32501.038
09.01.38.0026

N00204.AR.001545
NAS PENSACOLA
5090.3a

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Building
2600 Blair Stone Rod
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

October 21, 1997

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Bill Hill
Code 1851
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 190010
North Charleston, South Carolina 29419-9010

RE: Draft *Feasibility Study* for *Site 38,* NAS Pensacola

Dear Mr. Hill:

I have completed the technical review of the above referenced document dated September 8, 1997 (received September 16, 1997) and provide the following comments. Also, please address the comments from Mr. Greg Brown, P.E. in the attached memorandum.

1. In the Executive summary, as well as in other areas of the document, it mentions the industrial risk threshold as 1E-5. The risk factor for remediation goals should always be 1E-6 or a specified ARAR (e.g., Florida Primary Drinking Water Standard (FPDWS), etc.). Risk values are calculated for the range of 1E-6 to 1E-4 for an industrial scenario (e.g., site worker) and a residential scenario in the Baseline Risk Assessment.

2. Section 1.3.3.2 (Environmental Risk Assessment) implies that the groundwater contamination (Volatile Organic Compounds (VOCs)) at Site 38 does not pose a risk to Pensacola Bay as VOCs were not detected in sediment nor surface water. surface water samples were taken at a single point in time and in the water column. There has been no sampling at the groundwater surface water interface to conclude that VOCs are not exceeding Florida Surface Water Quality Standards (FSWQS) at the point of discharge. The most downgradient well from Building 604 had PCE, TCE and Vinyl Chloride at levels which exceed the FSWQS (8.85 µg/L, 80.7 µg/L, and minimum criteria, respectively). *Any* well near the surface water is the point of compliance for meeting FSWQS. This is also true for the wells most downgradient from Building 71.

However, the PSWQS exceedences were for metals rather than VOCS.

Also, in reference to the dilution model on page 1-23, the state does not accept dilution. To determine whether FSWQS are below FSWQS at the point of discharge, well points at the groundwater/surface water interface could be established, sampled and analyzed. Another possibility would be to perform chronic/acute bioassays with the groundwater from the above mentioned wells. If no deleterious effects were noted, then an exception could possibly be made.

3. Section 2.1 (Delineation of Areas Requiring Feasibility Study) used an arbitrary value of one order of magnitude to screen out some constituents from the feasibility study. There is no particular reason for this and should not be used in this document. Remediation goals should be based on the ARARs and risk. This needs to be eliminated from the document.

4. On page 2-11, under Organics Summary, well 38GS11 was eliminated from consideration' as chloroform was detected below the Federal MCL. This is inappropriate as the exceedence was above the Florida Groundwater Guidance Concentration which is an ARAR.

5. Section 2.1.2.2 (Building 604 Subsurface Soil) indicates no significant source to groundwater as the exceedences were laterally discontinuous with multiple "clean" borings in between. What is meant by "clean?" Also, the area around the exceedencas has not been delineated and may be acting as a source.

6. Section 2.1.2.3. (Building 604 Area Shallow Groundwater Zone) eliminates well 36GR52 from assessment in the feasibility study due to TCE being less than 1 order of Magnitude above the FPDWS(see comment No. 3) and because it is separate from the Building 604 plume. This well must still be considered in the feasibility study even if it were to require monitoring only and not be a part of an active remediation system.

7. On page 2-26, 1E-4 should be'1E-6.

8. Throughout the document, soils (surface and subsurface] are not considered for remediation based upon a presumption of continued industrial use or maintenance of a cap. Institutional controls are an alternative. Alternatives still need to be presented related to soils as they do pose a risk to potential future site residents and to site workers.

9. Table 2-16 must include the FPDWS, Florida Secondary Drinking Water Standards (FSDWS), and FGGC as the remediation goals for groundwater (i.e., manganese, benzo(a)pyrene, di(2-ethylhexyl)phthalate, chloroform, 1,2-DCA, ethylbenzene (SDWS), PCE, TCE, and vinyl chloride).

