STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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May 15, 2000

Mr. Fred Evans
Department of the Navy
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway, Mailstop 82
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re: Draft Revised OU2 Risk Assessment, Portsmouth Naval Shipyard, Kittery, Maine, March 2000

Dear Fred:

The subject document is a human health risk assessment developed according to the protocol proposed in an October 1999 technical memorandum from TtNUS. Most of the Maine Department of Environmental Protection's comments on the October 1999 protocol were addressed in the March 2000 risk assessment. Accordingly, the recent risk assessment was found to be generally compatible, if not entirely consistent with MEDEP/DHS guidance on human health risk assessment at contaminated sites. Comments on the revised OU2 risk assessment follow.

General Comment

1. The MEDEP still has concerns regarding facility background contaminant levels. Please see comments dated May 15, 2000 regarding the Draft Final Facility Background Development. These facility background levels are pertinent to the OU2 Revised RA. Given that the "facility background" contaminant levels are already in use, regardless of outstanding concerns, the following comment is for the record.

"Facility background," as determined, has only a few appropriate applications, one of which might be to identify source areas on PNSY property. "Facility background" contaminant levels should not be considered the same as "local anthropogenic background" contaminant levels without confirmatory data. This is of particular concern for substances that have no known natural sources such as DDT and its metabolites (DDE and DDD).

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Specific Comments

2. Page ES-2 (also, Page 1-2)

The table of exposure routes and receptors suggests that only surface soils were actually considered when estimating potential risks for residents, recreational users and occupational workers. For these receptors, potential risks posed by contaminants in subsurface soils were estimated for "informational purposes only." Although acceptable as presented, it should be clear that the subsurface soil may become a driving issue for planning potential future uses of the site.

3. Page ES-6

a) Paragraph 3

It is mentioned that polynuclear aromatic hydrocarbons (PAHs) and arsenic were detected at concentrations that may be indicative of or similar to background concentrations. There are some lingering concerns about what is considered background in general, and for PAHs specifically (see May 15, 2000 letter re: Draft Final Facility Background Development).

b) DRMO Impact Area

References to risks posed by contaminants in subsurface soils should be removed. Subsurface soils from the impact area were not evaluated in any way (i.e., quantitatively, qualitatively, or for informational purposes only).

4. Section 2.2.5

It is noted that estimated cancer risks for some exposure scenarios were within the U.S. Environmental Protection Agency (USEPA) target risk range (10^{-6} to 10^{-4}). Whether Maine's upper risk limit of 10^{-5} was exceeded should also be noted. A re-write of this section is not necessary. However, it should be noted that the State's upper limit may be exceeded even when the USEPA's upper limit is not.

5. Section 3.1

Correct the reference to Figure 2-3. It should be Figure 2-4.

6. Page 3-9

The extent of contamination by dichlorodiphenyltrichloroethanes (DDT) and it's metabolites, dichlorodiphenyldichloroethylenes (DDE) and dichlorodiphenyldichloroethanes (DDD) should be described both collectively, as sums of concentrations, and individually. Both DDE and DDD are significant breakdown products of DDT, and DDE at least would not be present if DDT had not been present

before it. The compounds might be evaluated separately for risk estimates, but should be considered collectively when evaluating the extent of contamination.

7. Table 3-5

Correct the entries representing minimum concentrations of DDE and DDT.

8. Section 4

See comment 1.

Section 5.1, General risk Assessment procedures

Note: the following Comments 9 – 13 also apply to Sections 5.2, 5.3, and 5.4.

9. Page 5-7

a) "Representative" background levels developed in the "Facility Background development document" were used to select inorganic contaminants of potential concern (COPCs). See comment 1, and the May 15, 2000 letter re: Draft Final Facility Background Development for concerns about how background values were developed. In addition, to limit chances for creating unintentional data gaps, it is preferred that background not be invoked until after potential risks posed by all contaminants have been characterized.

b) Note that petroleum hydrocarbons were found at elevated levels in groundwater and explain why they were not factored into the risk assessment.

10. Page 5-8

Some of the reasons given for not including surface water and sediments in the assessment are acceptable (topography and river conditions), whereas others are not. Most notably, inaccessibility due to fencing is an institutional feature that can change.

