



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

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May 20, 1992

Ms. Deborah Stockdale  
U.S. Department of the Navy  
Northern Division - NAVFAC  
U.S. Naval Base, Building 77L  
Philadelphia, PA 19112

Dear Ms. Stockdale:

Per our telephone conversation this afternoon, EPA has reviewed the Navy's responses to EPA's comments on the draft August 1991 IR Report and offers the followings comments and observations.

General Observations

As discussed with Mark Leipert of your office, although a majority of the responses provided by the Navy are adequate, there are several outstanding issues which must be resolved prior to preparation of the draft final IR Report. These issues are summarized below:

- As discussed in EPA's November 12, 1991 comment letter on the draft report, EPA cannot concur with the Navy's determination that sufficient data exist to support a "No Further Action" decision at three sites. As discussed on page 30 of the aforementioned correspondence, the fact that analytical results from a particular site did not result in contaminant values that exceeded ARARs or risk-based criteria, is not a sufficient means for determining whether the site should undergo further investigation. The CERCLA criteria for determining whether an Remedial Investigation (RI)/ Feasibility Study (FS) should be performed on a particular site does not consider ARARs or risk-based values. Generally, the amount of sampling which is performed for a PA/SI (Step I investigation) is only sufficient to determine the presence of contamination, not the nature or extent. Furthermore, all media are not typically sampled in the PA/SI phase. In addition, since there have been documented releases at all three sites, further investigation must be conducted that completely characterizes these areas.
- Site-specific background soil data for inorganics must be collected during Phase II activities.



- Several responses offered by the Navy indicate only that EPA comments "will be considered in future Work Plans." Examples of this include sampling for dioxins, suggestions for additional sampling locations, modification of the North Lake overflow plumbing, etc. Such responses are unacceptable and must be resolved prior to initiation of Phase II activities. In addition, as discussed during the March 31, 1992 TRC Meeting, EPA has not agreed that the nature and extent of contamination have been adequately determined for those sites which the Navy has moved into the FS phase of the investigation. It is recommended that the Navy refrain from submitting the Draft FS Report until adequate characterization data is collected.
- A baseline quantitative ground water risk assessment must be conducted to adequately evaluate potential risks to human health. Comparison of ground water quality to MCLs is unacceptable.
- As discussed during the February 13, 1992 meeting with EPA, the Navy and its contractor, the use of surrogate RfDs does not reduce uncertainty and is unacceptable in the baseline risk assessment. More specific comments on outstanding risk assessment issues can be found on proceeding pages.

#### Response to "General Comments"

- Page 2, Response 7 - The "other Navy analytical data" mentioned was not presented in the Draft IR Report. In addition, the Navy has not provided EPA with information on the DQO level of these data, the analytical methods used, or the specific locations from which samples were collected.

EPA believes that additional sampling of North Lake is warranted due to the fact that the lake appears to be recharged by ground water. This matter should be discussed further. The additional of a sample location near Triton Avenue is not a suitable substitute location for additional sampling at North Lake.

- Page 2, Response 10 - The tidal cycle investigation discussed on pages 3-42 and 3-48 of the draft IR Report is not adequate to interpret and predict the fate and transport of ground water contamination. The IR Report does not state whether the investigation was performed during spring or neap tides. It is not clear whether additional wells (in addition to those discussed in the report) were monitored to determine a tidal influence.

Although the statement that "the reversal of ground water flow direction at high tide does not extend farther than 300

feet inland from the river," may be correct, the tidal effect at the Goss Cove and the DRMO were not investigated. Furthermore, there are additional impacts or effects of tidal influence other than changes in ground water. For example, tidal induced water levels may complicate hydraulic conductivity test analysis, and the existence of floating product may vary with the rise and fall of the tide.

#### Section 1.0 - Introduction

- Page 4, Response 11 - This information should be included in the draft final IR Report.

