



RHODE ISLAND  
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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TDD 401-831-5508

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

RE: Draft Final Ecological Risk Assessment, Naval Station Newport, Newport, Rhode Island

Dear Mr. Shafer,

The Department of Environmental Management Office of Waste Management has reviewed the Ecological Risk Assessment for the Old Fire Fighting Training Area dated 2 August 1999. Attached are comments generated as a result of this review. If the Navy has any questions concerning the above, please contact this Office at (401) 222-2797, ext. 7111.

Sincerely,

Paul Kulpa, Project Manager  
Office of Waste Management

cc: Warren S. Angell, DEM OWM  
Richard Gottlieb, DEM OWM  
Christopher Deacutis, DEM OWR  
Robert Richardson, DEM OWR  
Kymberlee Keckler, EPA Region I  
Melissa Griffen, NETC

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**Comments on the  
Draft Old Fire Fighter Training Area  
Marine Ecological Risk Assessment Report**

**1. General Comment**

Throughout the report comparisons to the background station are made. Therefore the report should include a discussion of background station. This discussion should note, amongst other things, whether there are any potential sources of contamination at this background station, whether the observed concentration of contaminants at the background station are within the values expected for an unimpacted area, etc. The report should also include a comparison of the reference station used for OFFTA with the ones employed for Derecktor Shipyard and McAllister Point Landfill.

**Evaluation**

The Navy has submitted a comparison of the reference stations at OFFTA to those taken at other sites. In subsequent meetings to discuss this comparison, the DEM has stated that the Navy has not demonstrated that the OFFTA reference stations are comparable to those taken at other sites or that the OFFTA stations has not been impacted. Accordingly, these stations should not be used as reference stations in the OFFTA risk assessment report. Therefore, the Office does not accept the use of these reference stations in the report and all sections containing comparisons to the reference stations should be revised. As stated during the last EAB meeting the Office is still willing to review proposals to collect samples from additional reference stations or evaluate whether stations from other sites can be employed.

**2. General Comment**

Please indicate whether all of the contaminants detected in the soil and the groundwater samples were analyzed for in the sediment and tissues samples collected for the Ecological Risk Assessment.

**Evaluation**

The Office requested that the Navy indicate in the report whether all of the contaminants detected in the soil and groundwater were analyzed for in the sediment. The Navy has indicated that selected contaminants of concern were analyzed for in the ecological risk assessment. Please indicate which section of the report contains this statement and which table contains this comparison.

### **3. General Comment**

It is known that free product was detected at the site. In addition, it is known that petroleum products contain a wide range of compounds, many of which are not detected in standard VOC/SVOC runs. Therefore, as this is a public document the report should state why a simple TPH analysis was not performed on the sediment samples.

#### Evaluation

The Navy has revised the report as follows:

Total Petroleum Hydrocarbon (TPH) were detected in the onshore soils and groundwater at the site. TPH is typically measured in soil and groundwater to meet regulatory requests, since there are cleanup criteria enforced by RIDEM that apply to TPH in groundwater and soil. In addition, there is no toxicity information that can be used to characterize risk to ecological receptors from TPH.

The Navy has indicated that TPH analysis was not performed due to a lack of a regulatory requirement for this test and the lack of toxicity information with respect to TPH. Please be advised that the State may require TPH testing in the sediment. In addition, toxicity comparison to TPH levels have been made in the past. Therefore, the above should be modified as follows:

Total Petroleum Hydrocarbons (TPH) were detected in the onshore soils and groundwater at the site. TPH analysis was not performed on sediment samples as it was thought that analysis for specific constituents would suffice. As it is now known that constituent testing may not be sufficient, all future sediments sample collected in areas of suspected petroleum contamination will under go analysis for TPH.

### **4. General Comment**

The report should note what procedures were employed in the risk ranking if a compound was not analyzed for, collected, rejected or evaluated at a particular sample station.

#### Evaluation

The Navy has addressed the first part of the comment, namely that all compounds were analyzed for at every station. Please reply to the remaining portion of the comment, that is, what procedures were employed if a contaminant was rejected or not included in the evaluation.

**6. Figure 1.2.1, Sampling Stations**

Please include a figure that depicts what was sampled for or what analysis was performed at each sampling stations, i.e. depth of sample, chemistry biotoxicity, various tissue analysis, deployments, collections, community structure, etc.

Evaluation

The Navy has indicated that the requested figure may be found in a support document. Please be advised that the appropriate location for this figure is in the main document, and not the support document. Therefore, please include this figure in the main document.

