UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

OCT 0 3 2008

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. David Criswell
US Navy
BRAC PMO SE
4130 Faber Place Drive
Suite 202
North Charleston, SC 29405

Re: Naval Activity Puerto Rico (NAPR), formerly Naval Station Roosevelt Roads, EPA I.D. Number PRD2170027203,

1) August 28, 2008 Revised Final Landfill Gas Monitoring Work Plan for Base Landfill (SWMU #3);

2) August 28, 2008 Final Full RCRA Facility Investigation (RFI) Report for SWMUs 27, 28, and 29;

3) June 27, 2008 Draft Additional Data Report in Support of the Ecological Risk Assessment at SWMU 14;

4) July 11, 2008 Final Steps 6 and 7 Report of the Ecological Risk Assessment at SWMU 45;

5) September 8, 2008 Revised Final Monitored Natural Attenuation Work Plan for AOC F;

6) September 8, 2008 Draft Monitored Natural Attenuation – Year 6 First Quarter Report for AOC F.

Dear Mr. Criswell:

This letter is addressed to you as the Navy's designated project coordinator pursuant to the January 29, 2007 RCRA Administrative Order on Consent ("the Consent Order") between the United States Environmental Protection Agency (EPA) and the U.S. Navy (the Navy). EPA Region 2 has completed its reviews of the above documents, which were submitted by Baker Environmental on behalf of the Navy, pursuant to the requirements of the Consent Order.

Landfill Gas Monitoring Work Plan

Based upon reviews by EPA and by our consultant, Tech Law Inc., EPA has determined that the August 28, 2008 Revised Landfill Gas Monitoring Work Plan is acceptable.

Full RFI Report for SWMUs 27, 28, and 29

Based upon our reviews by EPA and by our consultant, Tech Law Inc., EPA has determined that the August 28, 2008 Final Full RCRA Facility Investigation (RFI) Report for SWMUs 27, 28, and 29 is acceptable. Nevertheless, EPA recommends that the Navy submit a letter addendum to the RFI report, which, as a point of clarification, includes, if correct, a statement indicating that for SWMU 27, analytes with a Contract Required Quantitation Limit (CRQL) higher than screening values were all detected below the EPA Region IX Residential Soil Preliminary Remedial Goals (PRGs) and/or the Selected Ecological Surface Soil Screening Values. In addition, it is suggested that a statement be included in the addendum indicating, if correct, that for SWMU 29, analytes with a CRQL higher than screening values were all detected below the EPA Region IX Residential Soil PRGs and/or the Selected Ecological Surface Soil Screening Values.

If the above statements are correct, please submit such an addendum or a written response, within 30 days your receipt of this letter.

Draft Additional Data Report in Support of Ecological Risk Assessment for SWMU 14

Based upon reviews of the above by EPA and by our consultant, Tech Law Inc., comments on the June 27, 2008 Additional Data Report are discussed in the enclosed Technical Review. In addition, the Puerto Rico Environmental Quality Board (PREQB) submitted several comments to EPA, which were transmitted to you by my Email of September 30, 2008. Since a "Streamlined" Corrective Measure Study (CMS) is slated to be submitted for SWMU 14 by October 29, 2008, please address the comments on the Additional Data Report, discussed in the enclosed Technical Review, in conjunction with submission of the CMS report. Or alternatively, within 45 days of your receipt of this letter, please submit an addendum to the Additional Data Report, addressing the comments in the enclosed Technical Review, and as necessary, the comments submitted by PREQB.

Steps 6 and 7 Report of the Ecological Risk Assessment at SWMU 45

Based upon reviews of the above by EPA and by our consultant, Tech Law Inc., comments on the July 11, 2008 Steps 6 and 7 Report are discussed in the enclosed Technical Review. In addition, the Puerto Rico Environmental Quality Board (PREQB) submitted several comments to EPA, which were transmitted to you by my Email of September 30, 2008. Within 45 days of your receipt of this letter, please submit an addendum to the Steps 6 and 7 Report, addressing the comments in the enclosed Technical Review, and as necessary, the comments submitted by PREQB.

Revised Final Monitored Natural Attenuation Work Plan for AOC F

Based upon a review of the above by EPA and by our consultant, Tech Law Inc., comments on the September 8, 2008 Revised Final Monitored Natural Attenuation (MNA) Work Plan are discussed in the enclosed Technical Review. Please note that the September 8th Revised MNA Work Plan does not fully reflect the changes proposed in the May 20, 2008 responses to previous EPA comments. Those responses were submitted on behalf of the Navy by Mr. Mark Kimes' (of your consultant Michael Baker, Jr., Inc.) letter of May 20, 2008, and had been reviewed and accepted by EPA, in my letter of July 23, 2008 to yourself. Within 45 days of your receipt of this letter, please submit revisions to the MNA Work Plan, reflecting the proposed changes discussed in the May 20, 2008 letter, as well as addressing comments in the enclosed Technical Review.

