Dredging of frequently maintained areas (e.g., navigation channels, berths that experience sand waves).
- Dredging of areas where debris is not expected based on operational use of a particular facility.
- Dredging in non-urban areas removed from marina/industrial/shipping activities.
- Evidence from previous rounds of dredging (at the same location) demonstrating that no debris was encountered while using a screen.

The inclusion of exemptions is intended to reduce costs where possible and to focus screening requirements on those projects that are most likely to have debris within the dredge prism. The DMMP agencies acknowledge that there may be projects other than the types discussed above where debris may not be present. Project-specific information such as sub-bottom profiling or historical dredging records will also be considered in making a decision regarding debris screening. It is the responsibility of the applicant to provide adequate information to the DMMP to support the determination of an exemption from screening. The determination of whether or not a grid will be required for a given project will be documented in the DMMP Suitability Determination.

Modification to Allowable Size of Debris that can be Disposed at Open-Water Sites

The maximum size of debris that may be taken to the open-water disposal sites will now be that which can pass through a 12-inch by 12-inch grid. The rationale for reducing the maximum allowable dimension from two feet to one foot is to provide more effective removal of both solid waste and woody/rock debris.

Implementation

Implementation of the requirement for physical screening of debris will begin in the dredging year 2017 (which starts on June 16, 2016), to allow time for dredging proponents to adjust their contracting procedures and for dredgers to acquire or construct the necessary equipment.

The User Manual section on debris management will be updated to read:

In general, debris is not allowed to be disposed at the DMMP open-water sites. This includes all floatable debris, large non-floatable debris such as logs, piling, rip rap and concrete, and all solid waste (e.g., tires, rebar, garbage). Occasionally, suitable dredged material may include smaller non-floatable woody debris such as sawdust, bark or wood chips, if these are inseparable from the sediment and represent less than half of the dredged material by volume. In cases where a heterogeneous mix of smaller woody debris and sediment exists, which otherwise meets DMMP disposal guidelines, open-water disposal may occur as long as none of the woody debris measures more than 12 inches in its longest dimension. As described in the 2015 DMMP Clarification on Debris Screening Requirements (Hoffman et al., 2015), all projects must use a 12-inch x 12-inch screen to remove debris unless it can be demonstrated that debris is unlikely to be present or that the debris present is large woody debris that can be easily observed and removed by other means during dredging. It is the responsibility of the applicant to provide adequate information to the DMMP to support the determination for an exemption from screening. Examples of project characteristics and/or information that can be provided to demonstrate that debris is unlikely to be present in project sediments are given in the 2015 Clarification paper. The determination of whether or not a grid will be required for a given project will be documented in the DMMP Suitability Determination.

Debris grids can be permanently affixed to a dredge scow or may be removable. They typically cover part of the scow and their design can vary from a flexible heavy-duty chain mesh to an inflexible steel mesh, examples of which are shown in Exhibit 3. The debris items captured on the grid may be individually transferred to a storage area on land or on the dredge derrick, or the entire grid may be cleared onto a separate debris barge (Exhibit 4). Details regarding the type of grid to be used, how it is attached to the disposal barge, and means for clearing the screen must be proposed by the contractor as part of the Dredging and Disposal Quality Control Plan (QCP).

Compliance with the requirement to use a 12-inch by 12-inch grid for debris removal will be enforced through site inspections. Failure to use a grid when required may result in fines being levied by DNR, EPA, Ecology and/or USACE. If there is a reason to believe that a dredger did not

use a grid for those projects or portions of projects where use of a grid was required, then post-disposal monitoring may be required at the disposal site, on a case-by-case basis, to verify the absence of problem debris. The cost of site monitoring and redress would be borne by the dredging proponent.

References

DMMP, 2014. Dredged Material Evaluation and Disposal Procedures – User Manual; prepared by the Corps of Engineers for the Dredged Material Management Program, December 2014.

PSDDA, 1988. Management Plan Report: Unconfined Open-Water Disposal of Dredged Material – Phase I (Central Puget Sound).

PSDDA, 1989. Management Plan Report: Unconfined Open-Water Disposal of Dredged Material – Phase II (North and South Puget Sound).