#### Section 2.0 - Site Investigation

- Page 6, Response 3 - EPA has reviewed the February 1992 Geophysical Investigation Report and submitted comments to the Navy via a letter dated April 20, 1992. EPA would appreciate a response to this letter and requests that a follow-up meeting be convened to discuss additional geophysical work that may be warranted based on data gaps identified in the report.
- Page 7, Response 6 - EPA does not require "vigorous QA/QC" to be applied to screening methodologies, only that QC samples have defined objectives of acceptability. The use of standard acceptance criteria is intended to apply reasonable limits to the subjectivity of the analytical system. For example, the accepted degree of precision for soil gas field duplicates need not be as stringent as those applied to laboratory analysis, but there should be a limit to the impression which will be accepted. That limit should be defined.
- Page 8, Response 12 - The discussion on Page 2-13 of the draft report does not indicate the specific selection criteria employed for each sample collected. This discussion is vague and cannot be used to develop an understanding of how a particular sample from a given boring was selected for analysis. Additional information is needed.
- Page 8, Response 13 - Although EPA is not requesting that the Navy install additional wells to determine the basewide ground water flow directions, a ground water map which encompasses all of the hazardous waste sites is fundamental to the interpretation of contaminant fate and transport and determining background reference sampling locations at the base.
- Page 9, Response 15 - A bedrock elevation map must be provided in the draft final IR Report.

- Page 10, Response 16 - The draft IR Report indicates that ground water flow reversals occur as far as 300 feet inland. It is probable, therefore, that "tidal effects" are pronounced several thousand feet inland, significantly more than the "200 feet" indicated in the Navy's response. Continuous monitoring water level recorders should be installed to document tidal effects at these sites.
- Page 12, Response 30 - EPA requires PRPs to perform data validation of all samples used for risk assessment regardless if the data were generated using DQO Level III methods. At a minimum, federal facilities are required to submit a representative subset (no less than 10%) of analytical results to validation in accordance with EPA Region I guidelines. It is recommended that the Navy identify critical data points, i.e. analytical results generated from sample locations where multiple analyses were performed, and submit these data for additional validation in accordance with the November 1, 1988 Region I Laboratory Data Validation Guidelines for Evaluating Organic and Inorganic Analyses. Conclusions regarding the acceptability of these data will then be applied to the remainder of the data.

#### Section 3.0 - Characteristics of Study Area

- Page 14, Response 2 - A bedrock elevation map for the entire base must be constructed and included in the draft final IR Report. Although the collection of additional data is not necessary at this time, the bedrock elevation map must portray the confidence level of each contour through the use of dashes and questions marks or other standard symbols.
- Page 14, Response 3 - The water table and water level elevations should be depicted on cross sections. Where sufficient data exists, flow sections should be prepared as well. For maps, areas of unsaturated overburden and posted water level elevations should be included.
- Page 20, Response 31 - The text should be changed that qualifies the useability of the data. A suggested revision to the text is to include a statement indicating that the pump test data are not accurate due to the factors discussed in EPA's November 12, 1991 comment letter.

#### Section 4.0 - Nature and Extent of Contamination

- Page 21, Response 2 - The collection of inorganic background samples for soils is an important issue, since without background data, the Navy must consider all inorganics detected as site contaminants. If it can be demonstrated that certain inorganics are naturally occurring (via

comparison to site specific background data), they need not be included in the risk assessment.

In addition, the draft IR Report contains several references to inorganic levels in soil that are "below background levels." Such statements must not be included in the draft final IR Report unless site specific background data are available.

- Page 21, Response 3 - Comments on the ARARs tables were offered by Robert DiBiccaro of EPA Region I's Office of Regional Counsel at the February 13, 1992 meeting. The Navy is encouraged to contact Mr. DiBiccaro at (617) 565-3449 with any additional questions or concerns in this regard.
- Page 24, Response 14 - Table 4-2 needs to be updated as follows:

Barium has final MCL and MCLG of 2000 ppb;

Copper has final MCLG and action level at 1300 ppb;

Chloroform has a MCL of 100 ppb (from total trihalomethanes); and,

Endrin has a proposed MCL of 0.2 ppb.

In addition, the Navy's response indicates that some of state's regulations are more stringent than EPA's. The fact is that many states adopt EPA's drinking water regulations. When EPA promulgated new regulations based on new data, most states still use EPA's old regulations. This seems to be the case for State of Connecticut because all the values mentioned here are EPA's old standards. Therefore, it may be more appropriate to cite EPA's standards.