Draft Monitored Natural Attenuation – Year 6 First Quarter Report for AOC F

Based upon a review of the above by EPA and by our consultant, Tech Law Inc., comments on the September 8, 2008 Year 6 First Quarter Report are discussed in the enclosed Technical Review. Within 45 days of your receipt of this letter, please submit revisions to, or an addendum to the Year 6 First Quarter Report, addressing the comments in the enclosed Technical Review.

If you have any questions, please telephone me at (212) 637-4167.

Sincerely yours,

Timothy R. Gordon
Remedial Project Manager
Resource Conservation and Special Projects Section
RCRA Programs Branch

Enclosures (4)

cc: Ms. Wilmarie Rivera, P.R. Environmental Quality Board, w/encls.
Mr. Julio I. Rodriguez Colon, P.R. Environmental Quality Board, w/encls.
Mr. Mark Kimes, Baker Environmental, w/encls.
Mr. Michael Smith, TechLaw Inc, w/o encls.

ENCL. 1

REPA4R2-002-ID-089

TECHNICAL REVIEW OF THE DRAFT ADDITIONAL DATA REPORT IN SUPPORT OF THE ECOLOGICAL RISK ASSESSMENT AT SWMU 14 DATED JUNE 27, 2008

NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID NO. PR2170027203

Submitted to:

U.S. Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007-1866

Submitted by:

TechLaw, Inc.
One Penn Plaza, Suite 2509
New York, NY 10119

EPA Task Order No.	002
Contract No.	EP-W-07-018
TechLaw TOM	Andrew Dorn
Telephone No.	312-345-8963
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Telephone No.	212-637-4167

August 13, 2008

DRAFT ADDITIONAL DATA REPORT
IN SUPPORT OF THE ECOLOGICAL RISK ASSESSMENT AT SWMU 14
DATED JUNE 27, 2008

NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID NO. PR2170027203

The following comments are based on a technical review of the Draft Additional Data Report in Support of the Ecological Risk Assessment at SWMU 14 (Report), dated June 27, 2008.

GENERAL COMMENTS

1. The human health risk assessment (HHRA) uses an on-line screening-level version of the Johnson and Ettinger Vapor Intrusion Model (Johnson and Ettinger 1991) to evaluate residential exposure to volatile chemicals of potential concern (COPCs) in groundwater. Due to the detection of volatile organic compounds (VOCs) in soil (e.g., 2-hexanone), residential exposure to volatile COPCs in soil via vapor intrusion should also be evaluated using the Johnson and Ettinger model. Revise the HHRA to incorporate the evaluation of indoor air inhalation of volatile COPCs in soil under the residential exposure scenario or provide rationale for excluding this exposure pathway. Please also provide the model outputs for the soil and groundwater indoor air evaluations in an appendix to the Report as supporting documentation for the HHRA.

2. The HHRA warrants explanation of several parameters that are not discussed in the text, but appear in the supporting tables and appendices. For example, while the use of surrogate chemicals, toxicity equivalency factors (TEFs), and particulate emission factors (PEFs) are not discussed in the HHRA, they are presented in the tables and appendices of the Report. Similarly, the HHRA makes reference to non-cancer hazards associated with specific target organs, but the methodology for conducting target organ analyses is not explained. For completeness, revise the HHRA to incorporate discussions of these issues.

3. As acknowledged in the Report, the U.S. Environmental Protection Agency (EPA) has issued Regional Screening Levels for Chemical Contaminants at Superfund Sites (EPA 2008) that replace the screening levels established by Regions 3, 6, and 9. The Regional Screening Levels (SLs) represent a collaborative effort among Regions 3, 6, and 9 and provide the user with the best information that EPA has available. In subsequent revisions to the HHRA, the Region 9 Preliminary Remedial Goals (PRGs) (EPA 2004) used in the risk-based screening and selection of COPCs for the HHRA should be replaced by the SLs.

4. Several contaminants of concern (COCs) were removed during the COC reevaluation in step 3a based on criteria other than those stated in Navy (2003). The Navy guidelines provide five steps to reevaluate the COCs identified in the Tier 1 Screening-Level Ecological Risk Assessment (SLERA): 1) Revise exposure factor assumptions and recalculate Hazard Quotients (HQs); 2) Remove COCs with HQs <1.0; 3) Compare maximum concentrations to

background levels; 4) Examine detection frequencies; and 5) Consider bioavailability. COCs that were removed in step 3a based on criteria other than the five listed above are discussed in specific comments below.

