

CENWS-OD-TS-DM
MEMORANDUM FOR RECORD

7 August 2001

SUBJECT: SUPPLEMENTAL DETERMINATION ON THE SUITABILITY OF DREDGED MATERIAL TESTED FOR THE PUGET SOUND NAVAL SHIPYARD DREDGING PROJECT (1998-01967) EVALUATED UNDER SECTION 404 OF THE CLEAN WATER ACT (CWA) FOR BENEFICIAL REUSE AS INITIAL¹ CAPPING MATERIAL AT THE CERCLA PIT-CAD SITE IN SINCLAIR INLET.

1. The following summary provides a supplemental Dredged Material Management Program (DMMP) Agencies' (U.S. Army Corps of Engineers, Department of Ecology, Department of Natural Resources, and the Environmental Protection Agency) suitability determination evaluation of 160,120 cy of proposed dredged material from the Turning Basin for a potential beneficial reuse as capping material at the CERCLA Pit-CAD site in Sinclair Inlet. This supplemental suitability determination augments the final 21 March 2000 SDM and addresses alternative beneficial reuse disposal alternatives for 160,120 cy of the turning basin material, which was previously found suitable for unconfined open-water disposal at the Elliott Bay disposal site.
2. All sampling and testing conducted within the Turning Basin, including the forty dredged material management units (DMMUs) identified for potential use as initial capping material at the Pit-CAD disposal site in Sinclair Inlet, were previously discussed and summarized in 21 March 2000 SDM, and will not be re-summarized here. See Appendix 1 for a summary review of the sampling/testing results for the forty of fifty-three total DMMUs identified from the Turning Basin for beneficial reuse. The remaining thirteen DMMUs from the Turning basin either have been or will be dredged and disposed as previously discussed in the 21 March 2000 suitability determination.
3. Relevant dates for regulatory tracking purposes are included in Table 1.

Table 1. Regulatory Tracking Dates

Phase I SAP submittal:	September 14, 1998
Phase I SAP Approval date:	October 6, 1998
Phase I Sampling date(s):	January 11-February 4, 1999
Phase I Data Report submittal date:	July 6, 1999
Phase I Interim Suitability Determination Date:	August 24, 1999
Phase II Retesting SAP Submittal date:	October 11, 1999
Phase II Retesting SAP Approval date:	October 12, 1999
Phase II Retesting Sampling date(s):	October 12-28, 1999
Recency Determination Date: High (2 years)	October 2001

¹ The sequence of capping of the contaminated sediments at the Pit-CAD disposal site from bottom to top is as follows: The first one foot of capping material will be commercial sand, followed by the next two feet of capping material, which will come from the Turning Basin/Inner Channel area. The final two feet of capping material will come from the stock piled material excavated from the Pit-CAD site (Peter Havens, August 7, 2001, personal communication).

Chemical Testing Summary

4. Appendix 3 provides a summary of the sediment conventional parameters including grain size and total organic carbon contents for the 40 DMMUs selected from the Turning Basin/Inner Channel. Table 2 summarizes the percent fines, clay content, and grain size averages within the turning basin and inner channel sediments.

Table 2. Comparative conventional sediment characteristics from the Turning Basin/Inner Channel.

Parameter	Surface: Turning Basin and Inner Channel
Volume (cubic yards)	160,120 cy
Number of DMMUs	40 + 2 field duplicates out of 53 +3 field duplicates (total)
Total Sand + Gravel Content	Average = 10.6 % Range: 6.7 – 17.1
Total Fines Content (% silt + clay)	Average = 89.4 % Range: 75.7 – 93.9 %
Total Clay Content	Average = 35.9 % Range: 27.4 – 41.3 %
Total Organic Content (% TOC)	Average = 2.5 % Range: 1.9 – 6.0 %

5. The chemical testing results for the forty DMMUs identified for potential beneficial reuse as capping material are briefly summarized as follows: Thirty-two of forty DMMUs had no chemical SL exceedances, whereas seven DMMUs (S4, S8, S10, S22, S26, S44, S45) had detected exceedances of the mercury SL and SQS. Two DMMUs (S22, S23) had undetected exceedances of the hexachlorobenzene, Benzyl alcohol, Hexachlorobutadiene, and N-Nitrosodiphenylamine SL, whereas a single DMMU (S22) exceeded the 2,4-Dimethylphenol SL. Comparisons to SQS indicated that all chemicals were below SQS except as noted above for mercury at 7 of the 40 DMMUs, and two DMMU undetected SQS exceedances of Hexachlorobenzene (S22, S23). All forty DMMUs were subject to bioassay testing and those results are summarized below.