**7. Section 3.3, Contaminants of Concern,  
Page 3-16, Paragraph 2.**

The bench marks employed for determining contaminants of concern are equivalent to those employed in the draft Ecological Risk Assessment for Dereecktor Shipyard dated July 1996. Please indicate whether any other benchmark from other states or other Regions, have been developed since that time. It is the Office's understanding that Region IV and New Jersey are developing or have developed sediment-screening values. These values should be incorporated into the report. The Office recommends investigating whether the other coastal states or Regions have developed standards.

Evaluation

The Navy has indicated that the selected benchmarks agree with an EPA summary. Please indicate whether this summary included other States as well as the Region reference in the comment.

**8. Section 4.1, Sources and Exposures Pathways of CoCs,  
Page 4-3, Paragraph 2.**

This section of the report states that the concentration of organic contaminants in aquatic organisms is based upon lipid content of the organisms and not due to other factors such as biomagnification. That is the external surface of the respiratory systems of water borne organisms facilitate the transfer of lipid soluble contaminants and thus biomagnification is not present. This would seem to imply that respiratory systems of aquatic organisms have a detoxification function, and as such contaminants absorbed by the organism, through ingestion, respiration or dermal content is removed via the respiratory system. Since biomagnification is known to exist in the aquatic environment, please indicate whether any other studies

other than the 1977 reference support his position.

#### Evaluation

The State requested additional literature sources in support of the position that lipid contact not biomagnification is important in determine concentrations of contaminants in organisms. The Navy has noted that the results for cunner samples taken at OFFTA support this position and have include an additional study performed by the authors of the report. Please confirm whether these two studies are the only one available in support of this position.

**9. Section 4.1, Sources and Exposures Pathways of CoCs,  
Page 4-4, Paragraph 1.**

This section of the report indicates that PAHs do not bioaccumulate in organism. As the report states it is known that PAHs are rapidly metabolized, and the metabolites themselves may be more harmful than the original PAHs. The report should note whether the PAH metabolite bioaccumulate.

#### Evaluation

Please indicate whether PAH metabolites bioaccumulate.

**10. Section 4.1, Sources and Exposures Pathways of CoCs,  
Page 4-4, Paragraph 1.**

This section of the report states combusted forms of PAHs are more highly particle bound then what is suggest by their chemical structure. Please provide the basis for this statement.

#### Evaluation

Please indicate whether there are other literature references in support of this position.

**16. Section 4.3.1.2, Porewater,  
Page 4-16, Paragraph 2.**

This section of the report states that mercury values were not used due to insufficient sample volume. As discussed in previous correspondence the mercury values are valid and should be treated as such in this report.

#### Evaluation

It is the States understanding that, although the data may not fall within the confidence intervals

used for the other contaminants, the laboratory results are valid and that the procedures employed are consistent with sample concentrations of this nature. Therefore, this data should be incorporated into the report, how be it with a higher degree of uncertainty. If the Navy is uncomfortable with the data the State will evaluate any request by the Navy to collect additional samples for mercury.

**20. Section 4.3.2.4, Tissue Residues,  
Page 4-28, Whole Section.**

It is not clear from this section of the report whether tissue samples analyzed for mercury, from all the species collected, including cunner were included in this section of the report. As stated in previous correspondence, the Office considers all of the tissue samples analyzed for mercury as valid and should be considered such in the report.

Evaluation

The States comment was not addressed. The Office simply requested if mercury samples from all species, including cunner were included in the report (the State is aware that samples from the other species was included in the report). Therefore, the State reiterates its comment. Was tissues samples for mercury from all species collected, including cunner, included in the report, i.e. was the mercury results from cunner excluded and were there any results from clams, mussel, lobsters etc, which were excluded from the report.

**21. Section 5.0, Toxicity Evaluations,  
Page 5-50, Whole Section**

This section of the report discusses the different toxicity test performed on the sediments and water samples. As these are standardized test the report should include a table that lists the typical cut off values inherent in these test. In addition, the report should include a discussion of the standard interpretation of these values.

Evaluation

The Navy has stated that the exact relationship between the toxicity of a sample and the extent of risk is not known therefore arbitrary cutoff values were selected. Accordingly, the Navy has assigned a low risk to samples in which forty percent of the organisms die with respect to the control and fifty percent had development problems with respect to the control. As the former is close to a LC 50 the Office does not agree with the assignment of a low risk to this value. The Office recommends that either different arbitrary cutoff values be evaluated or that the results of the toxicity test be evaluated with a higher degree of uncertainty and therefore these results would have lees weight in the overall evaluation.