5. The results of the wildlife HQ calculations (presented in Table 7-19) were double-checked for accuracy. Soil ingestion appears to have been systematically excluded from the exposure calculations, such that the daily doses only reflected food ingestion. Soil ingestion needs to be included in the daily doses. Revise all of the food chain modeling calculations by adding soil ingestion as part of the receptor diet. This effort will also involve re-evaluating the wildlife COCs to be retained for further evaluation.

6. An important inconsistency was noted between discussing analytical data from subsurface soil and sediment samples and eliminating several COCs in those matrices on the grounds that they were not likely to represent a significant exposure point for ecological receptors. A decision needs to be made about whether or not subsurface soil and sediment samples represent reasonable exposure media for ecological receptors at SWMU 14. If the answer is no, then those media – and their associated analytical data - need to be removed from the SLERA altogether. If the answer is yes, then the depth argument cannot be used to eliminate COCs. Resolve this issue and modify the text, as appropriate.

SPECIFIC COMMENTS

1. **Section 6.2.1, Data Evaluation, Page 6-1:** Section 6.2.1 states that all of the data presented in Appendix D, Human Health Risk Assessment Data Sets, were used in the HHRA "except for soil samples greater than 10 feet [below ground surface (bgs)] because it is unlikely that contact with soils greater than 10 feet bgs will occur." However, this statement contradicts Section 6.3.1, Potential Human Receptors, which specifies that soil samples used in the risk evaluation for construction workers were obtained from 0 to 12 feet bgs. It is not clear which soil data set, 0 to 10 feet bgs or 0 to 12 feet bgs, was evaluated for the construction worker. Revise the HHRA to resolve this discrepancy.

2. **Section 6.2.2.1, COPC Selection Criteria, Pages 6-2 to 6-3:** Section 6.2.2.1 describes the risk-based concentration screen that was used to identify COPCs. As acknowledged in Section 6.7, Summary and Conclusions of the Baseline HHRA (Page 6-27), new Regional SLs issued by EPA (2008) have replaced the Region 9 PRGs (EPA 2004). It is suggested that the SLs be used as part of the COPC selection criteria in the next revision to the HHRA.

3. **Section 6.2.2.2, Selection of COPCs, Pages 6-5 to 6-7:** The last paragraph of each medium-specific discussion (i.e., surface soil, subsurface soil, groundwater, and sediment) in Section 6.2.2.2 indicates that the selected inorganic COPCs are shown in Tables 6-1 through 6-4, respectively. However, these tables also identify the other COPCs selected in each medium. Since the first sentence of each medium-specific discussion already directs the reader to the appropriate table, the additional references in the last paragraph of each medium-specific discussion may introduce confusion regarding whether these tables address inorganic COPCs

or all COPCs. For clarity, it is suggested that the table reference appearing in the last paragraph of each medium-specific discussion be removed from the text.

4. **Section 6.3, Exposure Assessment, Page 6-8:** The last sentence of this section refers to "CT exposure parameters" and "RME exposure parameters." Since the acronym RME is defined as "reasonable maximum exposure," revise the second phrase in the last sentence of Section 6.3 to read, "RME parameters."

5. **Section 6.4.4, OnSite Johnson and Ettinger Model, Page 6-17:** Section 6.4.4 describes the on-line screening-level model (based on the Johnson and Ettinger simplified model) used to evaluate the vapor intrusion pathway. However, the outputs of this model were not provided as supporting documentation to the HHRA. Provide the outputs of the on-line screening-level model to facilitate verification of the results during the technical review.

6. **Section 6.5.2, Quantification and Characterization of Noncarcinogenic Risks, Page 6-19:** Section 6.5.2 describes the approach used to estimate non-cancer hazards. For the residential receptor, the sum of the HQs for the child resident generally represents the total hazard index (HI) for the residential receptor. Please indicate this in the HHRA.

7. **Section 6.6.4, Toxicological Assessment, Page 6-24:** For consistency, revise the heading of this section to read, "Toxicity Assessment."

8. **Appendix F, Equations For Estimating Intakes, Pages F-2 to F-3**: The second equation associated with the exposure pathway "Inhalation of Fugitive Dust from Soil" is for the parameter "Chemical Concentration in Air as Fugitive Dust," C_a, expressed in milligrams per cubic meter [mg/m^3]. The last paragraph in the discussion of this exposure pathway states that volatilization factors (VFs) used in the HHRA were obtained from the EPA Region 9 PRG tables (EPA 2004); otherwise, VFs were calculated. However, a description of the VF calculation methodology was not provided. Provide a summary of the methodology used to calculate VFs that were not available in the PRG tables. Include all equations and a discussion of the parameters used in calculating the VFs.