11. Page 5-14

Both "reasonable maximum" and "central tendency" exposure point concentrations were used to estimate risks posed by COPCs other than lead. It appears that for lead, only the average concentrations were entered into the risk calculation model (Appendix I). For residential scenarios, focusing on the average is acceptable only if the area of concern is no greater than that of a yard in which a child might play (e.g., <1/2 acre). Exposure to lead should be evaluated using both average and reasonable maximum EPCs.

12. Page 5-19

The assumptions used to compute the particle emission factor (PEF) are not given. The PEF that was used (7.95×10^9 M^3 / kg) indicates that the concentration of airborne respireable particles (PM_{10}) from OU2 may be only 0.13 µg / M^3. As is, the PEF is considered unacceptably high, with a corresponding PM_{10} concentration that is too low, even for undisturbed soils. Depending on the exposure scenario, this comment may be for the record only, because adjusting the PEF to the USEPA's default or lower is not likely to have a significant effect on the outcome of the risk assessment.

Please note that the aforementioned emission factors are for undisturbed soils. The PM_{10} calculations will require further consideration in situations where the contaminated soils might be disturbed, such as for bike paths, playing fields, excavation, and construction sites.

13. Page 5-28

a) There is insufficient information to conclude that the use of background contaminant levels for selecting COPCs will contribute to an overestimate of overall site-related risks.

b) It is indicated that diacetone alcohol (4-hydroxy-4-methyl-2-pentanone) was detected at a low frequency. According to Table 3-3, diacetone alcohol was detected in the one sample that was taken. It was detected in virtually all the samples collected for the "facility background" analysis. While it is agreed that information on the toxicity of this substance is insufficient for quantifying risks, there is still some concern about its presence.

Section 5.2, Site 6 (DRMO), p. 5-35 *ff.*

14. Page 5-42 (and page 6-3)

Potential risks posed by exposure to lead are based on average concentrations only. See comment 11.

15. Tables 5-4 and 5-31

Include a footnote about petroleum hydrocarbons.

Section 5.3, Site 29

16. Page 5-49

Note where estimates for potential risks posed by residential exposure to subsurface soils can be found.

17. Page 5-50 (and Page 6-5)

See comments 11 and 14.

Section 5.4, DRMO Impact Area

18. Page 5-54

DDT and DDE were present at concentrations sufficient to include them among the COPCs. If considered collectively (comment 6) the maximum concentration of DDT and metabolites in soil from this area is 5.5 mg/kg, which is high.

19. Page 5-56

Please note in the Risk Assessment that soils below two feet were not sampled, therefore not factored into the risk assessment for this site.

20. Page 5-60 (and page 6-7)

See comments 11 and 14.

Section 6, Summary and Conclusions

21. Page 6-1, bottom

a) It is agreed that inhalation exposures are likely to be minimal. However, it should be noted that the assessment did not account for dust levels that might be generated if the soils are disturbed beyond what occurs with low velocity winds.

b) Note that, while not selected as COPCs, petroleum hydrocarbons were present in groundwater samples. Include an explanation for why the petroleum hydrocarbons were not selected as COPCs.

22. Page 6-3

a) See comment 3a. Also, potential sources of PAHs might include ash from the Teepee Incinerator.

b) See comments 11 and 14.

23. Page 6-4 and others

Reasons are given for why risks may be overestimated. While generally acceptable, it should be noted that counterbalancing factors are not mentioned. Uncertainties and assumptions will require a detailed analysis if risk calculations are disputed.

24. Page 6-5, paragraph 3

a) See comment 22a.

b) See comments 11 and 14.

25. Page 6-7

See comments 11 and 14.

Overall, the human health risk assessment was satisfactory and most of MEDEP's comments are for clarification. As stated previously, we have outstanding concerns about how "facility background" contaminant levels were developed, which in turn raises issues relating to their use in the risk assessment. However, issues about "background" are not significant in the context of the current assessment, which is focused on specific areas.

While most contaminant-related risks appear to be satisfactorily characterized, it should not be forgotten that petroleum products in groundwater were not included in the assessment. Additionally, the assessment of potential risks posed by lead is considered to be incomplete until estimates based on reasonable maximum EPCs are presented.

Please feel free to contact me at (207) 287-8010 if you have any questions.

Sincerely,

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