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**Response to Comments by  
Regulatory Agencies on the  
Draft  
Groundwater Baseline Investigation**

**Former Atlantic Fleet Weapons Training Facility  
Vieques Island, Puerto Rico**



Prepared for  
**Department of the Navy**  
**NAVFAC ATLANTIC**

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EPA REGION 2 TECHNICAL REVIEW OF THE DRAFT GROUNDWATER BASELINE INVESTIGATION AT U.S. NAVY'S EASTERN MANEUVER AREA REPORT, VIEQUES ISLAND, PUERTO RICO DATED JUNE 2004

GENERAL COMMENTS

RCRA Programs Branch Comment # 1

The second objective of the Consent Order was to "investigate the groundwater flow patterns along the western perimeter" of the Eastern Maneuver Area. According to Section 2.2.3.2: 2004 Groundwater Baseline Investigation Sampling, the depth to groundwater was measured, as specified in the September 2001 Final Work Plan for Groundwater Baseline Investigation, Section 2.2.1. However, the only groundwater level data presented as a groundwater contour map (Figure 3-4) in the Groundwater Baseline Investigation report is from the "Round 1" sampling event in 1999. Any additional groundwater level data collected during "Round 2" should be presented in tables and figures, analyzed, and discussed in this report, as this will aid in achieving the stated Consent Order objective.

During future field activities, it will be important to collect additional groundwater data, particularly for the unconsolidated overburden. Considering that the 1999 data, according to Section 3.2: Assessment of Groundwater Flow Conditions, differed from the 1989 Torres-Gonzalez data, additional data will be needed if flow direction is to be accurately assessed.

Navy Response:

The depth to groundwater was obtained from monitoring wells prior to the groundwater sampling event in February 2004, as stated in the Final Work Plan for the Groundwater Baseline Investigation, Section 2.2.1, *Groundwater Sampling Procedure*. Only four monitoring wells (RCRA-1, 2, 3, and 4) were required by the Work Plan to be monitored for water levels and sampled. The depth to water for these wells is shown in Appendix D of the Phase I RFI report. To provide a more comprehensive assessment of the groundwater flow data, the water level data from the Hydrogeologic Investigation (completed in 1999) were evaluated.

Note: The Consent Order states "The groundwater baseline work plan shall be designed to establish baseline groundwater quality, regional groundwater flow patterns along the western perimeter of the Navy's Facility, and to ..." The August 26, 1999, groundwater data established the baseline regional groundwater flow pattern along the western perimeter.

A table (Table 2-2B) will be added that shows the February 2004 water level data with groundwater elevations and will be discussed in Section 3.2. This table is presented in Attachment C. Because a round of water level measurements was not required from all 19 wells/piezometers during the 2004 sampling event, a figure would not be beneficial for interpreting the regional groundwater flow pattern.

**RCRA Programs Branch (Enclosure 1) Comment**

The comment has been adequately addressed. No additional response is necessary at this time. Please note, however, that Table 2-B was missing from the Response document. Please include the above information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses.

**Navy's Second Response:**

**Table 2-2B is included in the Draft Final Groundwater Baseline Investigation Report, along with pertinent portions of the above discussion in Section 3.2.**

**RCRA Programs Branch Comment # 2**

Appendix G of the report includes what appears to be summary data of the RCRA well sampling results. In addition to the summary tables, provide copies of the original analytical data reports provided by the laboratory. These documents should be provided for review purposes.

**Navy Response:**

**Appendix IX Analytical Data Summary Tables from RCRA-1, 2, 3, and 4, along with a CD of the original analytical data reports, will be provided in the revised RFI Report.**

**RCRA Programs Branch (Enclosure 1) Comment**

Please include the above information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses.

**Navy's Second Response**

**The above information is included in the Draft Final Groundwater Baseline Investigation Report, as stated in the original Navy Response.**

**SPECIFIC COMMENTS**

**RCRA Programs Branch Comment # 1**

Figure 1-3, Monitoring Well and Piezometer Locations: The depth to groundwater at each well is provided in this figure, but it is unclear when this information was collected. Provide clarification on the figure or in the text as to when the depth to groundwater was determined. Provide a legend on the figure to indicate the topographic contour interval, and what the circumscribed numbers represent.