9. **Section 7.5.2.2.2, Dietary Intakes, 2nd ¶, p. 7-27, and Table 7-12 (Conservative Exposure Parameters for Upper Trophic Level Receptors):** Both EPA (2007) and Navy (2003) state that the most sensitive life stage for each receptor species must be used for exposure estimations. For example, nestlings represent a sensitive life stage in birds. The SLERA references minimum body weights, but is not clear to what life stage these body weights refer. Indicate the life stage which corresponds with the body weight values presented in Table 7-12. The wildlife exposures also should also be reassessed if the original body weights represent adults.

10. **Section 7.5.2.2.2, Dietary Intakes, 3rd ¶, p. 7-27, and Table 7-13 (Dietary Composition for Upper Trophic Level Receptors):** The text and Table 7.13 present the dietary composition of birds and mammals by percentage of terrestrial plants, soil invertebrates, and small mammals. EPA (1997) and Navy (2003) state that receptor diets should consist of

100% of the most contaminated food item when quantifying exposure in a SLERA. Revise the text and table to show the most contaminated food item in each receptor's diet (specifically, the American robin and the small mammal omnivore) and recalculate the dose for each receptor based on 100% of the diet from the most contaminated food source.

11. **Section 7.6.2.4, Drainage Ditch Surface Sediment, 1st ¶, p. 7-32, and Table 7-17 (Frequency and Range of Drainage Ditch Surface Sediment Data (Maximum Concentrations) Compared to Sediment Screening Values):** Table 7-17 shows that 12 PAHs were detected in the drainage ditch sediment. However, section 7.6.2.4 of the SLERA states that 13 PAHs were detected. Clarify the discrepancy of the numbers of PAHs detected.

12. **Section 7.6.2.4, Drainage Ditch Surface Sediment, 3rd ¶, p. 7-33, and Table 7-17 (Frequency and Range of Drainage Ditch Surface Sediment Data (Maximum Concentrations) Compared to Sediment Screening Values):** Beryllium and thallium were retained as COCs because of the lack of a sediment screening value (see Table 7-17). The text did not mention that these two COCs were retained for further evaluation. It is suggested to include beryllium and thallium in the text, together with the reason for their retention as COCs.

13. **Section 7.6.2.5, Drainage Ditch Subsurface Sediment, p. 7-33, and Table 7-18 (Frequency and Range of Drainage Ditch Subsurface Sediment Data (Maximum Concentrations) Compared to Sediment Screening Values):** Thallium was retained as a COC because of the lack of a sediment screening value (see Table 7-18). The text did not mention that beryllium was retained as a COC for further evaluation. It is suggested to include this contaminant in the text and the reason for its retention as a COC.

14. **Section 7.7, Uncertainties Associated with the Screening-Level Ecological Risk Assessment:** The size of the data sets for surface soil (n = 9), subsurface soil (n = 2), groundwater (n = 3), drainage ditch surface sediment (n = 6), and drainage ditch subsurface sediment (n = 6) are too small to draw conclusions about the entire site. Provide a comment acknowledging the small number of samples and the possible biases associated with a small data set for each media in the uncertainty section of the SLERA.

15. **Section 7.9, Step 3.a of the Baseline Ecological Risk Assessment, first bullet, p. 7-41:** The text states that non-detected chemicals lacking media-specific screening values were excluded from further evaluation in Step 3a. There is a large amount of uncertainty in this decision point due to the small data sets used in step 3a (see Specific Comment 6 above). It is inaccurate to assume that a matrix is not contaminated based on a handful of data points (e.g., n = 2 for subsurface soils or n =3 for groundwater). Please fully elaborate on this issue in the uncertainty analysis (Section 7.9.2) and reflect on how it might affect risk-based decision making.

16. **Section 7.9.1.2, Step 3a Risk Evaluation for Subsurface Soil, 2nd ¶, p. 7-45:** The SLERA states that benzene was detected in one surface soil sample (see Table 7-14), one subsurface

sample (see Table 7-15), and two groundwater samples (see Table 7-16). Table 7-15 shows no detects (0/2) for benzene. The frequency of detection for benzene for surface and subsurface samples together is 1 of 11, instead of 2 of 23 as stated in section 7.9.1.2. Revise this section of the SLERA to correspond to the data presented in Tables 7-14, 7-15, and 7-16, or amend the data in the tables, if necessary.

17. **Section 7.9.1.3, Step 3a Risk Evaluation for Groundwater, 3rd ¶, p. 7-47and 7-48:** Benzene was detected in two of three groundwater samples, with one sample (220 μg/L) exceeding the screening level benchmark of 53 μg/L. The text stated that the spatial distribution of detections in SWMU 14 groundwater did not indicate that benzene was migrating with groundwater off-site. Three samples are not enough to support removing benzene as a COC based on an argument of "spatial distribution." Revise the decision to remove benzene as a COC accordingly.