Exhibit 1: Debris in unscreened dredged sediments (WA)



Miscellaneous dredge debris in dump scow; Note: 20-30" diameter tire, PVC pipe, steel cable and woody debris (Lower Duwamish Waterway)



PVC pipe debris in clam shell bucket (Lower Duwamish Waterway)

Exhibit 2: Photos illustrating debris at the Elliott Bay disposal site (2014)



Concrete

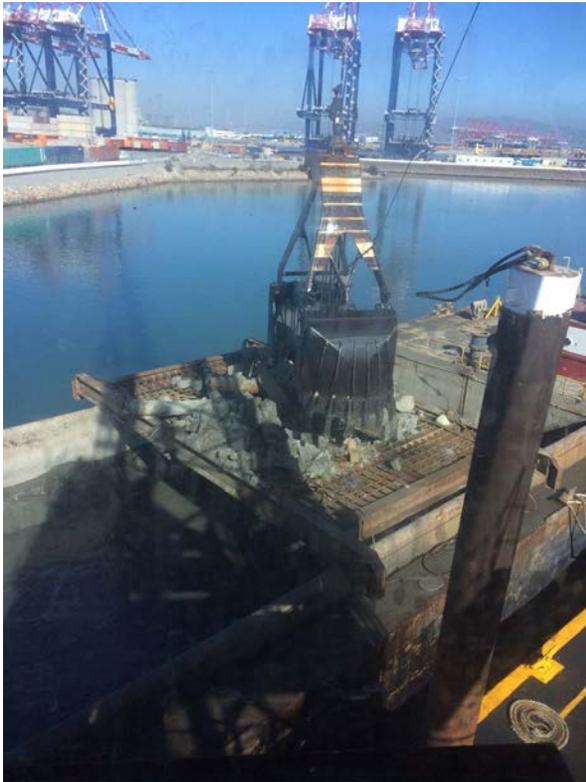


20- 30" tire



PVC pipe with crab

Exhibit 3: Examples of Grizzlies



Steel grizzly - Port of Long Beach



Dredging into a barge with debris screen – Port of Long Beach (CA)

Exhibit 3: Examples of Grizzlies (continued)



Large scow with movable steel grizzly – Port of Oakland (CA)



Chain grizzly (California)

Exhibit 3: Examples of Grizzlies (continued)



Small bottom-door scow with fixed grizzly - San Francisco Bay (CA)

Exhibit 4: Debris captured on 1-ft square grizzlies (California)

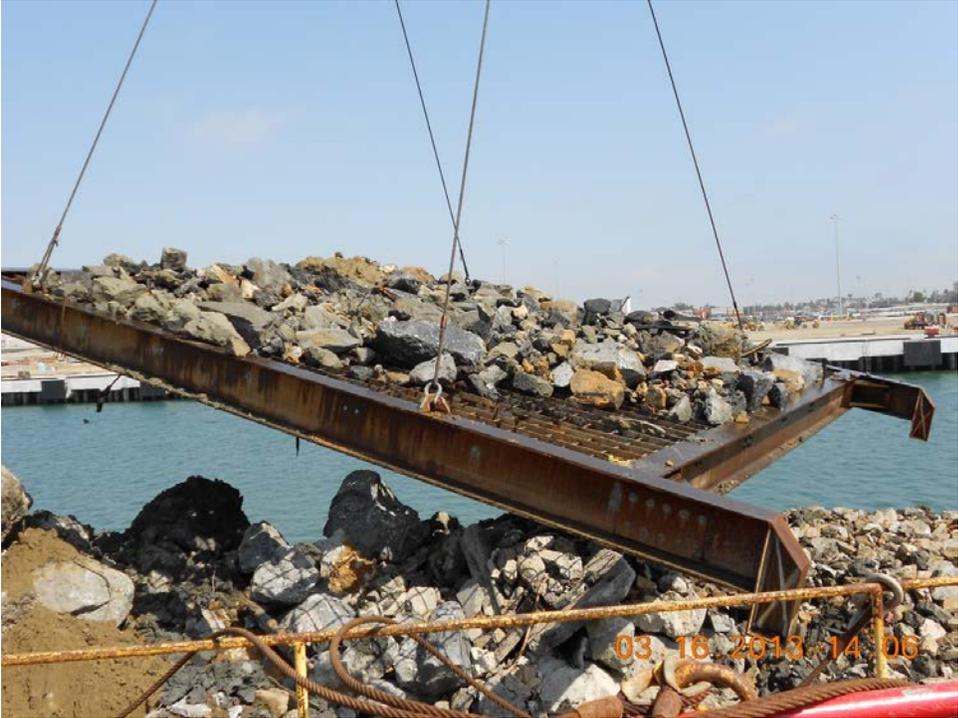


Exhibit 4: Debris captured on 1-ft square grizzlies (continued)