**Navy Response:**

**The depth to water column listed on Figure 1-3 will be deleted from the figure. A legend will be created which includes topographic contour intervals and what the circumscribed numbers (roads) represent. This modified Figure 1-3 is presented in Attachment D.**

**RCRA Programs Branch (Enclosure 1) Comment**

Please include the above information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses.

**Navy's Second Response**

The above information is included in the Draft Final Groundwater Baseline Investigation Report, as stated in the original *Navy* Response.

**RCRA Programs Branch Comment # 2**

Section 2.1, Sample Locations: Section 2.1 describes the field activities that took place at the AFWTF during the 1999 Hydrogeologic Investigation and it indicates that monitoring wells were installed at 11 locations. The September 2001 Groundwater Baseline Work Plan, Section 1.1.2: Previous Investigations, indicates that these 11 wells were sampled for explosives and metals. The data from these 11 wells is not presented or discussed in the text of the Draft Groundwater Baseline Investigation. The data and discussion would be useful in the Draft Groundwater Baseline Investigation for providing a broader picture of groundwater quality in the study area. Please revise the Draft Groundwater Baseline Investigation to include the sampling data from the 1999 Hydrogeologic Investigation, and any other appropriate sampling events, and a discussion of the results.

**Navy Response:**

An Analytical Summary Table of Explosive Compounds and Metals Data from the August 1999 sampling event and the February 2004 sampling event will be added to an Appendix in the Revised Groundwater Baseline Investigation Report. In addition, text summarizing the results will be added to the revised report.

**RCRA Programs Branch (Enclosure 1) Comment**

Please include the above information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses.

**Navy's Second Response**

The above information is included in the Draft Final Groundwater Baseline Investigation Report, as stated in the original *Navy* Response.

**RCRA Programs Branch Comment # 3**

Section 2.2.3.2, 2004 Groundwater Baseline investigation Sampling: The September 2001 Final Work Plan for Groundwater Baseline Investigation indicates that groundwater sampling will be conducted following EPA's "Low-Flow" guidance. Section V of the guidance states that drawdown during pumping should be kept to 0.3 feet or less. However, according to the groundwater sampling data sheet in Appendix D of the report, drawdown occurred which was significantly greater than 0.3 feet during sampling. Provide a discussion of the reason for deviation from the low-flow sampling procedures and how this may have affected sampling results.

*Navy Response:*

As presented in *Appendix D, Groundwater Sampling Data Sheets for RCRA-1, 2, 3, and 4*, only one well has purging drawdown greater than 0.3 ft. The well purging information is provided below:

RCRA-1 static water level at 47.48 ft bls, purging water level was 47.50 ft bls (drawdown= 0.02 ft);

RCRA-2 static water level at 36.40 ft bls, no drawdown;

RCRA-3 static water level at 56.95 ft bls, purging water level was 57.22 ft bls (drawdown= 0.27 ft);

RCRA-4 static water level at 38.62 ft bls, purging water level was 41.00 ft bls (drawdown= 2.38 ft). RCRA-4 was purged and sampled at a higher flow rate than specified in the low flow sampling procedures. The groundwater sample data are valid based on the consistency of the temporal field parameters collected during purging: pH within 0.04, conductivity within 0.002%, and DO within 0.07%. In addition, more than three casing volumes were purged from the well, and turbidity was comparable to the turbidity measurements of the other three wells, which were all low. Therefore, the groundwater sample collected from well RCRA-4 is representative of ambient formation groundwater conditions.

**RCRA Programs Branch (Enclosure 1) Comment**

Indicate why a higher flow rate was used for purging and sampling at RCRA-4. Also specify how a similar issue will be avoided in the future. If for some reason it is not possible to conduct low-flow sampling at this location, please specify and indicate the reason for this. Please include the above information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses.