10. Section 3.2.7 (Discharge Disposal) refers to treated groundwater being either discharged through the NOTW or by reinjection. Reinjection is highly unlikely to be allowed by the state. Also, is it known that the NOTW can adequately handle the increased load to its system.

11. Section 3.4.1 (Technologies Screened from Consideration) eliminates passive treatment walls due to the depth of a confining layer. I agree that under most conditions passive walls usually would extend to a confining layer. However, as the significant contamination is in the upper portion of the aquifer, a hanging passive wall might be feasible.

12. In Table 3-1, no consideration or mention was given to in-well treatment of groundwater. This is an innovative technology for treatment of VOCs.

13. In Chapter 4 (Development and Screening of Alternatives) and Chapter 5 (Detailed Analysis of Alternatives-), FSWQS in the receptor (Pensacola Bay) is not taken into consideration. Please see comment No. 2.

    Also in these chapters, under Alternative 2 (Natural Attenuation (NA)), pump and treat is considered as a contingency should the NA evaluation during the remedial design be found to be inappropriate. This would be an alternative in itself, rather than just NA. Also, NA is usually the "contingency" or follow-on to some form of source remediation to enhance the likelihood of proceeding to NA.

14. Section 6.1.1.2 (Compliance with ARARs), needs to indicate that Alternative 2 does not meet the point of compliance of FSWQS in the most downgradient wells.

15. In Appendix B (Summary of Potential Chemical Specific ARARs), FGGC are applicable for meeting the Florida Groundwater Classes, Standards and Exemptions (Chapter 62-520, F.A.C.) free from/minimum criteria standard. This rule, along with the FSWQS (Chapter 62-302. F.A.C.), needs to be included as applicable.

If I can be of any further assistance with this matter, please contact me at (904) 921-9989.

Sincerely,

John W. Mitchell
Remedial Project Manager

CC: Ron Joyner, NAS Pensacola
Gena Townsend, USEPA Region IV
Henry Beiro/Brian Caldwell, EnSafe, Pensacola
Allison Dennen, EnSafe, Memphis
Karen Atchley, Bechtel, Knoxville
Tom Moody, FDEP Northwest District
Pat Kingcade, OGC/Trustee File

TJB TB JJC JJC ESN ESN

Memorandum

Florida Department of
Environmental Protection

TO: John Mitchell, Remedial Project Manager, Technical Review Section

THROUGH: Tim Bahr, P.G., Supervisor, Technical Review Section

FROM: Greg Brown, P.E., Professional Engineer 11, Technical Review Section

DATE: October 16, 1997

SUBJECT: Feasibility Study, Site 38; NAS Pensacola, Florida.

I reviewed the subject Feasibility Study for Site 38 dated September 26, 1997 (received September 16, 1997). I have the following minor comments:

1. Section 2.0: Only remedial alternatives to reduce human health risks are proposed in the FS. There appears to be reasonable evidence that groundwater contaminated with' chlorinated volatile organic compounds and metals could be discharging to surface water at concentrations that violate Florida surface water quality standards. Responses to environmental risks associated with these discharges should be addressed in the FS along with the recognized risks to human health. The range of proposed alternatives are not adequate to address contaminated groundwater discharges to surface water.

2. Section 2.1.1.2, Subsurface Soil: The FS states that contaminants that do not fit risk-defining criteria are eliminated from further consideration. One of these criteria is the rejection of contaminants with concentrations exceeding the "PRG" but are within one order of magnitude of it. Censuring chemicals of potential concern from consideration based on best professional judgment or other subjective criteria is a risk management decision that should be made by the Partnering Team in consensus. Risk management decisions and the parties responsible for them should be explicitly documented in the administrative record so that they can withstand administrative, judicial, and public review.

3. Section 2.1.1.3, Building 71 Shallow Groundwater Zone: See comment no. 2.

4. Section 2.2.2, Remedial Goal: The potential exposure pathway of contaminated groundwater discharge to surface water is not considered when formulating remedial goals. If the remedial goals are inadequate, subsequent steps in the FS such as alternatives development will be inadequate as well.

