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COMMONWEALTH OF PUERTO RICO
OFFICE OF THE GOVERNOR
ENVIRONMENTAL QUALITY BOARD

August 4, 2004

Mr. Adolph Everett
Chief, RCRA Program Branch
Environmental Protection Agency
Region 2
290 Broadway St.
New York, NY 10007-1866

Dear Mr. Everett:

The Puerto Rico Environmental Quality Board (PREQB) respectfully submits to the U.S. EPA the comments contained herein regarding the *"Draft Final Work Plan and Sampling and Analysis Plan, Soil and Groundwater Background Investigation, Former AFWTF, Vieques Island, Puerto Rico."*

If you have any questions or comments, do not hesitate to contact me at 787-365-8573.

Cordially,

Yarissa Martínez
Vieques and Culebra Affairs Coordinator

Cc/ Felix López, Fish & Wildlife Services
Christopher Penny, P.E. U.S Navy

Enclosure



EQB Technical Comments
Draft Final
Work Plan and Sampling and Analysis Plan
Soil and Groundwater Background Investigation
Former Atlantic Fleet Weapons Training Facility
Vieques Island, Puerto Rico
May, 2004

Introduction

The above-referenced document is a second revision of the September 6, 2001 *Draft Final Work Plan and Sampling and Analysis Plan, Soil and Groundwater Background Investigation* prepared by CH2M Hill. TRC provided comments on the 2001 work plan to Don Elliott and Desiree Giler on October 30, 2002. CH2M Hill revised and reissued the report in December 2003. Based on the review of the revised work plan, most of TRC's comments on the September 6, 2001 document were not addressed and additional deficiencies were identified. TRC issued comments regarding this revision to Yarissa Martinez on February 2, 2004. CH2M Hill revised the report again in May 2004. This time the report has been changed to largely address the identified deficiencies. Below are a few, new comments that should be incorporated into the Final version.

Specific Comments

- 1- ~~Page 2-2, Paragraph 1, Section 2.1~~ – Groundwater elevations higher than bedrock elevations may be an indication of confined or semi-confined conditions not just semi-confined conditions.
- 2- ~~Page 2-2, Paragraph 2, Section 2.1~~ – Discuss the hydrologic properties of the weathered bedrock not just the unweathered bedrock
- 3- ~~Page 2-2, Paragraph 3, Section 2.1~~ – The use of the term “water table” in association with a *confined* or semi-confined aquifer is confusing. Perhaps refer to the uppermost-saturated rock unit. Water table conditions refer to unconfined aquifers. The water table is the surface upon which the water pressure is equal to atmospheric pressure and a confined aquifer contains water at pressures greater than atmospheric pressure.
- 4- ~~Page 2-2, Paragraph 5~~ – Provide a table summarizing all contaminated sites to be investigated and the associated geologic zone(s). This paragraph identifies 8 sites, but 12 sites are identified in the consent order.
- 5- ~~Page 2-2, Paragraph 6~~ – State why the different soil types were not considered statistically different.
- 6- ~~Page 2-3, Paragraph 2~~ – Recent comments by PREQB on Navy investigation reports have noted that collecting soil samples from the top 6 inches of soil is not adequate for characterizing soil from 0 to 2 feet for the purpose of characterizing potential risks to children playing in soil or adults working in soils. Where PREQB has noted this potential deficiency, additional soil samples have been requested from 1 to 2 feet bgs. Consider adding background sample collection from this depth interval in the various geologic zones relevant to the site characterization work to ensure comparability between the site and background data sets.



