RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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Received January 4, 1999

December 21, 1998

James Shaffer, Remedial Project Manager
Department of the Navy, Northern Division
Naval Facilities Engineering Command
10 Industrial Highway
Code 1823-Mail Stop 82
Lester, PA 19113-2090

RE: Final, Preliminary Remediation Goals for Offshore Derecktor Shipyard Ecological Risk Assessment, Naval Education and Training Center, Newport, Rhode Island

Dear Mr. Shaffer,

The Office of Waste Management has reviewed the Navy's response to comments on the Draft Final Preliminary Remediation Goals (PRG) and the final PRG document for the Derecktor Shipyard Site. Attached are comments that require further clarification.

If the Navy has any questions concerning the above, please contact this Office at (401) 277-2797.

Sincerely,

Paul Kulpa

Paul Kulpa, Project Manager
Office of Waste Management

cc Warren S. Angell, DEM OWM
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Comments on Final
Preliminary Remediation Goals
Derecktor Shipyard

2. Section 2.1, PRG Development Approach;
Page 4, Paragraph 2.

The report notes that the actual toxicity of sediments may be less than that predicted by direct comparisons to bulk sediment concentrations due site specific factors which limit the bioavailability of the contaminants. Accordingly, exposure to water as opposed to bulk sediments is used in the PRG development process. It is known that a number of organisms, clams, worms, etc. ingest sediments directly. Even in human health risk assessments, incidental ingestion of contaminants found on soil or sediments is include in the overall risk assessment. Since organisms are exposed via both pathways sediments, and dissolved constituents, incorrect PRG values will be obtained if only one route is evaluated. Therefore, the PRG process should evaluate exposure to bulk and dissolved contaminants at the site. Please modify the report accordingly.

Evaluation of Response

The Navy has indicated that benthic organisms, including worms and shellfish which directly digest sediments, due to their morphology, obtain all contaminants from pore water and not from the sediments which are digested. Please provide a copy of the reference material in support of this position.

3. Section 2.1, PRG Development Approach;
Page 4, Paragraph 2.

This section of the report notes that elutriate concentrations were compared to WQSVs. Elutriates are not obtained by allowing the water to drain from the sediment samples. Elutriates are obtained by mixing one part sediment with four parts water. This represents a dilution and should be treated as such in any comparison of WQC to elutriate concentrations (i.e. direct comparison is not possible, dilution should be factored into the comparisons). Please modify the report accordingly.

Evaluation of Response

The Navy has stated that the concentrations of contaminants released by sediments falling through a water column and then diluted by a factor of four is greater than that caused by sediments which have had time to come into equilibrium with the surrounding pore water. Please provide the reference material in support of this position.

5. Section 2.1, PRG Development Approach;
Page 4, Paragraph 2.

These predicted values for organic contaminants are combined with direct measurements of SEM/AVS measures of metal bioavailability to constitute the porewater data set.

The report indicates the SEM/AVS information will be used to determine whether inorganic contaminants are a concern at the site. This approach may be valid under static conditions, that is no resuspension of sediments. Resuspension events will change the SEM/AVS values (i.e. metal bioavailablity is increased). Therefore, the AVS/SEM modifications should not be applied for areas subject to resuspension. Please modify the report accordingly.

Evaluation of Response

The Navy has employed an AVS equal to zero to address bedded sediments. It is assumed that bedded sediments refer to sediments collected from core stations. Please confirm and include a definition of bedded sediments in this section of the report. In addition, for clarity, in this section, the report should state whether bedded sediments were used in the selection of polygons for remediation.

6. Section 2,1, PRG Development Approach:
Page 4.

This section of the report has compared the results of the biotoxicity test in the evaluation of whether contaminated sediment represents a threat. In numerous meetings this Office has indicated that due to variability in biotoxicity test and sampling, the biotoxicity test may be used as an indicator of contamination. It cannot be used as a stand alone test in the determination as to whether contaminated sediments represent a problem. The PRG document has used the biotoxicity test to discount contaminated sediments. The biotoxicity test performed at the site would not have sufficient rigor to meet this task and should not be used as such. Please modify the report accordingly.

Evaluation of Response

The Navy has performed an evaluation to determine whether elimination of the biotoxicity screen will increase the number of COC or change the PRG value. In the this evaluation it appears that the conservative assumption of resuspension with AVS = 0 is assumed for divalent metals. Please confirm, and modify the report to accordingly. For all other metals, although not stated it is assume that the elimination of this criteria will not increase the number of COC. Please confirm and modify the report accordingly. In regards to SVOCs, the Navy noted that employing the biotoxicity criteria will result in several individual PAHs being eliminated from consideration. However, these compounds would be addressed via total PAH. Please indicate whether use of the individual PAHs will increase the number of polygons requiring remediation or result in a lower PRG value than that dictated by total PAHs.