- Page 26, Response 28(a) - Response 29 in Section 3.0 does not respond to EPA's query. This sentence should be removed from the draft final IR Report until the Navy is able to present conclusive evidence that bedrock ground water does not discharge into North Lake.
- Page 27, Response 32 - An "approximate delineation of "hot spots" of soil contamination" is inadequate for determining soil contamination limits at a site. Additional data must be collected from this site to more accurately define the nature and extent of contamination.
- Page 27, Response 34 - It was recently brought to my attention by EPA Region One's Office of Environmental Review that the Navy is proposing to dredge 2.7 million cubic yards of sediment an 8-mile stretch of the Thames River in order

to provide sufficient channel depth for the SEAWOLF nuclear submarine. The Navy submitted a Draft Environmental Impact Statement (DEIS) in April 1991 which neglected to mention the existence of documented CERCLA hazardous waste sites at upgradient (from the Thames River) locations on the base. Since it has been determined in the draft IR Report that additional information on surface water and sediments is needed to fully evaluate potential impacts of the lower subbase, Area A wetlands, downstream watercourses, DRMO, and ponds along the Thames River, the Navy may want to consider coordinating its sample collection efforts pursuant to the proposed NEPA activities (see EPA's July 15, 1991 comment letter on the DEIS) with those underway as part of the ongoing CERCLA/IRP program.

#### Section 5.0 - Contaminant Fate and Transport

- Page 29, Response 6 - EPA believes that analysis for all chlorinated dioxin/furan compounds should be conducted, at a minimum, at locations where dibenzofurans were detected on the base. In addition, EPA has found through discussions with other Regional Federal Facility offices, that dioxins and furans are also being found at facilities where TCL "identifiers" such as 2,4,5-trichlorophenol, 1,2,4-trichlorobenzene, PCBs and dibenzofurans, were not detected. This finding is prevalent at areas where petroleum products (containing aromatic organic compounds such as benzene and toluene) have been burned with chlorinated solvents such as PCE and TCE or other chlorine sources.
- Page 31, Response 15 - Please explain what is meant by "soil background levels." As previously discussed, the Navy has not provided information on background contaminant levels at NSBNL. In addition, EPA does not allow use of published values for background levels of inorganics in soils. Site specific data must be collected to support such a finding. Additional maps and/or text must be provided to support the contention that there is an upgradient source of copper and lead contamination.
- Page 31, Response 17 - Refer to comment on preceding page - Page 29, Response 6.

#### Section 8.0 - Summary and Conclusions

- Page 34, Response 4 - EPA agrees that further discussion on this issue is warranted.
- Page 35, Response 5 - EPA agrees that further discussion on this issue is warranted.

- Page 35, Response 7 - Refer to comment on preceding page - Page 29, Response 6.
- Page 35, Response 9 - Refer to comment on preceding page - Page 27, Response 34.
- Page 36, Response 10 - EPA agrees that further discussion on this issue is warranted.
- Page 36, Response 14 - EPA disagrees. Cross sections and flow nets are fundamental tools in portraying the extent of contamination, especially in ground water, and must be included in the draft final IR Report.
- Page 37, Response 16 - Refer to comment on preceding page - Page 29, Response 6.
- Page 37, Response 18 - This response suggests that several data collection efforts will be delayed until the FS stage, including wetlands delineation, further definition of the nature and extent of contamination, and other activities. This strategy is unacceptable. As stated in EPA's "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA," a clear objective of the RI is to "determine the nature and extent of contamination." The FS then relies on the RI to determine the waste types, volumes and concentrations. It is recommended that the Navy redirect their efforts to proceed with a Phase II RI, prior to the submittal of the draft FS Report, in accordance with the RI/FS guidance.
- Page 38, Response 19 - Refer to comment on Page 5 - Page 29, Response 6.

#### Appendices

- Appendix A  
Page 39 - The depths of the soil gas samples should be provided in the Appendix A tables.
- Appendix E  
Appendix F-1  
Appendix F-2  
Page 40 - The Navy did not respond to these comments. A response at your earliest convenience is requested.