- 7- Page 2-3, Paragraph 3, Section 2.2 – Provide the name of the firm that conducted the aerial photograph survey and the date of the report.
- 8- Page 2-3, Paragraph 6, Section 2.3 – The samples should be collected away from drainage trenches associated with the road runoff.
- 9- Page 2-4, Paragraph 2 –
 - a. Clarify that all groundwater sampling will be conducted consistent with Region II low stress (low flow) guidance.
 - b. Clarify that all groundwater sampling will include field parameters such as dissolved oxygen, oxidation reduction potential, conductivity, etc., consistent with low flow sampling procedures.
- 10- Page 2-4, Paragraph 3, Section 2.3.1
 - a. Only unfiltered groundwater samples are appropriate for risk assessment.
 - b. Provide information about whether the old groundwater data that will supplement the new data was collected from wells constructed, sampled and analyzed in a manner consistent, and of the same quality as the new data.
- 11- Page 2-5, Table 2-1 Consider collecting additional background samples from the Qa geologic unit, in addition to that collected to assess site specific background, to improve representativeness for this geologic unit. The Navy's claim the soil samples from the Qa, Qs, and KTd units are statistically similar notwithstanding, one groundwater sample from this unit cannot provide any sense of the variability in groundwater constituent concentrations associated with the Qa zone. SMWU-1 is located in geologic zones Kv and Qa; therefore, the Qa geologic zone is relevant to future remedial investigations at the site.
- 12- Page 2-5, Paragraph 1, Section 2.3.2
 - a. Clarify the discrepancy between the last sentence in the paragraph concerning 10 percent PAH sampling and the response to comments provided in Appendix C. The response contradicts the revised text on Page 2-5, Paragraph 1 of the May 2004 document, which states that 3 samples will be selected randomly.
 - b. If indications of non-natural contamination are identified in soil samples, then additional samples may need to be collected to develop representative background values.
 - c. EQB's concern relative to PAHs is still relevant for unpaved roads given the common practice of oiling dirt roads in some regions as a dust suppression measure.
- 13- Page 2-5, Paragraph 2, Section 2.3.2
 - a. The pH and total organic carbon content of background samples should also be determined to provide further information on the comparability of background soils to site soils. Collection of representative soil samples from impacted sites should be included in site-specific work plans to for this comparison.
 - b. Ensure that the soil sampling logs provide information about whether there were indications of foreign objects, odors, staining, stressed vegetation or any other indications that the site has been impacted.
 - c. Clarify that Munsell color includes hue, value and chroma.
- 14- Page 2-6, Paragraph 2, Section 2.3.2
 - a. Provide information about whether the old soil data, which will supplement the

Explain why?



new soil data, was collected from soil borings constructed (same depths), sampled and analyzed in a manner consistent, and of the same quality as the new data.

- OK
- b. Discuss how the results and quantitation limits of the existing soil background analytical results compare to the Region 9 Preliminary Remediation Goals (PRGs) used during Navy remedial investigations to compare results and establish COPCs. The analytical performance for the background soil samples should be consistent with that used for the remedial investigations to help ensure comparability between the site and background data sets.
 - c. The eleven 1999 soil samples should be recollected for those parameters with detection limits higher than PRGs or ecological screening criteria.

why

15- Page 2-6, Paragraph 6, Section 2.4.1

- a. Clarify how the site-specific up gradient well data will be incorporated into the background summary data.
- b. The site-specific background groundwater data should be compared to the regional background data to determine if site-specific background conditions are similar to regional background conditions prior to using all background data during site evaluations. The site-specific groundwater data is preferable to regional groundwater data.

TRC REPs
Need to have an understanding of why we are conducting a background investigation

No

16- Page 2-7, Paragraphs 1 through 3

- a. Comment on what range of pre-specified coverage and a range of pre-specified confidence levels would be met if the Qb and/or T1 soil types were found to be statistically different from the rest of the background database (i.e., if "n" were equal to 8 or 12). Clarify if a satisfactory basis for the calculation of tolerance and confidence limits will be established.
- b. As discussed in the Navy's Response to comments on Page 2-2, Section 2.1, Paragraph 6 (see Appendix C), if the Navy determines that the Qb and T1 soil type data sets are statistically dissimilar to the main background data set, they will be treated as separate data sets. If this determination is made, then the Qb and T1 soils will have only 12 and 8 soil samples (surface and subsurface), respectively, for use in calculation UCLs. Using the criteria discussed in the text, the number of soil samples might fall short of the minimum sample number requirement.

Need to

17- Page 2-8, Table 2-2 – Provide the sampled depth information for the existing surface soil samples.

18- Figures 2-2 and 2-3 – Provide the date that the groundwater elevations were measured and consider renaming the "groundwater surface" as "piezometric surface".

19- Figure 2-4 – Typographic Error. The word "background" is spelled incorrectly in the figure title.

20- Figure 2-5 – Typographic Error. The word "background" is spelled incorrectly in the figure title.

21- Page 3-2, Paragraph 2 – With regard to the goodness of fit tests, add information from the response to comments provide in Appendix C (e.g., Statistical evaluations will be conducted by a qualified and experienced statistician who is experienced in evaluating environmental data. Multiple test forms will be used along with the recommended histogram presentations prior to determining the distribution for the data set. It will be conducted in accordance with the existing guidance and other references for the statistical evaluations.)