*Navy's Second Response*

A higher flow rate was used during the purging and sampling of the four RCRA wells because the field staff was unable to turn the flow down on the Whale pump due to the type of valve used on the effluent end of the TFE tubing. Three of the four wells had a sufficient specific capacity to accommodate the higher flow rate without drawdown, but the specific capacity in monitoring well RCRA 4 was lower than the other three wells which resulted in an increased drawdown.

The information listed in the original Navy response above on monitoring well RCRA-4 is included in the Section 2.2.3.2 of the Draft Final Groundwater Baseline Report.

**RCRA Programs Branch Comment # 4**

Section 3, Summary of Investigation Results, Table 3-1, Groundwater Analytical Data Detection Summary and Appendix G, Analytical Data Summary: Appendix G indicates that cyanide was detected in sample. However, these results are not included in Table 3-1. Revise Table 3-1 and the report text to include this information.

*Navy Response:*

Cyanide was non-detect in the normal sample and detected at a concentration of 6.59 µg/L in the field duplicate. Table 3-1 only presents the detections in the normal samples. All analytical results are provided in Appendix G. The field duplicates are typically used for monitoring precision in sampling procedures and not for characterization.

**RCRA Programs Branch(Enclosure 1) Comment**

Please include the above information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses.

*Navy's Second Response*

Section 3.3, first paragraph, second sentence has been edited to read: "Table 3-1 presents detected concentrations of parent (normal) samples and the duplicate sample from the RCRA wells for 1999 and 2004 analytical data that were above the PRG screening criteria."

Fourth sentence has been edited to read: "The complete set of analytical data for the RCRA wells is included in Appendix G."

**RCRA Programs Branch Comment # 5**

Figure 3-4, Groundwater Contour Map: The area of blue and red lines and text shown on this figure, located south of the Camp García area, is illegible due to the small size. Please provide a detail of this area either on Figure 3-4 or as a separate figure. Also provide a description in the legend of the areas outlined in green shown on this figure.

*Navy Response:*

Figure 3-4 will be revised so that data are more legible and the legend will include a description of the green areas (conservation areas). This modified Figure 3-4 is presented in Attachment D.

**RCRA Programs Branch (Enclosure 1) Comment**

Please include the above information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses.

*Navy's Second Response*

The revised Figure 3-4 is included in the Draft Final Groundwater Baseline Report, as stated in the original *Navy Response*.

**RCRA Programs Branch Comment # 6**

Section 4, Summary and Conclusions: This section states that the bedrock groundwater flow is "not likely to flow from the former Navy property to the west," and that VOC contamination reported in the laboratory results is likely due to laboratory cross contamination. However, these contaminants were also detected in the split samples

analyzed by EPA. Therefore, these contaminants may actually be present in groundwater. This should be confirmed, as stated in the text.

*Navy Response:*

Currently, the Navy does not have all the information concerning the results of the split samples collected by the EPA. If all split sample data collected by Tech Law-designated laboratories (Pace Analytical and GPL), and the EPA DESA laboratory and all data validation information are sent to the Navy for review, these data can be evaluated for QA/QC procedures used. If the data reviewed are found to be valid and usable then the above mentioned information will be incorporated into the Groundwater Baseline Investigation Report.

**RCRA Programs Branch (Enclosure 1) Comment**

Please include the above information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses.

*Navy's Second Response*

A new paragraph has been added to the end of Section 2.2.3.2 that states: "Split samples were collected by PREQB and EPA during the groundwater baseline sampling event. RCRA-1 samples were split with PREQB and RCRA-2, 3, and 4 samples were split with EPA. Currently, the Navy does not have information concerning the results of the split samples collected. If all split sample data collected by Tech Law-designated laboratories (Pace Analytical and GPL), and the EPA DESA laboratory, and all data validation information is sent to the Navy for review, these data can be evaluated for QA/QC procedures used."

