UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

May 1, 1995

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

Re: Review of the Navy's Draft Final Work/Quality Assurance Plan for the Narragansett Bay Ecorisk and Monitoring for Navy Sites dated March 24, 1995

Dear Ms. Carlson:

I am writing in response to your request for EPA to review the *Draft Final Work/Quality Assurance Plan for the Narragansett Bay Ecorisk and Monitoring for Navy Sites*. Generally, the work plan has shown improvement over previous versions. However, it is unclear to us why an approach to present uncertainties in the ecological risk assessment as recommended by EPA's revised Table of Contents (faxed on March 3, 1995) was not included. Uncertainty is an inherent aspect of risk assessment. This issue is discussed further in Attachment A.

The work plan should include a preliminary list of contaminants of concern ("COCs") for each site. While EPA agrees that the final list of COCs should be jointly developed with all involved parties, a preliminary list of COCs will assist us in deciding whether the tests proposed are appropriate. Additionally, since the list of COCs will be different for each site, the work plan should adjust each COC list to site conditions.

I look forward to working with you on the upcoming ecological studies. Comments regarding the Addendum for the Naval Construction Battalion Command will be sent separately from Christine Williams. Please do not hesitate to contact me at (617) 573-5777 should you have any questions or wish to arrange a meeting.

Sincerely,

Kymberlee Keckler, Remedial Project Manager
Federal Facilities Superfund Section

Attachment

5/5/95 cc: PROJECT FILE
CODE 1822/TB
CODE 1831/SH
HNUS (S. PARKER)

1624

cc: Paul Kulpa, RIDEM, Providence, RI
Brad Wheeler, NETC, Newport, RI
Bob DiBiccaro, USEPA, Boston, MA
Susan Svirsky, USEPA, Boston, MA
Christine Williams, USEPA, Boston, MA
Mary Pothier, CDM, Boston, MA
Ken Finkelstein, NOAA, Boston, MA

ATTACHMENT A

Page	Comment
p. 14, 2nd¶	Explain the rationale for conducting an analysis of "pathogens associated with sanitary services." Additionally, subsequent sections where pathogens are mentioned should cite studies that support their use in ecological risk assessment.
p. 34, § 3.6.5.1, 2nd ¶	There should be a discussion of the potential limitations of the vacuum technique for extraction of pore water from whole sediment. (Please note that the correct citation is "Winger and Lasier, 1991.") Some pore water vacuum extraction techniques are limited. To relate pore water and sediment data, semivolatile organics and metals and their partitioning/volatility between solid and aqueous phases must be measured. Applying a vacuum to the sample could alter the thermodynamics of partitioning (or the volatility) of any polycyclic aromatic hydrocarbon ("PAH") during extraction. The vacuum technique could also alter the oxidation-reduction status of the sample should active aeration occur during application or release of the vacuum. The report should address how this affects the results.
p. 35, 2nd ¶, § 3.6.5.3	Explain how the community data will be used to identify potential cause and effect relationships among chemistry, toxicological measures, and benthic ecology data. Species occurrence data can provide a critical link between exposure and the observed ecology. Statistical investigations of a potential cause and effect relationship between the chemical, biological, and ecological data can also add to the weight-of-evidence in the ecological risk assessment. For example, multivariate statistics could be used to probabilistically identify factors that significantly contribute to an observed effect, assuming that other possible causes such as physicochemical parameters (*e.g.*, grain size) are included in the data set with appropriate replication to satisfy statistical test assumptions (*e.g.*, degrees-of-freedom).
p. 36, 2nd ¶, § 4.1	Why was pore water excluded as a sample matrix? Such data could help explain results of the *Arabacia* bioassays and identify potential risk to infaunal organisms exposed to PAH in the pore water.
pp. 46 & 47, § 6.3	There is no reference to an uncertainty analysis as a stand-alone section or as subsections following exposure, effects, or risk characterization sections. Uncertainty is an inherent property of risk assessment and must be included.

