



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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NSY PORTSMOUTH
5090.3a

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July 6, 1999

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 MEDEP Comments Dated 2/9/99, Draft On-Shore/Off-Shore
Contaminant Fate and Transport Modeling Phase II Report Dated December 1998,
Portsmouth Naval Shipyard, Kittery, Maine

Dear Fred:

The Maine Department of Environmental Protection has reviewed the document
referenced above. The MEDEP has one additional comment.

Response to MEDEP Comment 13 (c) & (d)

“For instance, when Darcy’s velocity is used, the cross-sectional area that includes the
solid matrix must be used to obtain the total Q_{gw} . Or else, when seepage velocity is used,
the cross-sectional area that excludes the solid matrix (or just the pores) must be used,
and should obtain the same total Q_{gw} .”

However, when working in the Phase I document and particularly Appendices C-6
through C-9, one must remember that it is the Darcy groundwater velocity that is shown.
The respective seepage velocities are between 3 to 5 times larger, depending on the value
of aquifer porosity. The groundwater flow velocities shown under “Saturated Zone” in
Appendix D tables appear to have been converted to seepage velocities. The Navy
pointed out that the conversion exists internally in Equation 7.12, which it does. But, the
MEDEP cannot find where the seepage velocities are presented in a table for the various
OUs.

In that the transport model used a travel distance of 1 foot between source and shore at
the JILF to be conservative, the velocity term is academic anyway. Future users of the
Phase I and Phase II reports need to be aware that the calculations within do not define
the actual rate of groundwater movement toward the shoreline, and that a plume front
will move much faster than implied by Phase I calculations because contaminants will
preferentially travel in overburden horizons of the highest measured field permeabilities.
The geometric means of slug tests appear to grossly underestimate the speed of plume
advancement, in that a wide range of values are “averaged”.

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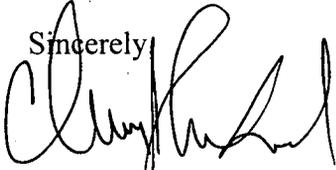
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Please feel free to contact me at (207) 287-8010 if you have any questions.

Sincerely,



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