Additionally both VOC compounds bromodichloromethane and chloroform are common disinfection byproducts from municipal water treatment with chlorine as stated in Section 4. There is no known water treatment type Navy activity in the area of RCRA-3. Monitoring well RCRA-3, which had concentrations of these two chemicals is located just east and downgradient of a residential area, which is supplied by municipal water. This information has been added to the end of Section 3.3.1.2 and to Section 4 of the Draft Final Groundwater Baseline Report.

The Navy requests that PREQB and EPA submit a QA/QC summary report for the split samples collected during the groundwater baseline sampling event. These findings would be beneficial for inclusion in the Final Baseline Groundwater Investigation Report.

**RCRA Programs Branch Comment # 7**

Section 4, Summary and Conclusions: The last sentence of the fourth paragraph indicates that the conclusions drawn here will be verified in future investigations. Provide additional detail (i.e., what, when, where) and discussion of the future work that is expected to take place.

*Navy Response:*

The future investigation referred to is the Soil and Groundwater Background Investigation that is being proposed. That investigation will be conducted across the eastern portion of Vieques. A work plan of the Background Investigation has been previously submitted to EPA for review. The technical approach for the investigation is currently under review by EPA and EQB.

The last sentence of Section 4, paragraph 4 will be edited to read: "However, this conclusion will be verified during the Background Investigation on the former AFWTF."

RCRA Programs Branch (Enclosure 1) Comment

Please include the above information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses.

*Navy's Second Response*

Because the Background Investigation approach has been revised to comprise only soil sampling, the last sentence of the fourth paragraph in Section 4 has been replaced with the following:

"Site-specific background groundwater data may be collected during future investigations of various SWMUs/AOCs. Comparison of these background data with the baseline groundwater data may help verify this conclusion."

This same text will replace the fifth, sixth, and seventh sentences of Section 3.3.1.1.

RCRA Programs Branch Comment # 8

Appendix A, Test Boring and Well Construction Records: The Test Boring and Well Construction Records are provided for some wells at the AFWTF site, but not all of the wells. Some test boring and well construction data have not been provided due to an "insufficient data set" (e.g., RCRA-2, NW-1, NW-6, P-1, P-6, P-7). Provide an explanation in the text as to why there were sufficient data for some wells but not others.

*Navy Response:*

These test boring and well construction records were completed during the 1999 Hydrogeologic Investigation by a drilling company licensed within the Commonwealth of Puerto Rico. Some of the logs may have been incomplete because the wells were installed using air rotary drilling techniques where continuous bedrock samples were not required to be collected. The primary purpose of the wells was to collect groundwater analytical data.

RCRA Programs Branch (Enclosure 1) Comment

Please include, and expand on, this information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses. Also, please indicate specifically which wells were installed using air rotary techniques. Also, the above response states that the logs "may" be incomplete because of the installation

technique. Clearly indicate any other reasons, if any, for why the logs would be incomplete.

#### Navy's Second Response

Section 3.2, third paragraph has been expanded to include: "Appendix A contains lithologic logs for the monitoring well and piezometer borings. Six of the logs (RCRA-2, NW-1, NW-6, P-1, P-6, and P-7) were not completed by the field staff (Baker Environmental, ERTEC Drilling, and CH2M HILL) during the drilling event and are listed as "Insufficient Data Set" in Appendix A. Field notes are included Appendix A for three of these borings (i.e., NW-1, P-6, and P-7). However, no drilling field notes are available for the RCRA-2, NW-6, and P-1 borings. Borings for RCRA-4, NW-8, P-8, and P-9 were drilled using the hollow stem auger drilling method only. Borings for RCRA-1, NW-3, NW-4, P-2, and P-3 were drilled with the air rotary drilling method only. Borings for RCRA-3, NW-5, NW-6, and P-5 were drilled using both hollow stem augers and air rotary drilling methods. Borings for RCRA-2, NW-1, NW-6, P-1, P-6, and P-7 did not have enough data available to determine what drilling method was used."

