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LETTER WITH U S EPA REGION IV COMMENTS ON DRAFT FOCUSED FEASIBILITY
STUDY AT STUDY AREA 2 NTC ORLANDO FL
9/16/1999
U S EPA REGION IV



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
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September 16, 1999

4WD-FFB

Mr. Wayne J. Hansel
Southern Division
Naval Facilities Engineering Command
P.O. Box 190010
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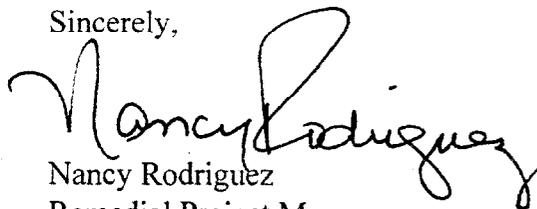
SUBJ: Comments on the Draft Focused Feasibility Study, Study Area 2, Herndon Annex, Naval Training Center, Orlando, Florida

Dear Mr. Hansel:

The United States Environmental Protection Agency (EPA) has completed the review of the Feasibility Study for Herndon Annex, Study Area 2, Naval Training Center, Orlando. EPA's comments on the subject report are enclosed.

If you have any questions regarding these comments, please call me at (404) 562-8536.

Sincerely,


Nancy Rodriguez
Remedial Project Manager

cc: Dave Grabka, FDEP
Rick Allen, HLA
Barbara Nwokike, SouthDiv
Steve McCoy, Tt NUS

NAVAL TRAINING CENTER ORLANDO
STUDY AREA 2 FEASIBILITY STUDY

Comment #1:

As described in the following comments, EPA continues to believe that the site characterization remains inadequate. The source area remains unidentified (page 1-11). Site specific contaminant migration rates are not presented. The issue raised in EPA comments dated June 15, 1998, regarding whether the plume is expanding, has not been addressed. Clean up times and the resulting costs are based on model results rather than site specific data.

It was stated in EPA's comments on the Herndon Annex Environmental Site Screening Report (ABB, April, 1998): *"The report states that evidence of natural attenuation based on analytical results is inconclusive (page 6-14). The only long-term groundwater quality data presented are for two samples two years apart from only two wells. The concentration of benzene went up in one well and down in the other well. Clearly the sampling which has been done to define the status of this plume is inadequate. Is the plume expanding? If the plume is expanding, an active source is still present. This is an important conclusion which could have been documented during the time period covered by this investigation, but an insufficient number of samples were collected."* These comments have not been addressed.

EPA guidelines (EPA, 1997, 1998), guidance documents from other government sources, particularly the Air Force Center for Environmental Excellence (AFCEE by Weidemeier and others, 1995, 1996, 1998), and guidance from even older sources (McAllister and Chiang, 1994) have not been implemented.

If the unsupported assumptions in the report are correct, the remedial measures proposed in the Feasibility Study appear reasonable. The assumptions for the cost of natural attenuation are unsupported and may be over estimated, making natural attenuation appear to be less cost effective. EPA can not confirm that the remedial measure which appears to be the most favorable (Alternative 3 Tables ES-2 and 5-1) is in fact the most appropriate or cost-effective remedy for the site.

Comment #2:

Tables ES-2 and 5-1 indicate that the time to achieve drinking water standards for Alternative 4 is estimated to be 8 years. It is stated throughout the report that the estimated duration to achieve MCL for this alternative is the same as Alternative No. 3 which is 5 years. Please correct this inconsistency.

Comment #3:

The Executive Summary, page i, identifies the Federal Maximum Contaminant Level (MCL) for benzene as 1 µg/L. The Federal MCL for benzene is 5 µg/L. (<http://www.epa.gov/OST/Tools/dwstds1.html>).

Comment #4:

The source of contamination has not been found despite numerous, apparently well-executed field efforts. EPA could accept that the source has been depleted if site specific data from a ground water monitoring program conclusively showed degradation rates for benzene, and explained the absence of toluene, ethylbenzene and xylenes which would be expected in a "fuel spill" plume. Because the source remains undefined, because the mobility of the plume has not been addressed and because the content of the plume appears to be anomalous, the site characterization remains incomplete.

Comment #5:

The Executive Summary, page xii, states that natural attenuation process would require 30 years to reduce observed contaminant levels to the MCL for benzene. Data supporting this assumption is not provided in the report. Observed degradation rates for benzene, based on data from the groundwater monitoring program, should be used as the basis for evaluating the feasibility of natural attenuation and for the cost comparisons presented in the Focused Feasibility Study. Guidelines regarding natural attenuation specifically state that estimates of the performance of natural attenuation should be based on field observations, not simply on modeled results.

