Baker

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October 11, 1994

Commanding Officer
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street, Building N-26
Norfolk, Virginia 23511-2699

Attn: Mr. David M. Forsythe
Code 18224

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0138
CD Landfill RI/FS
Naval Base Norfolk, Virginia
Teleconference Meeting Minutes

Dear Mr. Forsythe:

A conference call was conducted on Wednesday, October 5, 1994 to discuss radiological issues as applicable to the CD Landfill Remedial Investigation, Naval Base Norfolk, Virginia.

Participants included:

Mr. Dave Forsythe - LANTDIV, Project NTR
Lt. Cmdr. L. Fragoso - RASO
Mr. Dick Loman - RASO
Mr. Dave Farrin - RASO
Mr. Rob Thomson - USEPA, Region III
Ms. Pat McMurray - VADEQ, Toxicologist
Mr. Carl Thomas - VADEQ, NPDES Permit Writer
Ms. Jeri Trageser - Baker, Project Manager
Dr. Charles Caruso - Baker, Sr. Chemist

A brief introduction provided background information and highlighted results of radiological analyses (total gross alpha and beta) conducted during the Round 1 sampling event (September 1993). Those results, which indicated groundwater concentrations above MCLs in some wells, prompted an expansion of the Round 2 sampling event (December 1993) to include analyses of selected radionuclides. Depending on Round 1 total gross alpha and beta results, wells were sampled for analyses of some or all of the following radionuclides: Radium 226, Radium 228, Radon 222, isotopic Uranium (238, 235, 234), isotopic Thorium (232, 230, 228), total Strontium (90,89), and gamma spectroscopy (including Cesium 134).

Data generated during Rounds 1 and 2 and reviewed by both RASO and Baker (including an evaluation of the Uranium and Thorium isotopic ratios), indicate that gross alpha, gross beta, and selected radionuclides in groundwater at the levels and ratios detected suggest natural origin/background conditions. Radon concentrations appear to be as expected for the area.

In addition, soil samples collected during installation of two wells (MW-03A and MW-06A) which exhibited the highest concentration of total gross alpha and beta during Round 1 were composited for analysis of the same radionuclides selected for the Round 2 groundwater analytical program. Again, results were evaluated and the Ur and Th ratios also indicate natural occurrence/background conditions. LANTDIV agreed to forward the soil results along with a discussion of the radiological investigation. A discussion followed regarding the various decay schemes and how the Ur and Th isotopes were evaluated for soil and groundwater.

RASO lead a discussion of the increased gross alpha and beta values closer to the airfield. RASO noted that this is most probably due to the crushed rock used to build up the runway base, if the rock was granitic in origin.

RASO pointed out that a radiation survey was conducted of the site in 1991 by RASO and results indicated no radioactive material found on the ground surface. RASO also offered that the CD Landfill is a relatively new landfill (1970s-mid 1980s). Regulations for radioactive waste disposal were in effect much earlier (1940s). RASO indicated that, in their professional opinion, no additional sampling is required to conclude this issue.

USEPA added that the alpha emitters from the Round 2 selected radionuclide analyses don't add up to the total gross alpha concentration results from the Round 1 sampling event. RASO stated that there can be many variables which could impact the results not adding up to the Round 1 concentrations, including:

- Difference in season (September vs. December)
- Difference in precipitation (dry vs. wet)
- Groundwater movement through the water column
- Difference in air pressure

The USEPA and VADEQ representative wanted assurance that no radionuclides were overlooked and asked about a "full suite" of alpha emitters if sampling would occur in the future. RASO indicated that more sampling would not provide additional pertinent information. RASO observed that a gamma spectroscopy analysis was completed with results presented in the informational package sent to the USEPA.

USEPA indicated concern about high radon levels and asked if radon was included in the alpha analysis. Baker responded that radon evaporates out during the alpha analyses and therefore, is not included in the analysis.

VADEQ asked why tritium was not analyzed. RASO responded that tritium is naturally occurring in the atmosphere and is commonly found in surface and groundwater. Tritium is absorbed almost immediately by microbes in soil and water. In addition, tritium is difficult to sample and is measured by Liquid Scintillation counting.

There was some discussion on the background well (MW-01). A request was made for a base inventory of all monitoring wells to determine adequate coverage and provide background gross alpha/beta analyses. LANTDIV indicated that a well inventory was recently completed by the base, but sampling of these base wells for gross alpha/beta analyses would not be useful.

It was determined by VADEQ that a risk assessment should be performed even though the radioactivity appears to be of natural origin. USEPA indicated that information should be presented clearly and concisely bringing all data together in a human and environmental risk package. Toxicity of radionuclides should be addressed in the Risk Assessment report. Mr. Thomas commented that surface water flows into Bousch Creek and then empties into Willoughby Bay. Other beneficial uses of the surface and groundwater should be considered in the risk assessment report. Fish and crab populations should be addressed as a human food source, in addition to recreational activities which occur in Willoughby Bay.

It was agreed by all participants that Cmdr. Fragoso (RASO) would contact Mr. Bill Bellinger (USEPA-Radiochemist) to clarify RASO's evaluation of the soil and groundwater radiological data.

Baker appreciates the opportunity to provide continued technical support for this important project. If you have any questions or comments on the above, please call me at (412) 269-2032.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Jeri L. Trageser

Jeri L. Trageser, P.G.
Project Manager

JLT/ldq

cc: Mr. Charles Caruso, PhD. - Baker
Ms. Lee Anne Rapp, LANTDIV, Code 183