8. Section 2,2, Aquatic TEV Derivation:
Page 7

This section of the report indicates that EPA WQC values were used in the PRG development. Please be advised that RIDEM WQC values are used throughout this State. Therefore, in order to be consistent, RIDEM's WQC values must be used in the PRG derivation process.

Evaluation of Response

There are two issues regarding the applicability of the State WQC. The one addressed by this comment is simply the use of States WQC values in lieu of the EPA WQC as performed in the document. The second involves the applicability of WQC to pore water, an issue the State agrees has not been resolved.

As the first issue simply involves the replacement of the more conservative State WQC value with the EPA WQC value, which is in concert with the Superfund process, it can be implemented at this time.

9. Section 2.4.1, Benchmark Selection HQ Derivation; Page 13, Whole Section.

This section of the report notes that the "receptor population for the consumption of locally-caught shellfish include local adult subsistence fisherman." The report also note that the consumption rate is 15.6 g/day. As noted in the Human Health Risk Assessment the exposure rate for subsistence fisherman would be greater than the 15.6 g/day value. Therefore, the report should note that the exposure for the subsistence fisherman would be greater than the 15.6 g/day.

Evaluation of Response

The State realizes that the authors of the PRG document are not responsible for the Human Health Risk Assessment Report for Derecktor Shipyard. This comment was designed to advise the authors of potential changes in this document. Therefore, please be advised that the Human Health Risk Assessment has not been finalized. As stated in previous correspondence the State requests that the regulatory agencies meet to resolve this issue as it affects this and other documents related to the site.

11. Section 3.2, Approach for Spatial Implementation of PRGs; Page 21, Whole Section.

The report has incorporated the results from previous studies in the PRG development process (i.e. URI study). However, the report has not incorporated results from other studies specifically the ACOE investigation that was conducted in the Pier 1 area. Historically two large floating dry docks and a barge was moored at Pier 1. Operations carried out on these docks resulted in the uncontrolled continuous release of contaminated sand blast grit into the environment during sand blasting operations. In addition, it was common practice to either remove the contaminated sand blast debris from the dry docks by either dumping the material over the side or submerging the dry docks. Other waste from operations conducted on the dry docks were also dumped over the side. These waste included, bilge waste, waste oils and sludges from either the dry docks or the ships being serviced by the dry docks. These actions resulted in a Cease and Desist Order being issued against Derecktor Shipyard. The amount of material dumped in this area was considerable as it could be measured by a bathometric survey of the area, (the survey was conducted in order to determine the extent of contamination in the area). Twenty sediment samples collected in this area were analyzed for lead, copper and zinc. The concentrations of these contaminates in the majority of these samples exceeded the proposed PRGs for Derecktor Shipyard. As previously noted in meetings and correspondence, this area was not sampled during the recent ERA. Therefore, the proposed PRGs should apply to these results.

Evaluation of Response

The Navy has indicated that predesign studies are designed to further delineate the areas of concern. The Office agrees. The Office simply requested that the Navy employed the ACOE results in the application of the PRGs. The final delineation of the areas of concern will be performed during design work. Therefore, please apply the ACOE results to the present study.

12. Section 3.3, Assessment of PRGs for Risk Assessment Reduction; Page 22, Whole Section.

The correlation between PRG and ecological risk assessment appears to be limited to high risk areas and not intermediate risk stations. Please confirm. Note, it is this Offices position that intermediate risk stations should be addressed, and the PRGs development should incorporate these stations.

Evaluation of Response

The PRG document function is to propose remediation numbers for areas that have been identified as areas of concern in the Ecological and Human Health Risk Assessment, not vice a versa. The areas in question have been identified as areas in the various risk assessments and the PRG document should address these areas. Therefore, this Office reiterates its comment.

13. Section 3.3, Assessment of PRGs for Risk Assessment Reduction; Page 23, HWW PAHs.

This section of the report discusses the relationship between observed risk and the PRG value. The report notes that eight stations exceeded the PRG value (6923 ng/g). However the report recommends a PRG of 13846 ng/g apparently based upon the fact that two stations close to Station 20 did not show similar exceedence of the PRG-HQ and the fact that the recommend value is within the Long and Morgan range. The concentrations of contaminants at two closely located stations probably represents sediment heterogeneity. It is unclear how sample concentrations at different stations can be used in support of a higher PRG. Therefore, the PRG value of 6923 ng/g should be employed.

Evaluation of Response

The Navy has indicated that one high risk station DSY-9 had a HQ of 4.3, while a second high risk station DSY-27 had a HQ of 1.47 and a low risk station DSY-30 had a HQ of 1.49. This discrepancy between the latter two stations are used in support of the recommended HQ greater than two (the rest of the Navy's response deals with stations located in proximity to each other). This same discrepancy may also be used in favor of the argument for use of a HQ value less than two. Please indicate whether there are any other factors which may be contributing to this discrepancy, such as whether risk drivers other than PAHs are responsible for the risk at station DSY-27.