5. Table 2-16, Contaminant-Specific Remedial Goals for Groundwater at Site 38: Refer to the "RG Concentrations" for VOCs. State of Florida drinking water standards and groundwater guidance concentrations are ARARs and should be used as groundwater cleanup standards.

6. Section 2.2.3.1, Remedial Soil Volume: Like section 2.1.1.2, this section provides a data censure etep for soils with contamination above cleanup goals by applying land use characteristics as its censuring criteria. This approach makes institutional control a "presumptive remedy" without explicitly stating so. By applying this strategy before technology screening and alternative development, the quantity of contaminated media considered in subsequent FS steps is reduced. This changes economies of scale and reduces the range of feasible technologies and cost-effective alternatives that are considered. If volumes of contaminated media are censured from consideration for organizational motives, subsequent steps in the FS such as alternatives development will be inadequate as well.

7. Section 3.2.2, Natural Attenuation: In general, a combination of active source removal and hotspot treatment coupled with natural attenuation is potentially a sensible strategy at petroleum-contaminated sites; This strategy is being applied at many federal facilities in Florida to achieve improved cost effectiveness of petroleum-contaminated site remediation. Use of natural attenuation at chlorinated VOA contaminated sites, however, remains uncertain. Unlike petroleum compounds, there is yet to be a scientific consensus formed around the efficacy of natural attenuation of chlorinated VOAs and metals in the environment and whether or not natural attenuation of chlorinated VOAs and metals is a practical mechanism considering rates of decay, permanence, and intermediate by-products. The Department does not recommend natural attenuation as the sole method for groundwater remediation unless sufficient site-specific evidence and alternatives analysis support it (refer to U.S. EPA's draft policy statement on monitored natural attenuation, dated June 9, 1997).

8. Section 3.4.1, Technologies Screened from Consideration: This section claims that inorganic contaminants cannot be treated and could be toxic to microbes used in in-situ biological treatment technologies. If true, this would limit the efficacy of natural attenuation, as well.

9. Section 4.0, Development and Screening of Alternatives: The Department recognizes the problematic remediation challenges posed by Site 38. The range of proposed alternatives, however, describe endpoints with no intermediate choices. They do not provide risk managers with sufficient options to

balance risk reduction with cost effectiveness. The proposed alternatives give the appearance of being defined a *priori* without prior consideration of risks, remedial goals, and contaminated media volumes (refer to earlier comments).

10. section 4.2.2.1, Alternative 2: Natural Attenuation Program: The Department anticipates a period of trial and error by PRPs and their consultants as experience is gained in the application of natural attenuation. None of the three bulleted items in this section have been shown based on the information in the FS. In particular, bullet number 3 appears to be violated at both Buildings 71 and 604.. For your information, I am quoting from the U.S. EPA's draft policy statement, June 9, 1997, on monitored natural attenuation to briefly describe the general "[c]onditions for the application of natural attenuation:"

> "Monitored natural attenuation should be selected only where it meets all relevant remedy selection criteria, where it will be fully protective of human health and the environment, and where it will meet site remediation objectives, within a time frame that is reasonable compared to other methods. In the majority of cases, natural attenuation will be appropriate as one component of the total remedy; that is, either in conjunction with active remediation or as a follow-up measure. Therefore, monitored natural attenuation should be used very cautiously as the sole remedy at contaminated sites."

11. Section 4.2.1 Alternative 1: No Action and Section 4.2.2.1, Natural Attenuation Program: In-situ bioremediation was rejected in the technology screening phase due to concerns about the toxicity of contaminants. If this is the case, then the mechanisms of natural attenuation will be principally physical phenomena.. There.seems to be little technical difference, therefore, between the no action alternative and the natural attenuation alternative except that the former costs an estimated $75,300 and lasts 30 years and the latter costs an estimated $807,900 and lasts 29 years. The estimated 29 to 30 years project life-cycles are not reasonable time frames, *An* inadequate range of viable alternatives are presented in this FS that do not provide risk managers sufficient flexibility to balance restoration objectives.

