N00102.AR.002142
NSY PORTSMOUTH
5090.3a

LETTER REPLY TO MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION COMMENT REGARDING FEASIBILITY STUDY GROUNDWATER ISSUES AT OPERABLE UNIT 3 (OU 3)
NSY PORTSMOUTH ME
5/26/2000
MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

May 26, 2000

Mr. Fred Evans
Department of the Navy
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway, Mailstop 82
Lester, PA 19113-2090

re: Response to Navy's Request for Information – Teleconference of May 18, 2000 on OU 3 FS Groundwater Issues

Dear Fred:

This letter is in response to the Navy's request as referenced in the subject line. The Navy's request stems from the May 18 discussion of MEDEP's comment No. 4 (sent May 17, 2000) which reads:

> "DEP is concerned that the seep/surface water dilution factors calculated by the Navy could be a factor of 3 too large for Clarks Cove. Instead of a factor of 100, the factor may be close to 30. Our differences go back to our previous comments that we believe that the hydraulic conductivity of the fill material has been underestimated by inclusion of all slug test data into the derivation of a geometric mean."

Request 1: Provide references to prior MEDEP memoranda which state that hydraulic conductivity value that the Navy used from Phase I modeling was not acceptable to MEDEP.

- MEDEP Comment of February 9, 1999: See Comment 13a (L. Dearborn's first in-depth examination of the Phase I report)

  DEP said "Calculated hydraulic conductivity values are unrealistically low" concerning Table C-3 of the On-Shore/Off-Shore Contaminant Fate and Transport Modeling Phase I Report. The geometric mean for the OU3 to Clark Cove estimated from slug tests was 24.56 ft/day. DEP recommended separating out the WOT wells as not representative of the Jamacia Island landfill wells, resulting in a geometric mean of 77 ft/day.

  The Navy gave a lengthy rebuttal.

- MEDEP Follow-Up Comment of July 6, 1999 on prior comment 13 c & d.

The last sentence stated "The geometric means of slug tests appear to grossly underestimate the speed of plume advancement, in that a wide range of values are averaged."

The Navy provided a short reply that did not address hydraulic conductivity.

- To Summarize

To clarify the Department's viewpoint, the application of the Phase I geometric mean hydraulic conductivity of 24 ft/day to the landfill area is tenuous, because this value is biased low by a factor of 3X due to the significantly lower conductivites of the included WOT wells of Site 11. Our belief is that that the five WOT wells are not representative of the landfill area for which tidal flushing is calculated.

If the volume of water that fills the tidal wedge each incoming tide event is attributed to solely moving horizontally inland from the river, the Department calculated that an average hydraulic conductivity over 300 ft/day would be required. The Navy contends that the Darcy Equation can not be applied to tide water invasion for estimation purposes. DEP disagrees. However, the DEP and the Navy recently agreed that a component of wedge filling must be upward movement of deeper water under tidal loading. Even under this likely process, we believe that the hydraulic conductivity is larger than 24 ft/day within 200 feet of the shoreline.

Finally, the Department wants to clarify that we do not endorse using a single slug test value to characterize an area such as the Jamacia landfill. However, the Phase I data set only contains one well (MW-4) that is located close to the tidal area of interest. As this value (86 ft/day) is very similar to the geometric mean without the WOT wells, MEDEP considers it to be the most representative value available.

Request 2: Explain how hydraulic conductivity values affect the Navy's calculation of dilution factor.

Please refer to the Navy's May 3, 2000 Interim Submittal for PNS OU 3 FS, specifically the Seep/Surface Water Dilution Factor Development section.

- Near the bottom of page one, the submittal states: "The calculation of the dilution factor consists of estimating three primary values; the groundwater flow rate, the surface water flow rate, and the return rate. These three values are input parameters for the modeling and are discussed in the Phase I modeling report."

- On page two, under Groundwater Flow Rate, the first sentence reads: "The groundwater flow rate for each model area was calculated based on estimated hydraulic gradients (based on measured groundwater elevations), hydraulic conductivities [DEP emphasis], and geologic stratigraphy."

- On page 3 of 5 of the dilution factor calculations, the applied equation for calculation dilution factor is given as: intertidal zone volume divided by the groundwater flow rate (or $\mathbf{V_i / Q_{gw\ (12\ hrs)}}$). A table on page 4 of 5 gives the values of $\mathbf{Q_{gw}}$ and $\mathbf{V_i}$.

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

Sincerely,

Iver McLeod
Project Manager
Bureau of Remediation and Waste Management

pc:

Denise Messier, MEDEP
Larry Dearborn, MEDEP
Katie Zeeman, MEDEP
Harrison Bispham, MEDEP
Meghan Cassidy, USEPA
Marty Raymond, PNS
Linda Klink, TtNUS
Debbie Cohen, TtNUS
Ken Finkelstein, NOAA
Ken Munney, USFWS
Jeff Clifford, RAB
Doug Bogen, RAB
Don Card, RAB
Michele Dionne, RAB
Mary Marshall, RAB
Phil McCarthy, RAB
Jack McKenna, RAB
Onil Roy, RAB
Roger Wells, RAB
Mary Menconi, RAB
Seacoast Anti-Pollution League, TAG Group
Carolyn Lepage, TAG Advisor
Claire McBane, NH F&W
File