**28. Section 5.3.1.2, Benthic Community Assessment Protocols  
Page 5-62, Whole Section**

This section of the report includes a discussion of the different indexes that were used to analyze the data. The significance of the values obtained from these indices has not been included for all the assessment, which were conducted. As an illustration, the Shannon Weiner Diversity Index was performed at the site. However, the significance of the values obtained the critical values and the limitations of the analysis was not discussed in the report. Please modify the report accordingly.

Evaluation

The Navy has addresses the first part of the comments but has n9ot addressed the latter half.

In regards to the first part of the comment the Navy has stated that no literature base benchmarks exist for the diversity indexes employed at the site. The State disagrees with this statement as an illustration as noted in comment number 30 literature base benchmarks have been employed for the Shannon Weiner Diversity Index (see Wilhm, J.L. Range of Diversity Index in Benthic Macroinvertebrate Populations). Therefore, the statement that literature values do not exist should be removed from the report and the text should note that the comparisons to the reference stations were used at the site.

The Navy has not addressed the second part of the comment, that is the limitations if the different indexes employed at the site. As an illustration, the basic equation for the Shannon Weiner Diversity index breaks down if less then one hundred organisms are present, (i.e. the index will generate erroneous results if less then one hundred organisms are present). Therefore, the report should note and discuss the limitations of this and other indexes employed at the site as this information has obvious implications concerning the use of these indexes

**30. Section 5.3.1.2, Infaunal Community Assessment Results, Benthic Community Assessment.  
Page 5-66, Paragraph 2.**

*Ranges were calculated using an arbitrary division system dividing the benchmark values into ranges.*

The above states that an "arbitrary division system" was used to segregate the various matrixes and determine the final ranking, low, intermediate or high. This would by definition translate into an arbitrary ranking system. One of the results of this approached is that a sample with only fifty percent of the matrix of the reference station is ranked as a low risk. In essence a sampling locations with half of the

number of individuals or diversity may be given a low risk. Therefore, the ranking system should be revised and the arbitrary division should be replaced by one reflective of risk.

#### Evaluation

The Navy has assigned a low risk to stations which exhibit half the diversity or total number of individuals as the control. This arbitrary system was assigned due to unknowns in population stability. It is assumed that the environments between the sample and reference stations are similar, otherwise a comparison between the both would be inappropriate. Since the stations are located in the same general area one would expect to have similar natural stressors at both locations which would affect the populations. Therefore, the Office does not agree with the assignment of a low risk to populations which have fifty percent of the individuals or diversity with respect to the control and the arbitrary ranking system should be revised.

#### **38. Table 6.02, Indicator specific and Overall Weight of Evidence Ranking for Effects Concentrations.**

Bedded/Resuspended Sediment Toxicity. This section of the report provides cut off values for assign low and intermediate risk based upon survival or development rates. The report is a public document and therefore justification should be provided for the different cutoff values. As an illustration, as presented a low risk value is assigned for a sampling site in which forty percent of the organisms died.

#### Evaluation

The Navy has noted that "The 80 % cutoff is based upon a statistical evaluation of toxicity results to determine the minimum degree of toxicity need to result in a finding of a statistical significant reduction relative to controls."

Please indicate whether the 80 % figure is a literature value (and if so please provide a photocopy of the section which contains this value) or if a value based upon a professional review of other findings, (if this professional review of other findings has been compiled please provide a copy of this document).

#### **42. Table 6.6-3, Overall summary of exposure and Effects-based Weights of Evidence.**

This table assigns a low overall risk to areas, which have intermediate risk for one weights of evidence summary and a low risk for the other weights of evidence summary. Using this scheme a sampling site with intermediate risk for bedded sediment, resuspended sediments and bioconcentration would be assign a low risk if sediment toxicity, field effects and tissue effects are low. The Office recommends that an overall intermediate risk be assigned if two or more individual exposure effects in either summary are intermediate, i.e. if two or more exposure effects

in one weights of evidence summary are intermediate and the other weights of summary overall assessment is low the station would be assigned an intermediate value.

**43. Table 6.6-3, Overall summary of exposure and Effects-based Weights of Evidence.**

Please explain the following difference between the draft and draft final versions of this table:

- OFF-4 Resuspended changed from high to intermediate.
- OFF-13 Tissue Effects changed from intermediate to low
- OFF-14 Field Effects changed from intermediate to low
- OFF-15 Field Effects changed from intermediate to low