Responses to EPA's Comments on Human Health Risk AssessmentGeneral Comments

- Although a majority of the outstanding issues were discussed at the February 13, 1992 meeting in Boston, the Navy chose not to respond in writing to most of the issues raised in EPA's November 12, 1991 comment letter. Therefore, many of EPA's initial concerns with regard to the human health risk assessment are still relevant and the risk assessment portion of the draft IR Report inconsistent with EPA guidance and policy.

Specific Comments

- Page 1, Response 3 - A quantitative risk assessment is necessary to establish a baseline assessment of potential risks to public health from exposure to site ground water. A comparison of ground water quality to MCLs does not adequately evaluate potential health effects due to the fact that 1) MCLs are not solely health-based, 2) such a comparison does not take into account the combined effects of multiple chemicals present, and 3) MCLs may not be available for all contaminants detected.
- Page 2, Response 4 - As previously discussed, the collection of inorganic background samples for soils is an important issue, since without background data, the Navy must consider all inorganics detected as site contaminants. If it can be demonstrated that certain inorganics are naturally occurring (via comparison to site specific background data), they need not be included in the risk assessment.

In addition, the draft IR Report contains several references to inorganic levels in soil that are "below background levels." Such statements must not be included in the draft final IR Report unless site specific background data are available.

- Page 2, Response 5 - Some discussion on the distribution of the data should be provided in the text of the draft final IR Report.
- Page 4, Response 11 - There appears to be confusion about the intent of this comment. Response (b) speaks specifically to average times in the risk assessment equation. The Navy response, on the other hand, addresses exposure frequency. Also, there appears to be a miscalculation in comment (d). The 1.2 l/day risk calculation is incorrect based on EPA's 2.6 hour/day and 0.13 l/day ingestion rate. Please revise.

- Page 4, Response 15 - Refer to comment on preceding page - Page 1, Response 3.
- Page 5, Response 17 - The 100 mg/day ingestion rate for soil must be used and therefore the spreadsheets must be changed. A discussion in the narrative section of the report is insufficient. In addition, the zonal approach discussed in this response should be reiterated in the risk assessment text of the draft final IR Report.
- Page 5, Response 19 - There appears to be confusion with regard to the intent of this particular comment. EPA is concerned about the surface water ingestion rate reported, not the permeability constant. Please respond accordingly.
- Page 6, Response 23 - This response is inadequate. Were soils slightly below, at, and above the 15 foot depth included in the calculation of exposure point calculations?
- Page 7, Response 29 - The Navy's response indicates that there is some uncertainty with regard to the difference between exposure frequency, exposure duration or average time. EPA requests that the Navy submit complete equations and the parameters that were used for each calculation. The response for this comment clearly indicates that calculations for noncarcinogenic risks are incorrect.
- Page 7, Response 30 - As discussed at our February 13, 1992 meeting in Boston, the surrogate RfDs used by the Navy to calculate risk for compounds without RfDs are inappropriate for the reasons discussed below.

The Navy claims that structure activity analysis was used for calculating surrogate RfDs. Current EPA guidance requires that the contractor submit all documentation supporting its proposed structure activity analysis approach to EPA's Superfund Technical Center (STC) in Environmental Criteria and Assessment Office located in Cincinnati, Ohio, through EPA Region I's risk assessor for approval prior to its use in performing a baseline risk assessment. This issue has been discussed with STC for the appropriateness of the surrogate RfDs assigned by Navy. The STC has provided the Region with the technical papers for the provincial RfDs for the chemicals in question. A copy was sent to the Navy and its contractors. With the exception of methylnaphthalene, none of the information received to date supports the values presented in the draft IR Report.

The use of incorrect surrogate RfDs does not make the base line risk more conservative, rather, it misinterprets the risk. If the compound is already a carcinogen, the

carcinogenic risk is more of a concern than the non-carcinogenic risk. The use of surrogate RfDs belies a degrees of certainty that is misrepresentative to the reader and should not be inferred.

With regard to noncarcinogenic PAHs, it is EPA Region I's policy to use the verified RfDs on IRIS for noncarcinogenic effects. If the RfD is not available, the HEAST annual FY' 91 value of 4.00 E-3 mg/kg/day for naphthalene is to be used for all other non-carcinogenic effects of PAHs.