15. Section 3.3, Assessment of PRGs for Risk Assessment Reduction; Page 24, Lead.

This section of the report discusses the relationship between observed risk and the PRG value. The report notes that five stations exceeded the proposed PRG value (84 ng/g). Two stations had high risk (two stations employed URI data, risk assessment were not conducted at these locations), however, one station had low risk (Station 32). The report recommends adopting the higher PRG-HQ equal to 2 (this translates into a concentration of 166 ug/g). In essence, even though high risk was observed at a station with a HQ less than two, the lack of similar risk at the other station supports adopting a HQ value of 2. A review of the risk assessment for these stations reveal that the weights of evidence sediment hazard quotients for metals, elutriate HQ, laboratory toxicity, and field effects indicators are similar amongst the three stations. However, the tissue concentration ratios

for Station 32 is lower than Stations 27 and 29, thus the overall lower risk for this station. It should be noted that this lower risk is not based upon the fact that the tissue samples had lower concentrations of contaminants; it is due to the lack of data, tissue samples were not collected at Station 32. That is, the lower risk is not based upon data but the lack there of. Therefore, it would be inappropriate to recommend a PRG value based upon a HQ equal to two and the PRG value of eighty four should be employed.

Evaluation of Response

The Office has reviewed the Navy's response and requires further clarification. Due to the complexities associated with this comment the Office recommends that this issue be discussed verbally.

16. Section 3.3, Assessment of PRGs for Risk Assessment Reduction; Page 24, Total PCBs.

This section of the report discusses the relationship between observed risk and the PRG value. The report notes that four stations exceeded the proposed PRG value (530 ng/g). Two stations had high risk (the other stations employed URI data, risk assessment were not conducted at these locations), however, one station had a hazard quotient that only slightly exceed the PRG-HQ equal to one. The report therefore recommends adopting the higher PRG-HQ equal to 2 (1060 ng/g). High risk observed at a slight exceedence of the HQ would seem to validate the lower value (560 ng/g) not higher value. Therefore, the lower PRG value (560) should be employed at the site.

Evaluation of Response

The Navy has indicated that the biotoxicity assessment attributes the high risk at station 29 to lead and not to PCBs. Please elaborate.

17. Section 3.3, Assessment of PRGs for Risk Assessment Reduction; Page 24, Total PCBs.

The proposed PRG for PCBs is 1638 ng/g, which is well beyond the Long and Morgan value of 22-180 ng/g. Previously, in support of the proposed PRG value for PAHs the document referenced the Long and Morgan value. This comparison was not done for PCBs. Please explain why the proposed PRG for PCBs greatly exceeds the Long and Morgan values.

Evaluation of Response

The Navy has indicated that the Long and Morgan values for PCBs are artificially increased due to the presence of other contaminants in the field. That is, the field observed toxicity for PCBs is due to located contaminants at these stations (i.e. in the evaluation of all the studies conducted by Long and Morgan there is another contaminant, other than PCBs, which contributing to the observed toxicity. This problem with Long and Morgan values does not hold true for PAHs or the other contaminants. It is also possible that the presence of other contaminants may increase the toxicity of PCBs, (PCBs is more bio available, etc.). Please indicate whether there has been any studies which address this issue.

18. **Section 3.3, Resuspension Evaluation;**
Page 25, Whole Section.

This section of the report employs a model to predict the areas subject to resuspension by prop wash. The model predicts that any area greater than 10 meters in depth will not be subject to resuspension from prop wash. It is known that the ability of a model to assess or predict conditions at a site is limited by a number of factors, including the assumptions used in the model and the prevailing site conditions. These limitations can result in the model not being representative of field conditions. That is, the model's predictions are incorrect. Accordingly, when possible, it is common practice to test the predictions of a model. Such a test occurred at the Derecktor Shipyard during the docking of the USS Saratoga. The Rhode Island Department of Environmental Management inspected the area after the Saratoga had been docked. Resuspension of sediments was observed from the propellers of the tugboats used to dock the ship. The resuspension of sediments was extensive as the entire area in between Pier 1 and Pier 2 was muddied by the tender vessels. It should be noted that these observations were made well after the ship had been docked. In addition, the tug boats were not operating at moderate high propeller RPMs (as assumed by the model), but instead were idling as the ship had already been secured to the dock, (vessel was tied to the dock). Therefore, the predictions of this model are incorrect, (the model predicted no resuspension in area where the Saratoga was docked; resuspension was observed), and this model should not be used to evaluate resuspension from vessels operating at the site. Finally, it is unnecessary to expend monies and manpower employing another model as the conditions at this site has been proven to be subject to resuspension. Therefore resuspension via propeller action should be considered for the entire study area.

Evaluation of Response

The Navy's modeling exercise was designed to delineate areas which are subject to resuspension, not areas in which resuspension may or may not result in an excedence of PRGs. Therefore, as the function of the model was to delineate areas of resuspension, and as these area were observed in a real life situation, the State reiterates its comment.