p. ii, Table of Contents	Based on EPA's revised Table of Contents provided to the Navy on March 3, 1995, Sections 2.2, 2.3, and 2.4 should each include an uncertainty analysis. Alternatively, the ecological risk assessments could be covered in a separate section of the document (*e.g.*, Section 2.5 Uncertainties).
Table 2-4	Osprey is incorrectly identified as a terrestrial receptor species. This receptor consumes only fish and its major exposure pathway is aquatic. In addition, red-breasted merganser and great blue heron should be listed under both aquatic and wetland headings. This table, the text, methods used in the assessments, exposure models and assumptions, risk characterizations and any other appropriate sections of the report should be revised.
Table 2-6	The purpose of this table should be clearer. Define pathogens, pathogen abundance, and their bearing on the ecological risk assessment (*see* related comments 20 and 21 in EPA's review of the draft work plan by cover letter dated September 8, 1994). Also, it is unclear what is meant by "markers," in the discussion about chemical and microbial markers. (*See also* comments below regarding Tables A2-7, B2-4, and C2-4.) The parameter, "Species occurrence" should be added to the Exposure Medium/Receptor headings: Sediment and Water. Assuming that the list of data parameters under each heading includes data that can be statistically correlated and compared, possible cause and effect relationships may be identified. (*See also* comment regarding page 35.)
Table 3-2	Why are pore water and its respective target method detection limits for PAHs, organochlorine pesticides ("OCP"), and polychlorinated benzene congeners not included as sample matrices? Evaluation of risks to ecological receptors exposed to these constituents in the aqueous phase of the bulk sediment, or results in the *Arabacia* pore water bioassays will be improved with such information. (*See also* comment regarding page 36.)
Table 6-1	Uncertainties or an uncertainty analysis must be added to the appropriate section(s) of this outline.
Appendix A	SAIC Standard Operating Procedure - Techniques for Extracting Pore-Water: There should be a discussion about the use of the vacuum technique (Winger and Lasier, 1991) for extraction of pore water from bulk sediment. The report should also discuss whether contaminants in the pore water are the likely cause of any toxicity exhibited (*see also* previous comment concerning page 34).

Appendix B, Table 2	See also comment above and the one for page 34.
Appendix C, Section 2.1	Halliburton NUS Project Manager's phone number appears to have been inadvertently omitted.
Addendum A	Again, a discussion of uncertainties should be added to the table of contents. Dr. Ken Finkelstein of the National Oceanic and Atmospheric Administration has recommended that you qualitatively analyze the effect of landfill debris altering the nearshore habitat. Such observations should be incorporated into the weight-of-evidence decision tree.
Addendum A, Tables A1-5 & A1-6	Footnotes that identify statistical significance should be corrected from "P=0.05" to "P<0.05" if $\propto$=0.05.
Addendum A, Table A2-5	The habitat of osprey should be changed to "aquatic" (*see* earlier comment for Table 2-4).
Addendum A, Table A2-7	The purpose of this table is unclear. Define pathogens, pathogen abundance, and their bearing on the ecological risk assessment. Explain what is meant by "markers" in the discussion on chemical and microbial markers (*see also* comment concerning Table 2-6 and use of species occurrence data).
Addendum B	See earlier comment concerning addition of uncertainties sections in the table of contents. Section 2.1.2.1 lists tributyltin ("TBT") as "...the most abundant OCP in the samples...." However, its presence is not discussed either in Section 1.2.2 or on Table B2-1. Moreover, the report should clarify how TBT data will be used in the ecological risk assessment.
Addendum B, Section 1.0	This section of the document must discuss both the off-shore study and the on-shore evaluation work at Derecktor Shipyard, as contamination present in these two areas could be related. It is likely that any contamination in the off-shore area is the result of on-shore activities and shipyard operations.
Addendum B, Section 1.3	The off-shore and on-shore studies at Derecktor should be integrated. Further, explain how such studies will answer questions about the site as a whole.

Addendum B, Table B2-2	The habitat of osprey should be changed to "aquatic" (*see* earlier comments for Tables 2-4 and A2-5).
Addendum B, Table B2-4	The purpose of this table is unclear. Define pathogens, pathogen abundance, and their bearing on the ecological risk assessment. It is not clear what is meant by "markers" in the discussions about chemical microbial markers (*see also* comments concerning Tables 2-6 and A2-7 and use of species occurrence data).
Addendum C	See earlier comments concerning addition of uncertainties sections to table of contents.
Addendum C Table C2-2	The habitat of osprey should be changed to "aquatic" (*see* earlier comments for Tables 2-4, A2-5, and B2-2).
Addendum C Table C2-4	The purpose of this table is unclear. Define pathogens, pathogen abundance, and their bearing on the ecological risk assessment. Explain what is meant by "markers" in the discussion about chemical and microbial markers (*see also* comments concerning Tables 2-6, A2-7, B2-4, and use of species occurrence data).