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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY 5090.3a
NEW ENGLAND - REGION I
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BOSTON, MASSACHUSETTS 02114-2023

July 20, 2009

Linda L. Cole, P.E.
NAVFAC Mid-Atlantic
9742 Maryland Ave
Bldg Z-144, 1st Floor
Norfolk, VA 23511

Re: **Responses to USEPA Comments Dated February 9, 2009, Draft Supplemental Remedial Investigation Report for Operable Unit 2, Portsmouth Naval Shipyard, Kittery, Maine**

Dear Ms. Cole:

I have reviewed the subject document provided by the Navy and have include the Agency's comments as Attachment 1.

If you have any questions, please feel free to contact me at audet.matthew@epa.gov or 617.918.1449.

Sincerely,

Matthew R. Audet, P.G.
Remedial Project Manager
Office of Site Remediation and Restoration

cc. Iver McLeod/ME DEP
Deb Cohen/Tetra Tech NUS
RAB Members

Attachment 1
US EPA Follow-on Comments on Supplemental Remedial Investigation Report,
OU2, Portsmouth Naval Shipyard

General Comment

I believe the Navy's jest will savor but of shallow wit, that notwithstanding the central concern within EPA's General Comment remains unaddressed. That is, the Navy's conclusions consistently overstate what is supported by the data. This is not to say that moving forward to a Feasibility Study is inappropriate, but rather acknowledging that the Navy, with the support of EPA, does so fully aware of the limitations of the data. And while you are not the first to suggest I am uniformed on how to manage an RI/FS, I believe acknowledging the limitations as well as the strengths of data ultimately leads to more informed decisions, not less.

Secondly, it is EPA's overarching concern that there has been, and potentially continues to be, migration of contaminants as or absorbed to particulate matter from the site between the mean high and low tide elevations to the offshore.

A conference call to resolve these issues is recommended.

Specific Comments

1. *General Response.* The argument that the "majority" of the contamination is in the surface fill and that unacceptable risk was "generally" not found in the rock-fill layer is a non-starter. These statements, while accurate, do not and will not justify disregarding "minority" waste and the potential risk posed. Waste fill material is located at depth below the mean high tide elevation, not just above the mean high tide level and the limited samples collected in that interval due to the rock fragments inhibiting the advancement of soil borings caution against overstating such a conclusion. A more qualified statement is appropriate.

Again, the understandably limited sediment sampling does not allow for overstating the conclusion. The Navy attributes contaminant concentrations definitively to erosion from the revetment area above the mean high tide level. This conclusion is not supported by the data. EPA acknowledges that this conclusion is among the likely scenarios, however, there is insufficient data to support the Navy's definitive statement. Ultimately, there is no verification that even with the stated improvements to the shoreline revetment that migration of contaminants has ceased. A more qualified statement is appropriate.

2. *Response 1 (Pg. ES-1, ¶4, Last Two Sentences).* Concentration of metals in ground water depicted on Figure 3-2 of the Supplemental Remedial Investigation report is not insignificant. In particular, the concentrations of total copper and lead were elevated in monitoring wells DW-6 and DW-7S and extremely elevated in DW-8. The issue is one of overstating the conclusion that dissolved phase concentrations indicate no current or future impact to the offshore. Simply restating the uncontested dissolved concentrations does not address the issue raised. That is, EPA believes the data does not support such a comprehensive statement. A statement limited to those facts as supported by the data is more appropriate.

The "probable" attribution of elevated sediment concentrations to seawall erosion does not, in and of itself, establish the absence of potential adverse impact originating from DRMO proper.

3. *Response 2 (Pg. ES-2, ¶1).* The data does not support the conclusion that migration of contaminants absorbed to particulate matter to the near shore environment should be

"insignificant". The Navy has not demonstrated that there is adequate filtration of fine grain particulate material from within the fill beneath the site to the near shore as a result of the incoming and outgoing tidal cycles. Contamination exists at depth within this zone and continued downward vertical migration of contaminated fine grain materials can be expected to occur into the underlying porous rock fragment zone.

4. *Response 3 (Pg. ES-2, ¶3, 4th Sentence)*. EPA agrees to text clarifications identifying uncertainties in the data. EPA highlights the Navy's logic that a lack of data specifically attributing contamination to one potential source as apposed to an alternative source should require a discussion of the various uncertainties and limitations in the data. EPA suggests a similar logic be applied to elevated concentrations in the offshore as discussed in this document's comments #1 and #2.
5. *Response 4 (Pg. 1-10, ¶3, 4th Sentence)*. The information provided by the Navy does not provide support that there is an effective filter to prevent migration of contaminated fine grain material from the site to the near shore environment. See this document, Comment 12.
6. *Response 5 (Fgs. 2-4 – 2-9)*. EPA's concern is that the revised figures lead one to the false impression that there is no contamination in the fill material underlying significant portions of the site. This impression is inconsistent with the data and should be avoided.

The additional soil sampling referenced by the Navy was overwhelmingly shallow soil sampling as is documented on Table 3-1 and Table A-1. While there were several deeper soil borings and test pits, the data from those borings does not refute the data from the deeper soil borings used to construct the 2004 Draft Feasibility Study cross sections. Elevated concentrations of lead and copper were recorded at the terminal sampling point of those new borings and test pits. As such, the interpretations of the depth of waste material constructed using the soil borings for the 2004 Draft Feasibility Study remain valid.