12. Section 4.2.3.1, Groundwater Pump and Treat Process: 'Based on experience with pump and treat groundwater remediation systems in Florida, the scope of the proposed alternative appears extensive relative to site conditions, and the cost estimate may represent an unlikely worst case scenario. The FS engineers may wish to qualify their proposal to indicate that it may not be the most likely scenario for a pump and

treat system at this site, but represents an upper-end estimate. Otherwise, this alternative may be rejected out-of-hand as not cost-effective when compared to more optimistic alternatives.

13. Natural attenuation is at risk of becoming a *de* facto presumptive remedy if site-specific conditions and viable alternatives are ignored. It does promise improved cost-effectivness of environmental restoration by supplementing active remediation. I am attaching for your information a Department memorandum sent to ASTSWMO commenting on the U.S. EPA's draft policy statement on natural attenuation. This memo provides modest suggestions on how to rationally consider this technology in remedial strategy decision making.

If you have questions, please call me at (904) 488-3935.

enclosure

Printed on recycled paper.

Florida Department of
Environmental Protection

Memorandum

TO: Dan DiDomenico, Environmental Administrator, Hazardous Waste Cleanup Section

THROUGH: Zoe Kulakowski, P.G., Professional Geologist 11, Technical Review Section

FROM: Greg Brown, P.E., Professional Engineer II, Technical Review Section

DATE: August 5, 1997

SUBJECT: Comments for the ASTSWMO Leaking Underground Storage Tank Task Force on the U.S. EPA Draft Policy "Use of Monitored Natural Attenuation at Superfund, RCRA, Corrective Action, and Underground Storage Tank Sites," June 9, 1997.

I reviewed the subject document and the draft ASTSWMO Task Force comments. The Task Force makes good recommendations in key areas of the U.S. EPA's draft policy. I would like to emphasize an issue touched upon in the draft policy but not adequately addressed. Risk-based cleanup standards coupled with natural attenuation are popularly becoming informal "presumptive remedies." The incentives to use proven or innovative technologies may weaken as natural attenuation becomes a universal preference. This may undermine the remedial technology market and prevent the development of future effective and efficient remediation technologies. To counter this trend, the U.S. EPA should strongly encourage thorough and objective comparison of natural attenuation with other technologies when it is considered a remedial alternative. No new policy is necessary beyond assertively applying existing remedy selection guidance and policy in a thorough and objective manner.

Cost-Benefit Analysis. To give other technologies a "fair shot," our section is advocating a cost-benefit approach to comparing remedial alternatives whenever natural attenuation is proposed. We have successfully applied this approach at complex federal facilities contaminated with petroleum products such as large bulk storage facilities. The cost-benefit approach I describe below uses well known engineering economic analysis methods coupled with recent natural attenuation modeling advances.

Immediate remediation costs are easier to estimate than benefits, and this biases alternative selection towards low-capital, least-cost options such as natural attenuation. We attempt to counter this bias by using "time to cleanup" as a proxy measure of benefits since it quantifies the extent that

Framing alternative selection in the context of a demand curve such as the one above gives decision makers flexibility. For example, the responsible party may have a strong preference for Alternative D because it best matches their budget constraint (i.e., lower costs). Regulatory or community interests may prefer, on the other hand, alternatives with shorter time to cleanup such as Alternative B (i.e., greater benefits). By explicitly describing the time to cleanup and cost relationships in a demand curve, tradeoffs become obvious and rational negotiations are possible. Alternative C may become apparent as an acceptable compromise that meets both the responsible party's and regulatory preferences for lower costs and higher benefits. Natural attenuation is also more likely to be coupled with other remedial technologies so that the demand for active remediation is not undermined. All technologies thus compete on the basis of their merits to achieve low cost, high benefit solutions that meet all stakeholders preferences.

Conclusions. The cost-benefit approach described above is only one of many analytical frameworks that can be applied to alternative selection. It is unlikely to be the best. I describe it to emphasize the requirement to thoroughly and objectively assess natural attenuation relative to other technology choices. Otherwise, natural attenuation may become the default remedy of choice and incentives to develop more effective and efficient remedial technologies will be diminished.

Printed on recycled paper.