Bioassay Testing Summary

6. The DMMP interpretation outcome summary of bioassay testing conducted on the 40 DMMUs is briefly summarized below. During initial sediment testing with the amphipod *Eohaustorius estuaricus* there was unexplained toxicity in a large number of DMMUs, which appeared to be at least partially attributable to high clay contents. A reference area study conducted by The U.S. Navy at the request of the DMMP agencies documented that high clay content sediments may contribute to *Eohaustorius* mortalities. See the final 21 March 2000 SDM for a comprehensive discussion of the bioassay testing anomalies observed during the initial testing for this project and DMMP deliberations on these issues relative to amphipod bioassay retesting and other potential causes of the observed toxicity.
7. In summary, the DMMP agencies using weight of evidence and best-professional judgement (PBJ) concluded that the amphipod testing results indicated that three DMMUs (S24, S29, S50) had two-hit

responses from *Eohaustorius estuarius*, whereas the remaining 37 DMMUs had no-hit responses from the amphipod, *Ampelisca abdita* bioassay. Twenty-seven DMMUs exhibited bivalve larval bioassay two-hit responses, whereas thirteen DMMUs had no-hit responses. All forty DMMUs exhibited no-hit responses for the *Neanthes* 20-day growth bioassay. In conclusion, all forty DMMUs passed the nondisperser disposal site interpretation guidelines for bioassays (see Appendix 1 summary).

8. Interpretation of the bioassay testing results relative to SMS guidelines results in the following outcomes. All forty DMMUs were below the *Neanthes* SQS guidelines, and thirty-seven out of forty were below the Amphipod (*Ampelisca abdita*) SQS guidelines, whereas three DMMUs (S24, S29, S50) exceeded the SQS interpretation guidelines (*Eohaustorius estuarius*), but did not exceed the CSL interpretation guidelines. Twenty-seven of forty DMMUs were below the Bivalve larval SQS guidelines, whereas the remaining thirteen DMMUs (S4, S5, S8, S22, S30, S33, S35, S37, S38, S40, S41, S42, S44) exceeded the Bivalve larval bioassay SQS guidelines, but did not exceed the CSL guidelines.

Suitability Determination

9. The DMMP agencies accepted all the data discussed herein as sufficient using best-professional judgement (BPJ) to make a suitability determination regarding the potential reuse of this material as initial capping material at the Pit-CAD disposal site. As noted in footnote 1, this material will be used as part of an initial cap and will be subsequently capped by an additional two feet of stockpiled material previously excavated from the Pit-CAD disposal site. Appendix 1 summarizes the final suitability determination outcome for each of the 40 DMMUs representing a total volume of 160,120 cubic yards, and summarizes the essential chemical and biological testing information forming the basis for these determinations. Most of the material is below SQS guidelines (24 of 40 DMMUs), and all the remaining material is below CSL guidelines.
 10. A total of 160,120 cubic yards of potential dredged material in 40 DMMUs passed DMMP evaluation guidelines and are suitable for beneficial reuse as capping material at the Pit-CAD disposal site in Sinclair Inlet based on BPJ.
 11. This memorandum documents the suitability of the dredged material dredged within the Turning basin/inner channel within the U.S. Navy Shipyard dredging project in Sinclair Inlet for beneficial reuse as part of an initial cap at the Pit-CAD disposal site in Sinclair Inlet. However, this suitability determination does not constitute final agency approval of the project. A dredging plan for this beneficial reuse must be completed as part of the final project approval process.
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