STATE OF MAINE

DEPARTMENT OF ENVIRONMENTAL PROTECTION

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December 1, 1994

Lt. Jim Conroy
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop #82
Lester, PA 19113

RE: **Draft Ecological Risk Assessment Report, dated October 1994, for Portsmouth Naval Shipyard, Kittery, Maine.**

Dear Jim:

The Department has received and reviewed the Draft Ecological Risk Assessment Report for Portsmouth Naval Shipyard. The Department's comments are provided below.

General Comments

1. In hindsight, it may have been beneficial to all reviewers if the risk managers and scientists had discussed the objectives of this report prior to its submission. The results and conclusions of this report may play a significant role in remedial decisions at the Shipyard. This report seems to discount many of the results of the ecological studies that have been performed to date, which identified areas around the Shipyard with adverse contaminant concentrations in water, sediment, and biota. There were also many more contaminants of concern identified in previous studies than are discussed fully in this report. It was surprising to read that lead is considered by the authors to be the primary contaminant of concern and is the focal point of this risk assessment. I don't know how that decision was made, but it requires some further explanation. It was also quite tedious to read repeatedly about the other potential source areas in the estuary. Consider limiting the source area discussion to one section of the report and removing all the other references in the text. The repeated assertion that there are other source areas in the estuary only serves to portray the Navy as defensive and suspect. I'm not sure that source area discussion should play such a large role in a risk assessment. This issue should be discussed further. If you remember, we went through the same discussion in reviewing the Offshore Human Health Risk Assessment. In that instance, the Navy made a greater effort to separate risk assessment from risk management. Unless it can be sufficiently demonstrated otherwise, the mere existence of other potential source areas does not eliminate the possibility that the Shipyard may also be a contributor.

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Specific Comments

2. p. 1: The last paragraph on this page states that the "Calculation of qualitative risk quotients, and evaluation of the relevance of exposure and effects within specific media identified the predominant chemicals of concern to be lead (Pb), mercury (Hg), and copper (Cu). Additional analyses relating distributions of exposure to ecological effects were conducted on Pb, a major contaminant of concern identified in screening procedures." What was the rationale for choosing lead for additional analysis? It appears that all other contaminants dropped out of consideration when Pb was chosen to be used in additional studies. How was risk assessed for Hg and Cu and the other contaminants that were not deemed to be "predominant" contaminants of concern?

3. p.2, second paragraph: Define "moderate elevations" of the chemical stressors Pb, Cu, Hg, Zn, Ni, PAHs, and DDT. Why is it important in a risk assessment to state that "Several of these were implicated to be linked to other sources in the estuary."? Does the potential existence of multiple contaminant sources lessen the ecological risk?

4. The authors identified lead as a major stressor of concern because of its spatial distribution, its relatively high concentration, it's known toxicological properties, and its association with Shipyard sources. Does this statement mean that the other contaminants are not major stressors of concern? Where did the preference criteria for association with Shipyard sources enter the picture?

5. The report focuses on lead contamination. What is the risk associated with all the other contaminants found in the sediment, water, and biota in the estuary including; Cu, Hg, Zn, Ni, PAHs, and DDT? Is lead the only major stressor of concern? Because this report states that these contaminants <u>may</u> be attributed to other sources, does that mean that they have dropped from any further consideration?

6. p. 2, third paragraph: Several areas around the Shipyard with adverse chemical concentrations were identified in the Draft Media Protection Standards Report. The areas are listed as follows:

	Water	Mussel	Sediment
Clark Cove:	Hg Cu Ni Zn	As Ag Cu Pb	Cr Pb Hg Ni Zn DDT
Police Dock	Hg Cu Zn	DDT	Pb DDT
Jamaica Island	Hg Cu Ni Zn Pb	Hg Cu Zn Pb	Pb PHEN DDT DDE
Back Channel		Hg Cu Pb	Pb PHEN DDT DDE
DRMO		Cu Pb	
Dry Docks		Hg Cu Pb Zn Ag PAH	Hg Cu Pb PAH