18. **Section 7.9.1.4, Step 3a Risk Evaluation for Drainage Ditch Surface Sediment, 8th ¶, p. 7-51:** Chromium was detected in all six drainage ditch surface sediment samples. Two of those samples exceeded maximum site-specific background levels (14S-SB02, and 14D-SB06). Sample 14D-SB-06 is the last sample location along the ditch and furthest away from SWMU 14 site. Even though the detected level of chromium was almost double the maximum site-specific background level, the SLERA did not recommend further evaluation of this metal in the PEM1 wetland area due to spatial distribution of chromium (and selenium and vanadium) along the length of the drainage ditch. The fact remains that chromium at sample location 14S-SB-06 exceeded both its screening benchmark and the site-specific background level. It should therefore be retained as a COC for further evaluation (for example, by confirmatory sampling). Revise the conclusions regarding chromium results in the drainage ditch surface sediment.

19. **Section 7.9.1.5, Step 3a Risk Evaluation for Drainage Ditch Subsurface Sediment, p. 7-54:** Nickel was detected in all six subsurface sediment samples and the maximum detected concentration exceeded the maximum site-specific background subsurface sediment concentration. Not identifying nickel as a COC based on a low potential for exposure (sediment collected from 1.0-2.0 foot depth interval) and a low magnitude of the maximum detection above the sediment screening value is not a sufficient argument. Revise the decision to not identify nickel as a COC.

20. **Section 7.9.1.5, Step 3a Risk Evaluation for Drainage Ditch Subsurface Sediment, 2nd ¶, p. 7-55:** The background concentration argument for including or removing a COC from further consideration is used inconsistently. The SLERA assumes that a COC concentration above background is site-related. Yet, the exact opposite was argued in this paragraph. Chromium in surface sediment sample 14D-SB06, which is the farthest downgradient ditch sample, exceeded both its screening benchmark and background concentration. The text argued that this concentration was not site-related because two sediment ditch samples collected further upgradient did not contain chromium above its screening value or site-specific background. The fact that chromium in 14D-SB06 exceeded its background value made it site-specific, by definition, regardless of the fact that it was present at a lower

concentration further upstream (unless it can be argued that the background data set did not fully reflect conditions at the NAPR). Ensure that background is used consistently in the COC decision-making process and modify the text accordingly, where necessary.

References:

Johnson and Ettinger, 1991. Johnson, P. C, and R. A. Ettinger. 1991. *Heuristic Model for Predicting the Intrusion Rate of Contaminant Vapors in Buildings.* Environ. Sci. Technol. 25: 1445-1452. On-line screening version available at http://www.epa.gov/athens/learn2model/part-two/onsite/JnE_lite_forward.htm.

U.S. Environmental Protection Agency (EPA). 2008. *Regional Screening Levels for Chemical Contaminants at Superfund Sites*. Available on the Oak Ridge National Laboratory website (http://epa-prgs.ornl.gov/chemicals/index.shtml). June.

EPA. 2004. *Region 9 Preliminary Remediation Goals*. October. Available on-line at http://www.epa.gov/region09/waste/sfund/prg/index.htm.

United States Environmental Protection Agency. 1997. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. EPA 540-R-97-006. June 1997.

Navy 2003. Navy Guidance for Conducting Ecological Risk Assessments. Available at http://web.ead.anl.gov/ecorisk/process/pdf/index.cfm

ENCL. 2

REPA4R2-002-ID-090

EVALUATION OF THE FINAL STEPS 6 AND 7 OF THE ECOLOGICAL RISK ASSESSMENT, SWMU 45

DATED JULY 11, 2008

NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID NO. PR2170027203

Submitted to:

U.S. Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007-1866

Submitted by:

TechLaw, Inc.
One Penn Plaza, Suite 2509
New York, NY 10119

EPA Task Order No.	002
Contract No.	EP-W-07-018
TechLaw TOM	Andrew Dorn
Telephone No.	312-345-8963
EPA TOPO	Timothy Gordon
Telephone No.	212-637-4167

August 15, 2008

EVALUATION OF THE FINAL
STEPS 6 AND 7 OF THE ECOLOGICAL RISK ASSESSMENT,
SWMU 45

DATED JULY 11, 2008

NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID NO. PR2170027203

The following comments are based on an evaluation of the July 11, 2008 Final Steps 6 and 7 of the Ecological Risk Assessment, SWMU 45.