- 22- Page 3-2, Paragraph 2, Section 3.1.3 - Since it is known how many samples will be collected, a more detailed discussion should be provided on how non-detect data will be evaluated. The example where one sample out of four is a non-detect does not seem applicable to the background study where 29 to 69 soil samples will comprise the datasets, as described in Section 2.4.2. This section should also include a discussion on how elevated detection limits will be addressed in the evaluation of non-detect data.
- 23- Page 3-3, Paragraph 4 - Strike the last sentence of this paragraph, which contradicts other sections of the document that are consistent with EPA guidance. Per EPA Region 2 policy, COPCs will not be eliminated if below established background levels. These COPCs will be carried through the full risk assessment process and background levels will be discussed after the risk assessment (see Page 1-2, Paragraph 2 of the revised document).
- 24- Page 3-3, Paragraph 2, Section 3.2.1- Cite the guidance that states that background concentrations should be used for screening purposes, as indicated in the first sentence of this paragraph. Also, cite the reference for the EPA guidance discussed in the second sentence of the paragraph.
- 25- Page 3-4, Section 3.2.1.2 - This paragraph indicates that the distributions of site data are compared against background to determine whether the site and background samples are drawn from the same sample population. PREQB looks forward to reviewing this distribution analysis in all draft investigation reports in addition to a comparison of point-estimate values.
- 26- Page 3-4, Section 3.2.1.3 - Typographic Error. Delete the word "of" in the last sentence of the paragraph to improve clarity.
- 27- Page 3-5, Section 3.2.1.5 - See previous comments regarding low flow sampling.
- 28- Page 3-5, Paragraph 1, Section 3.2.1.5
- a. It is unclear whether the authors are proposing to correlate trace elements with aluminum and iron concentrations.
 - b. Cite a reference for the correlation between trace element concentrations and aluminum and iron concentrations and the associated evaluation technique.
- 29- Figure 3-1 - Consider replacing "W test" in the third step in the flow chart with "goodness of fit tests" to be consistent with the response to comments in Appendix C, wherein the Navy indicates that multiple test forms will be used along with the recommended histogram presentations prior to determining the distribution for the data set.
- 30- Page 4-2, Paragraph 6 - Most of the site groundwater data collected for the Navy's environmental work will be used in Human Health Risk Assessments (HHRAs). EPA Region 3 guidance notwithstanding, EPA Region 2 has stated that unfiltered sample data should be used in HHRAs and that any large discrepancies between filtered and unfiltered data should be discussed in the uncertainty section of the HHRA. PREQB recognizes the utility of having both filtered and unfiltered metals data in the background database for comparison purposes and agrees with the consistent collection of both unfiltered and filtered metals data from the background well locations.
- 31- Pages 4-3 and 4-4, Tables 4-1 and 4-2: Clarification of the reply to USFWS Comment



No. 14 (see Comment No. 44 herein) affect the method numbers cited in Tables 4-1 and 4-2. If SVOC analysis will be performed, then the method listed in Table 4-1 will need to be changed to SW-846 3550B/8270C. If PAH analysis will be used, TRC recommends that SW-846 8270C also be used in lieu of SW-846 method 8310, which is currently cited. The potential for false positive results is higher with SW-846 method 8310 versus SW-846 method 8270C. If lower reporting limits are needed, the use of selective ion monitoring with method SW-846 8270C could always be performed.