Paragraph 3 on page 2 of this report states that ..."indications of localized ecological stress included anomalies in the benthic community structure in Clark Cove and near the western end of the island, elevated tissue residues in indigenous blue mussels near

SHIPYARD sources, water column toxicity in Clark Cove, sediment toxicity in the dry dock area, back channel, and off Sullivan Point, and the absence of eelgrass in Clark Cove." Is paragraph 3 alluding to the same areas that are listed above? If so, the description in paragraph 3 doesn't seem to fully recognize the extent of contamination that was detected in these areas. These areas and contaminants of concern are not thoroughly addressed again throughout this risk assessment. Why? Is the contamination in this areas insignificant?

7. p. 3: I'm unclear about the meaning of the second sentence in this paragraph. Is lead the only chemical that requires mitigation? This statement implies that none of the other contaminants detected in various media in the estuary warrant mitigation. Please explain and expand on this question.

8. p. 13, last paragraph, last sentence: Does the potential existence of an up-estuary source for some chemicals mean that there are no other sources other than up-estuary sources for those chemicals? Has the Shipyard been removed from consideration as a source area for Ni, Cr, Zn, and PAH's?

9. p. 13, last paragraph: Pb, Hg, Zn, Cu, Ni, Cr, and to a lesser degree, PAHs, were identified as contaminants of concern in the estuary. In the revised conceptual model, "stressors of concern with respect to the SHIPYARD include the metals Pb, Hg, Ni, Zn, and Cr, (Figure 9) with Pb contamination associated with prominent SHIPYARD sources being of primary concern." Why was Cu dropped from the list? Why was lead chosen as "being of primary concern."? Define the "prominent" shipyard sources for lead.

10. p 16, first paragraph: Please cite where the Problem Formulation identified lead as the only contaminant of concern that can be clearly linked to Shipyard sources. What was the criteria used to direct further studies for lead?

11. p. 16, first paragraph: Is the Shipyard included in the "Piscataqua River" in the statement, "There was clear evidence of contaminant exposure to marine organisms in the Great Bay and Piscataqua River and some evidence of moderate toxicity at a few locations in the vicinity of the Shipyard."? If not, does that mean that there was no clear evidence of contaminant exposure to marine organisms in the vicinity of the Shipyard?

12. p. 16, second paragraph: It appears that Cu has dropped out the list of contaminants of concern.

13. p. 16, third paragraph: What is the significance of identifying source areas in quantifying risk?

14. p. 16, last paragraph: Why was high exposure to lead of any more concern than high exposure to other chemicals?

15. p. 17, first paragraph: The last sentence in this paragraph requires further explanation. Please explain the significance of a reduction in the analytical uncertainty in Hg measurements.

16. p. 18, second paragraph: Define the Hg input from "weakly defined source(s)."

17. p. 18, fourth paragraph: Expand on the last sentence in this paragraph.

18. p. 19: Definitions: (lobsters: Sub-legal adult, juveniles, etc.) of biota age? Were these a certain size class? Could a size (carapace length) distribution table be added?

19. Include an indication of statistically significant differences (tests used and results, i.e., which were different from which?).

20. p. 27-28: Include an explanation of replicates (e.g. Could not figure out replicates used in the toxicity and bioaccumulation test.).

21. p.29: Exposure response profiles were a bit unclear as to whether or not static test reference sediments were toxic to Ampelisca.

22. p. 30-31: Are variables used to come with the risk quotient all equally weighted?

23. p. 31., first paragraph: Were the seep waters analyzed for any compounds other than metals? When will the Cullen report be submitted for review?

24. p. 33, fourth paragraph: How can the results from the lead studies be correlated with other contaminants?

25. p. 37, second paragraph: Again, why was lead chosen to be the major contaminant of concern?

26. p. 41: It is not clear why additional eelgrass investigation is singled out any more than other investigations such as source identification and quantification, model improvement, remediation, etc.

27. Tables 4-8: What are the units? Are they in wet or dry weights?

If you have any comments or questions, please call me at 207-287-2651. Thank you.

Sincerely,

Nancy Beardsley

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