1. **Evaluation of the Response to TechLaw General Comment 2:** The response to General Comment 2 does not adequately address the issue being raised. The original comment requested a table that summarizes the MATC (Maximum Acceptable Toxicant Concentration) values that were used to calculate MATC based Hazard Quotient (HQs) values. Table 4-13 contains the MATC-based HQs, but not the MATC values used to calculate those HQs. The lack of MATC values prevented the reviewer from being able to verify the MATC-based HQs. Please provide a table that shows the MATC values and explain how each value was calculated.

2. **Evaluation of the Response to TechLaw General Comment 3:** The response to General Comment 3 only partially addresses the issue being raised. It is understood that the results in Table 2-4 are from the Final Additional Data Collection Report and Screening-Level Ecological Risk Assessment for SWMU 45 (Baker, 2006a). It is suggested that a footnote be added to this table citing this particular document as the source for the input parameters used to calculate the HQs shown. This would clarify to the reader from where the values originated.

References:

Baker Environmental, Inc (Baker). 2006a. Final Additional Data Collection Report and Screening-Level Ecological Risk Assessment and Step 3a of the Baseline Ecological Risk Assessment for SWMU 45, Naval Activity Puerto Rico, Ceiba, Puerto Rico. Coraopolis, Pennsylvania. May 18, 2006

ENCL. 3

REPA4R2-002-ID-096

TECHNICAL REVIEW OF THE REVISED FINAL MONITORED NATURAL ATTENUATION WORK PLAN FOR AOC F SEPTEMBER 8, 2008

NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID NO. PR2170027203

Submitted to:

U.S. Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007-1866

Submitted by:

TechLaw, Inc.
One Penn Plaza, Suite 2509
New York, NY 10119

EPA Task Order No.	**002**
Contract No.	**EP-W-07-018**
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Telephone No.	**212-637-4167**

September 30, 2008

TECHNICAL REVIEW OF THE
REVISED FINAL MONITORED NATURAL ATTENUATION
WORK PLAN FOR AOC F
SEPTEMBER 8, 2008

NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID NO. PR2170027203

The following comments were generated based on TechLaw's technical review of the Revised Final Monitored Natural Attenuation Work Plan for AOC F, dated September 29, 2008 (Revised Final Work Plan). The Revised Final Work Plan was reviewed to ensure that information supplied by the Navy in response to previous EPA Region 2 comments through a letter dated May 20, 2008 (letter from Mark Kimes of Michael Baker, Jr., Inc. to Mr. Adolph Everett of EPA Region 2) was incorporated into the document. Further, new information supplied by the Navy as part of the Revised Final Work Plan was also subject to technical review.

I. Incorporation of Information from May 20, 2008 Letter in Response to EPA General Comment 2

1. The Navy agreed with the suggestion that isopleths maps from the most recent sampling event be included in the 5-year review. As part of the response, the Navy indicated that text would be added to the Revised Final Work Plan Section 11, Reporting, to read: "During years where a five-year review is required, site maps showing isopleths of concentrations from the five years previous to the current sampling year will be included in the annual report for easy comparison to current concentrations." This statement was not included in Section 11 of the Revised Final Work Plan. Furthermore, the statement or a similar statement was not found in the Revised Final Work Plan. Please revise Section 11 of the Revised Final Work Plan to include the statement on providing isopleths for comparisons.

2. In their response, the Navy agreed that sites where methyl tert-butyl ether (MTBE) or MTBE fuels were managed should be sampled at least twice. The response indicated the following text would be added to Table 8-1, Parameter Lists and Contract Required Quantitation Limits (CRQL): "MTBE, although not included in Appendix IX, is to be analyzed at all sites during the first two sampling events." The proposed statement was not added to Table 8-1 of the Revised Final Work Plan. Section 5.6, Follow-up to Recommendations, Year 6 Annual Sampling Event, indicates quarterly sampling will continue at site 1738 and each sampling event will include MTBE. However, Section 2.0, Sites 124 and 2842 B, provides no indication that MTBE will be sampled more frequently than annually. Please revise Section 2.0 to indicate MTBE will be sampled at least twice to minimize the potential for false positives/negative results and to account for seasonal groundwater fluctuations.

3. In responding to the issue of seasonal effects at sites subjected to quarterly sampling, the Navy indicated that the bullet for trend analysis would be revised to read: "Trend analysis and seasonal variation analysis, if applicable." This information was not added to Section 11. Furthermore, the statement or a similar statement was not found in the Revised Final Work Plan. Please revise Section 11 to incorporate the proposed text into the bullet for trend analysis.

II. Technical Review Comments on New Information

1. Section 1.2, Organization of the MNA Work Plan for AOC F, and Sections 2.6, 3.6, 4.6, 5.6, and 6.6 all indicate that figures referenced in these new sections of the Revised Final Work Plan are included in Attachment A, Figures and Tables from Year 6 Annual Report. A number of figures referenced in Sections 2.6, 3.6, 4.6, 5.6, and 6.6 were not found in Appendix A. For example, Figures A-1 through A-4 and Figure A-7 referenced in Section 2-6 were not found in Attachment A. Please review these sections and ensure all referenced figures are included in Attachment A.