7. *Response 7 (Pg. 3-27, Last ¶)*. The responses provided in Comments No. 1 and No. 2 do not provide documentation that ground water (outgoing tidal water) did not transport contamination attached to fine grain particulate matter for subsequent deposition to the near shore environment. See Comment 12 below. It should be noted that observed slumping and erosion of the embankment is often the result of soil piping and not just the result of wave action. In fact, to prevent this various references provide design guidance that the filter fabric should be carried to below the mean low tide elevation in order to prevent soil piping and loss of soils. These include "*Designing with Geosynthetics*", Robert M. Koerner; 2nd edition, 1990, pages 218 to 221; "*Design of Coastal Revetments, Seawalls and Bulkheads*", USACE EM 1110-2-1614; and "*Geotextile Filter Design, Application, and Product Selection Guide*", Mirifi, page 11.
8. *Response 8 (Table 3-1)*. The reason that the majority of the contamination is associated with surface fill, above high tide is a direct result of the Navy's insistence on stating so, NOT the direct result of data interpretation. Waste fill was placed to depth in the area outside that described by the Navy as "waste disposal area." This is evident from the Draft 2004 Feasibility Study report cross sections that the Navy changed in this Supplemental Remedial Investigation Report. FCS-47 shows waste fill to 98 feet, FCS-48 shows waste fill to 95 feet, FCS-51 shows waste to 93 feet, DSB-2 shows waste to 99 feet, DSB-7B shows waste to 92 feet, DSB-7 shows waste to 96 feet, all below the mean high tide elevation of around 100.5 feet. These locations are outside of the area designated by the Navy as "waste disposal area".
9. *Response 9 (Table 3-2)*. The soil boring data indicates the presence of waste fill throughout both Site 6 and Site 29 and not just the Navy-designated "waste disposal

area." The Navy does not account for downward vertical migration of contaminants from surface soils into the more porous, coarser underlying fill material (which includes waste as well as rock fragments). Also, the presence of elevated copper at depth cannot be discounted due to the observations from OU2-140 and TP-201. Copper was detected and both locations at 25,400 mg/Kg and 23,900 mg/Kg, respectively, at the limit of the depth of sampling of 6 feet.

10. *Response 10 (Table 3-5).* BAP equivalent was detected at TP-101 at 9,248 microgram per kilogram ($\mu\text{g}/\text{Kg}$) and TP-102, at 4,280 $\mu\text{g}/\text{Kg}$; both at the limit of the test pit of 4 feet and 7 feet, respectively. Also elevated BAP equivalent was detected in the surface soil of DS-6 at 15,659 $\mu\text{g}/\text{Kg}$ although the depth of sampling was only to 1 foot.
11. *Response 11 (Table 3-6).* The Navy has not demonstrated that the elevated concentrations of metals in ground water do not pose unacceptable risk to the near shore environment. There has not been recent sediment sampling of the near shore environment to document that additional deposition to sediment has not occurred. Inspection of information provided by the Navy does not show that there would be filtration of contaminants absorbed to particulate matter that will potentially continue to migrate from the site with the outgoing tidal cycles. See Comment No. 12.
12. *Response 12 (Pg. 4-8, ¶4).* The Navy has not provided information to support that the revetment along Site 6 has been constructed in sufficient manner so as to preclude migration of fines through the revetment. The response notes that the revetment was constructed in accordance with a Final Action Memorandum for Site 6 Shore Line stabilization dated June 6, 2001 along with a discussion of revetment construction and referral to Figure 4. Figure C-100, an engineering drawing also included, which depicts the slope stabilization along a 600-ft length of the DRMO has a survey date of April 27, 2000. This indicates that the slope stabilization occurred over a year before the Final Action Memorandum. There is no reference to a similar engineering drawing showing the revetment cross-section design.

The referenced Figure 4 does show an "as-built" cross-section. However, it has no date.

Further, while it may reflect the actual "as-built" construction of the revetment it is not clear whether this applies to the entire DRMO revetment. Prior communication with the previous Navy project manager, Mr. Fred Evans indicated that the revetment along Site 6 was not an engineered structure, per se, and consisted of placed riprap.

Regardless, the placement of the filter fabric appears to have been intended only for addressing the effects of wave action. Inspection of Figure 4, if it does represent the "as-built" conditions of the revetment in front of Site 6, shows that the filter fabric extends down only to an elevation just above the mean high water mark at approximately 100.5 feet and not to the mean low water mark. Inspection of the Cross Section Figures C-C' and F-F' within the Site 6 area clearly depict that low ground water elevations along the shoreline are around 91 feet above mean sea level (MSL) while high ground water (tidally influenced) elevations along the shoreline are approximately 100.5 feet MSL for a differential of almost 10 feet without filtering protection of any kind. It should be noted that to ensure revetment stability and prevent soil piping and loss of soil through the revetment the filter fabric should extend to below the mean low tide elevations. See references in Comment No. 7.

EPA has consistently raised the concern that fine grain materials either residing within the saturated zone or migrating downward into it over time have the potential to migrate out to the near shore environment with the cyclical fluctuations of the tide.

13. *Response 13 (Pg. 4-9, ¶1).* The vertical extent of contamination is not limited as stated by the Navy. The Navy appears to be passing over soil boring data from the 2004 Draft Feasibility Study, discounting the inability to sample sufficiently to depth to confirm lack of continuation of high levels of contaminants observed at shallower intervals, rejecting the downward vertical migration of fine grain material into the more porous underlying waste fill material, and ignoring the results of ground water samples such as DW-6, DW-7, DW-8, DW-12, and DW-13 which clearly demonstrate contamination in the ground water below the mean high tide elevation.

14. *Response 14 (Pg. 4-13, ¶3).* The fact remains that sediment sampling has not been conducted since 2003. Contamination in the form of waste material, and likely migrating contaminants as or adsorbed to particulates exists beneath the site subject to cyclical tidal fluctuations beneath the mean high tide elevation that is not protected by a geotextile filter fabric. Contaminants have been deposited along the near shore environment with (demonstrating in some cases) increasing trends.