Site specific estimates of apparent natural degradation rates are important because published information indicates that the half-life for benzene in groundwater ranges between 10 and 720 days (Howard and others, 1991). If the maximum initial concentration is approximately 100 µg/L (Executive Summary, p. ii), degradation at the rate of the longest half-life (720 days) results in concentrations near the MCL after 5 - 7 years. While there is uncertainty in this time estimate because the site-specific degradation rate is unknown, 5-7 years is much less than the 30 year "Treatment O&M Duration" time for natural attenuation shown on Table ES-2 (Alternative 2).

The estimated cost for Alternative 2 shown on Table ES-2 may be lower than shown, and Alternative 2 may be more cost competitive than indicted. Site specific data obtained from the quarterly monitoring program, which should have been implemented no later than the summer of 1998, should be the basis for the natural attenuation clean up time estimates.

Comment #6:

The Feasibility Study provides no indication that the status of the plume has been characterized. Is the plume expanding? If the aquifer is anaerobic (FS, page 5-3) and the plume is 50 years old as has been suggested in the Environmental Site Screening Report, the plume probably is expanding.

Comment #7:

Appendix B describes the injection of a slurry which will cause the instantaneous degradation of benzene in groundwater. The proposed locations of the injection points are shown in Appendix B on contour map of the groundwater plume which appears to be the same as Figure 1-6 from the Environmental Site Screening Report (ABB, April 1998). Because the migration rates of the plume are not known, what assurance do we have that the plume is still where it is shown on this figure? What assurance do we have that injection at these locations will still find benzene to destroy? What assurance do we have that this will work?

Comment #8:

The primary focus of the report is the benzene plume only. Will the injection of a slurry to destroy the benzene by oxidation, alter the natural attenuation of the chlorinated VOCs? Could changing the condition of the aquifer from anaerobic conditions to aerobic conditions improve the natural attenuation of benzene, but make the situation worse by decreasing the natural attenuation of chlorinated solvents?

Figure 6-9 of the Environmental Site Screening Report (ABB, April 1998) shows the locations of numerous exceedances of the MCLs for chlorinated VOCs in groundwater. Most of these chlorinated VOCs under go reductive dechlorination under anaerobic conditions. The Feasibility Study states that two-thirds of the surface water samples collected in Lake Barton contained detections for tetrachloroethene and trichloroethene (Feasibility Study, page 1-11). Will tetrachloroethene and trichloroethene concentrations in surface water exceed surface water standards in the future? Because the migration rates of the plume have not been defined, we don't know if these contaminants will ever increase in surface water under the existing conditions. However, if reductive dechlorination is diminished by injection of a slurry to destroy benzene, the chlorinated solvents may become more mobile than they are under the existing conditions. These issues are not addressed in the feasibility study.

Comment #9:

It is not clear the need to include a signature page in this FFS. In the past, the BCT has signed site screening reports supporting HLA's recommendation on a particular study area. EPA suggests to take out the last sentence and the signature block from Section 5.4.

References:

EPA, 1997, Draft EPA Region 4 Suggested Practices for Evaluation of a Site For Natural Attenuation (Biological Degradation) of Chlorinated Solvents, EPA, Region 4, Office of Technical Services, November, 1997, Version 3.0

EPA, 1998, Monitored Natural Attenuation for Ground Water, U.S. Environmental Protection Agency, Office of Research and Development, Washington, D.C., EPA/625/K-98/001, September, 1998.

Howard, P.H., R.S. Boethling, W.F. Jarvis, W.M. Meyhan, E.M. Michalenko, 1991, Handbook of Environmental Degradation Rates, Lewis Publishers.

McAllister and C.Y. Chiang, 1994, A Practical Approach to Evaluating Natural Attenuation of Contaminants in Groundwater, Ground Water Monitoring and Remediation, Spring, 1994, pp. 161-173.

Wiedemeier, T.H., J.T. Wilson, D.H. Kampbell, R.N. Miller, J.E. Hansen, 1995, Technical Protocol for Implementing Intrinsic Remediation with Long-Term Monitoring for Natural Attenuation of Fuel Contamination Dissolved in Groundwater, USAF Center for Environmental Excellence, Brooks AFB, San Antonio, TX, November, 1995.

Wiedemeier, T.H., M.A. Swanson, D.E. Moutoux, E.K. Gordon, J.T. Wilson, B.H. Wilson, D.H. Kampbell, J.E. Hansen, P. Haas, 1996, Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater, USAF Center for Environmental Excellence, Brooks AFB, San Antonio, TX, November, 1996.

Wiedemeier, T.H., M.A. Swanson, D.E. Moutoux, E.K. Gordon, J.T. Wilson, B.H. Wilson, D.H. Kampbell, P.E. Haas, R.N. Miller, J.E. Hansen, F.H. Chapelle, 1998, TECHNICAL PROTOCOL FOR EVALUATING NATURAL ATTENUATION OF CHLORINATED SOLVENTS IN GROUND WATER, USEPA Office of Research and Development, Washington DC 20460, EPA/600/R-98/128, September 1998 (<http://www.epa.gov/ada/report.html>).