2. The first paragraph of Section 4.6, Follow-up to Recommendations, Year 6 Annual Sampling Event, identifies three new monitoring wells installed at Sites 731 and 735. Section 4.5, Recommendations, as well as Section 7.2, Well Development, indicates that during new well installation, existing wells would be checked to determine if redevelopment was necessary prior to the first sampling event. While Section 4.6 discussed installation of the new wells, it is not clear if existing wells at Sites 731, 734 and 735 were redeveloped or checked for redevelopment. Revise Section 4.6 to indicate that the existing wells at these sites were redeveloped during installation of the new wells. If they were not, explain why redevelopment did not occur.

3. Section 4.6 proposes that polynuclear aromatic hydrocarbons (PAHs) be dropped from the sampling design based on their low and decreasing concentrations. Section 4.6 references Figure 4-4 for information demonstrating that PAH concentrations obtained during the May 2008 sampling event were approximately half of the levels quantified during the September 2006 sampling event. While Figure 4-4 did not include any information on PAHs, the results of the September 2006 sampling event were depicted in Figure 4-5, Site 731, 734, and 735 PAH Concentrations in Groundwater. However, no quantitative information on PAH results achieved during the May 2008 sampling event was provided. Thus, the assertion that PAHs should be dropped from the sampling design for these sites is not adequately supported. Revise Section 4.6 to include lines of evidence, including quantitative results from the May 2008 sampling event, demonstrating that sampling results for PAHs at these sites meet or exceed the requirements outlined in Section 10.2, Optimization (note this section is incorrectly labeled as Section 10.1 in the text), for elimination from the sampling design.

ENCL. 4

REPA4R2-002-ID-097

TECHNICAL REVIEW OF THE DRAFT MONITORED NATURAL ATTENUATION AOC F – YEAR 6 1st QUARTER ANNUAL REPORT DATED SEPTEMBER 8, 2008

NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID No. PR2170027203

Submitted to:

U.S. Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007-1866

Submitted by:

TechLaw, Inc.
One Penn Plaza, Suite 2509
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EPA Task Order No.	002
Contract No.	EP-W-07-018
TechLaw TOM	Michael S. Smith
Telephone No.	678-765-0815
EPA TOPO	Timothy Gordon
Telephone No.	212-637-4167

September 30, 2008

TECHNICAL REVIEW OF NAPR's
DRAFT MONITORED NATURAL ATTENUATION
AOC F – YEAR 6
1st QUARTER ANNUAL REPORT
DATED SEPTEMBER 8, 2008

NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
EPA ID No. PR2170027203

The following comments were generated from TechLaw's review of the Draft Monitored Natural Attenuation AOC F – Year 6, 1st Quarter Annual Report, dated September 8, 2008; Naval Activity Puerto Rico (NAPR) in Ceiba, Puerto Rico (Annual Report). The Annual Report was evaluated for general consistency with the Navy responses to EPA comments on the Draft and Final Monitored Natural Attenuation (MNA) work plans and general consistency with the EPA's 1999 Directive on *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites* (OSWER Directive #9200.4-17P [MNA Guidance]).

GENERAL COMMENTS

1. Groundwater elevation data are not available for several monitoring wells at Sites 731, 734 and 735 and at Site 1738 as indicated in Tables 5-2 and 6-3, respectively. As such, a thorough evaluation of the screened intervals could not be conducted. In addition, due to the absence of groundwater elevation data, groundwater flow directions at these sites have not been clearly defined indicating potential data gaps in the monitoring well network. It is suggested that once the survey is completed, the wells be evaluated to determine whether they are screened appropriately, that groundwater flow directions are clearly established, and as supported by the data, no data gaps exist.

2. Source/release areas are not clearly indicated on the figures for each site presented in the Annual Report. As such, the upgradient, sidegradient, downgradient, plume, sentinel, and other monitoring well locations with respect to the source/release locations at each site are not clearly identified. To demonstrate that the current well networks are adequate to detect potential plume movement, it is suggested that future monitoring reports include this information by showing the source/release areas in the appropriate figures and indicating in tabular form the locations (e.g., downgradient) of the monitoring wells relative to source/release areas.