- Page 8, Response 33 - Refer to preceding comment - Page 7, Response 30.
- Page 9, Response 34 - Refer to preceding comment - Page 7, Response 30. In addition, these human health risk assessment issues must be resolved prior to the submission of the draft final IR Report. Presentation of the "new CPF value for BaP" in the FS is unacceptable. EPA cannot review a draft FS until the outstanding RI (baseline risk assessment) issues can be resolved.

In addition, the 5.8 per kg/mg/day cancer potency factor for benzo(a)pyrene is for an oral route. It is inappropriate, therefore, to use this oral CPF or the old 6.1 per mg/kg/day inhalation CPF for an inhalation pathway.

Refer to preceding comment regarding RfDs for noncarcinogenic PAHs - Page 7, Response 30.

- Page 10, Response 35 - EPA's comment addresses the inadequacy of deriving RfD for lead from drinking water standards. In other words, the risk from lead exposure should be addressed qualitatively. As previously, this model should be used to estimate lead target clean up levels in soil for areas with exposure scenarios where lead is an issue in the draft final IR Report, not the FS.
- Page 11, Response 36 - Please provide documentation that supports the Navy's finding that none of RfDs or CSFs for the compounds of interest in this site have changed. Has a comparison actually been conducted between the FY 90 and FY 91 HEAST?
- Page 11, Response 38 - Average time for the calculation of exposure dose for noncarcinogens is equal to exposure durations. It should be site specific or 30 years. The Navy's response indicates that the calculations for noncarcinogenic risks are incorrect for this site. Whether the exposure duration is standard 30 years or site specific, the average time should be the same as exposure durations for noncarcinogens. Please refer to EPA's guidance on human

health risk assessment for additional information in regard to this matter.

- Page 11, Response 39 - The text of the risk assessment in the draft final IR Report should include a discussion of the zonal approach.

### Responses to EPA's Comments on Ecological Risk Assessment

#### General Comments

- Overall the response by the Navy to EPA comments pertaining to ecological risk assessment are adequate. It is obvious that further study of ecological impacts at this site is warranted, primarily in the Area A wetlands, downstream watercourses and ponds along the Thames River.

#### Specific Comments

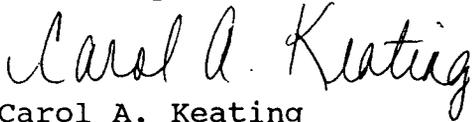
- Page 12, Response 42 - The discussion of potential ecological risk from environmental media at the CBU Drum Storage Area and OBDANE site should clarify the reference to "very low concentrations" and provide the rationale for excluding these sites from further ecological risk assessment.
- Page 14, Response 49 - A recent site visit (March 31, 1992) to the downstream ponds and watercourses also found that these areas appeared barren and devoid of aquatic organisms (particularly in the lower pond). It is strongly recommended that a benthic invertebrate survey be developed and conducted within these areas in conjunction with the additional sampling efforts proposed for the Phase II RI work plan.
- Page 14, Response 52 - It is hoped that with future consideration, the reason for the lack of species types and number associated with Wetland A and downstream watercourses and ponds, will be addressed. A determination should be made, whether it be habitat requirement related or proven to be caused by contaminants, should be clearly assessed.
- Page 15, Response 57 - Given that additional sampling is necessary in the areas concerned, the request for actual TOC determination to enhance the accuracy of the risk assessment seems reasonable. The question of available data alluded to in the response could be eliminated in this manner.
- Page 16, Response 59(b) - The sampling location of the frogs allows for approximation of conditions in a small area of the actual wetland area. Further assessment should be conducted, not only in the Area A ponds, but in the

downstream watercourses exiting from the wetlands area. This would provide a much better representation of the wetlands.

- Page 17, Response 65 - Refer to above comment.
- Page 19, Response 77 - The Navy's response only addresses terrestrial exposure assessment issues. Although it is acknowledged that at this time it may not be possible to assess every exposure, it would be appropriate to examine the other major exposure scenarios, i.e. surface water and sediment ingestion.

Should you have questions or need any additional information with regard to the above, please do not hesitate to call me at (617) 573-5764.

Sincerely,



Carol A. Keating  
Remedial Project Manager  
Federal Facilities Superfund Section

cc: Paul Jameson, CTDEP  
William Mansfield, SUBASE New London  
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