Challenge
Chis

- 32- Page 4-3, Table 4-1 Have the perchlorate analysis conducted by a laboratory that can achieve the lowest detection limit. The risk-based screening criterion for perchlorate is 3.6 ug/L.
- 33- Page 4-4, Table 4-2
- The extraction method currently cited for SVOCs in soil samples is for aqueous samples and must be changed to a solid extraction method (SW-846 method 3550B).
 - The table must include the appropriate method, bottles, preservative, and holding time for perchlorate in soil samples.
 - The number of containers for explosives in groundwater samples should be increased to two. This is an extractable organic method and therefore requires two bottles in case of breakages or if re-extractions are required.
 - Soil total organic carbon analysis using the Lloyd Kahn method should be added to the table. Include soil pH as well.
- 34- Page 4-5, Paragraph 3 – Note that minimal drawdown criteria must also be achieved to be consistent with low stress (low flow) guidance.
- 35- Page 4-5, Paragraph 5, Section 4.1.4 – The z-coordinate should be listed for soil samples as well as groundwater if the GPS unit is capable of estimating the vertical elevation.
- 36- Appendix C, Page 6, Response to EPA Comment No. 8 - The response to EPA Comment No. 8 indicates that the method used for the analysis of thallium was accepted by EPA and used during the Phase I RFI. However, the detection limits achieved for thallium in groundwater during the Phase I RFI were about 10x higher than the Region IX PRG-Tap Water. Therefore, the EPA's comment has still not been addressed.
- 37- Appendix C, Page 9, Response to PREQB Comment No. 2 - EQB's concern relative to PAHs is still relevant given the common practice of oiling dirt roads in some regions as a dust suppression measure. Also, the response contradicts the revised text on Page 2-5, Paragraph 1 of the May 2004 document, which states that 3 samples will be selected randomly.
- 38- Appendix C, Page 9, Response to PREQB Comment No. 3 - Although background data is not screened against risk-based criteria, the detection limits should be within the range of risk-based levels. Non-detect background data above risk-based levels should not be compared to site data for those chemicals that show elevated risks. Elevated detection limits do not provide data sufficient to eliminate chemicals from cleanup that show an elevated risk at a site. EQB's goal is for the background and site data to be collected to a similar level of analytical performance to maximize comparability between the site and background data sets.
- 39- Appendix C, Page 10, Response to PREQB Comment No. 5 - Additional physico-chemical properties of background and site soils that should be determined include total organic carbon and pH.



40- Appendix C, Page 11, Response to PREGB Comment No. 6

- a. The response adequately addresses the issue of sample size estimation. However, as an additional measure it might be worthwhile to use the results of the 29 surface soil and 29 subsurface soil samples to generate a pre-specified variance. The pre-specified variance can then be used to calculate the number of additional surface and/or subsurface samples required (if any).
- b. Clarify the importance of assuming that the samples are collected within an area of relatively homogeneous contamination. The discussion should include how this assumption impacts the statistical evaluation being conducted.
- c. Comment on what range of pre-specified coverage and a range of pre-specified confidence levels would be met if the Qb and/or T1 soil types were found to be statistically different from the rest of the background database (i.e., if "n" were equal to 8 or 12). Clarify if a satisfactory basis for the calculation of tolerance and confidence limits will be established.

41- Appendix C, Page 18, Response to PREQB Comment No. 21 – PREQB recognizes the utility of having both filtered and unfiltered metals data in the background database for comparison purposes and agrees with the consistent collection of both unfiltered and filtered metals data from the background well locations. However, EPA Region 3 guidance notwithstanding, EPA Region 2 has stated that unfiltered sample data should be used in HHRA's and that large discrepancies between filtered and unfiltered data should be discussed in the uncertainty section of the HHRA.

42- Appendix C, Page 29, Response to USEWS Comment No. 6 – USEWS Comment No. 6 is consistent with EQB's concern over the use of generic depths for characterization of surface and subsurface soil contamination. Specifically, PREQB is concerned with only collecting surface soil samples from 0 to 6 inches as representative of surface soils defined as 0 to 2 feet below grade for the purpose of evaluating future residential exposure. EQB believes the depth of the surface soil sample should be based on where contamination is likely to occur based on that particular site's history rather than selecting generic sample depths to be used at all sites. Historic releases of volatiles will not be detected in the top 6 inches nor will historic releases be detected in shallow surface soil where surface grading has occurred. Background samples should be collected from depth zones consistent with what is needed to effectively characterize soil contamination at the SWMUs and AOCs.

True

43- Appendix C, Page 32, Response to USEWS Comment No. 14 - The response to the USEWS Comment No. 14 states that 10 percent of the soil samples will be analyzed for semi volatile organic compounds (SVOCs) and not just polynuclear aromatic hydrocarbons (PAHs). However, there are some discrepancies in the report which do not reflect this response. First, Section 2.3.2 states that 10 percent of the surface soil samples will be analyzed only for PAHs (not SVOCs). Second, Table 4-1 lists only PAH analyses in soil samples, not SVOC analysis. Table 4-2 is the only location where SVOC analysis is designated for soil samples. The analysis of SVOCs versus PAHs only must be clearly presented in the entire document.