SPECIFIC COMMENTS

1. **Section 1.2, MNA Objectives, Page 1-1:** The Annual Report states the general objective of the MNA program is to monitor the natural reductions in contaminant concentrations to below the Puerto Rico Environmental Quality Board (PREQB) target levels. Section 1.2 references Table 1-1, Summary of MNA Quantitative Objectives, for each site specific quantitative objective. Table 1-1 indicates the quantitative objectives include PREQB target levels, as well as EPA Region 9 tap water preliminary remediation goals (PRGs) for the polynuclear aromatic hydrocarbon (PAH) compounds listed in the table. Revise this section to clearly indicate the basis for determining the presented target levels in Table 1-1.

2. **Section 2.2, Well Redevelopment, Page 2-1:** This section of the Annual Report states none of the existing wells exhibited consistent turbidity and; therefore, in accordance with the Draft MNA Work Plan, it was decided in the field that redevelopment was not necessary for any existing wells. Although monitoring well 520MW08 is a newly installed well, turbidity data provided in Table 4-1, Groundwater Quality Parameters – Site 520, indicated the groundwater sample exhibited consistent turbidity during purging activities. In addition, a well development record for 520MW08 was not included in Table 2-3B, Well Development Record – Site 520, and the turbidity levels and other geochemical data recorded during development is not known. Groundwater analytical results can be impacted by elevated turbidity levels. In order to conduct a thorough evaluation of the well development and purging/sampling activities with respect to the analytical results, revise the Annual Report to include all well development information for 520MW08.

3. **Section 4.2, Free Product Detection, Page 4-1:** Section 4.2 of the Annual Report states the Tow Way Fuel Farm (TWFF) gauging contractor has been notified to gauge and remove product in August 2008 and the text references Table 4-2, Summary of Free Product Removal – Site 520, for information regarding free product removed to date. Currently, Table 4-2 indicates no volume (i.e., a zero, 0, was entered in the table) was removed from well 520MW02, which measured free product thickness at 0.23 feet (ft). Table 7-2 indicates free product removal data are not available for wells 1995MW07 and 1995MW06, which measured free product thicknesses at 0.05 ft and 0.69 ft, respectively. The Annual Report does not discuss whether the TWFF gauging and product removal information for wells where free product is detected will be included in the respective groundwater reports. The relevant free product gauging and removal data is needed to gauge the progress towards groundwater restoration within a reasonable time frame. Revise the Annual Report to address this issue.

4. **Section 4.4, Analytical Results, Page 4-1:** The last paragraph in this section states Figure 4-9, Natural Attenuation Parameter Isopleths Site 520, depicts isopleth lines for dissolved iron, sulfate and methane at concentrations that indicate reducing geochemical conditions at Site 520. The text further states the dissolved oxygen (DO) data do not agree with the reduced conditions surrounding wells where petroleum compounds have been detected. The text further indicates the geochemical conditions as related to

biodegradation of fuel compounds are not fully understood. It is suggested that the Annual Report be revised to include the DO data in Figure 4-9 so all the geochemical data are illustrated, thus, aiding in the evaluation of the efficacy of MNA at Site 520.

5. **Section 6.1, Field Observations, Page 6-1:** The third paragraph in this section states one temporary well designated "TEMPORARY WELL" was installed to supplement the existing well network. The text further states that due to bedrock, the well was advanced to approximately 20 ft below the ground surface (bgs) and the well was dry. However, there is no further discussion presented in the Annual Report regarding the path forward for the "TEMPORARY WELL" at Site 1738. If the goal was to address a data gap in the monitoring well network, the installation of the "TEMPORARY WELL" failed to achieve this objective. Revise the Annual Report to discuss how this apparent data gap in the monitoring well network will be addressed.

6. **Section 7.2, Free Product Removal, Page 7-1:** This section discusses that free product was measured in wells 1955MW07 and 1995MW08 at 0.05 ft and 0.69 ft, respectively at Site 1995. The text further states that no free product removal was conducted this period. The Annual Report does not discuss if the TWFF gauging and free product removal contractor will also conduct these activities at Site 1995. The relevant free product gauging and removal data are needed to gauge the progress towards meeting target levels within a reasonable time frame. Revise the Annual Report to address this issue.

7. **Section 8.1, Analytical Requirements, Page 8-1:** The third bulleted item in this section recommends dropping PAHs from the sampling plan due to their low and decreasing concentrations at Site 735. The data appears to support this recommendation; however, it is suggested that wells be sampled for PAHs at least once every 5 years, in conjunction with the 5-year review, to ensure that no new releases have occurred.

8. **Table 1-1, Summary of MNA Quantitative Objectives Year 6 Annual:** The compound "Acenaphthene" is misspelled in the table as "Acemaphthene." Revise the table to correct the misspelling.

9. **Table 7-2, Comparison of DTW Measurements and Well Screen Intervals Site 1738 Year 6 Annual:** The table presents the comparison of depth to water (DTW) measurements and well screen intervals at Site 1995 and not Site 1738, as indicated in the title. Revise the table to correct this error.