It is important to note that the objectives of the studies during which these wells/piezometers were installed were to assess the groundwater quality and flow conditions, not characterize the lithology. Further, the wells were not installed as part of the RFI; their installation was conducted as part of Navy support for the Department of Justice.

#### RCRA Programs Branch Comment # 9

Appendix A, Test Boring and Well Construction Records: The Test Boring and Well Construction Records do not include information regarding the depth at which groundwater was first encountered at certain wells (e.g., RCRA-1, NW-4, NW-7, P-2, P 3, P-5). Revise the Test Boring and Well Construction Records to include this information if it is available.

#### Navy Response:

These test boring and well construction records were completed as part of the 1999 Hydrogeologic Investigation. Copies of the records are not available. However, the wells were installed to collect groundwater samples from the first encountered groundwater.

#### RCRA Programs Branch (Enclosure 1) Comment

Please include the above information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses.

#### Navy's Second Response

The following paragraph has been added after the above response to Comment # 8 in Section 3.2:

"The top of the screened interval of the monitoring wells and piezometers were installed above the first encountered groundwater that was detected during drilling. Although this depth was determined during drilling, it was not documented on all the boring logs."

### RCRA Programs Branch Comment # 10

Appendix E, Data Quality Evaluation, Page 5, Laboratory Method Accuracy: The fourth sentence indicates that 14 records were rejected. However, the paragraph goes on to describe a total of 16 rejected data points. The last sentence of this paragraph indicates that "5.4% (14/260)" of the total sample measurements were rejected. However, this percentage is based on 14 rejected sample results, instead of 16 rejected sample results. Correct the reference to indicate 16 rejected data points and change "5.4% (14/260)" to "6.2% (16/260)" to accurately reflect the total number of rejected samples.

#### Navy Response:

A review of the DQE queries indicates that 14 records were rejected in two analytical fractions, pesticide and semi-volatile. The rejected data were attributed to blank spike recoveries outside criteria. The rejected data represent 5.4% of the total sample measurement.

A review of the 3<sup>rd</sup> party data validation results as "percent completeness" by method and matrix reveals that all project DQOs and completeness goals were not only met but exceeded. The completeness statistics indicate that the Navy CLEAN BOA-approved laboratory provided excellent analytical services to the project team and our client.

### RCRA Programs Branch (Enclosure 1) Comment

The text in Appendix E, Data Quality Evaluation, states that toxaphene was rejected in one field sample, and three semi-volatile compounds were rejected in four field samples and one field duplicate. This adds up to 16 total rejected records [ $1+(3 \times 4)+3=16$ ]. However, the text states that this totals 14 rejected records. (If the field duplicate sample is excluded, the total should be 13 rejected records.) Furthermore, based on the "Final Conc Qual" column of Exhibit 5, it appears that 4-nitroquinoline-n-oxide; acetonitrile; 1,4-dioxane (p-dioxane); and isobutanol were also rejected in these same five samples (RCRA-1GW-R01; RCRA-2GW-R01; RCRA-3GW-R01; RCRA-4GW-R01; and RCRAFD01P-R01). Please revise the text to correct this discrepancy, or provide additional information regarding how the number of rejected records was determined. Please include the information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses.

#### Navy's Second Response

The Section labeled Laboratory Method Accuracy in the Appendix E DQE was edited to read:

"Laboratory control samples (LCSs) or blank spikes (BSs) are quality control samples utilized to monitor laboratory method performance. These samples consist of deionized (DI) laboratory water spiked with the target compounds of interest. Exhibit 8 presents the LCS accuracy and LCSD precision statistics. Exhibit 5 indicates that a total of 16 records were qualified as rejected. A single organochlorine pesticide (toxaphene) result and 15 semi-volatile records were rejected. The semi-volatile data show that three analytes, isosafrole, alpha, alpha-Dimethylphenethylamine, and 1,4-Naphthoquinone, were

qualified as rejected in 5 field samples. The rejected data attributed to blank spike recoveries outside criteria represent 1.5 % (16/1067) of the total sample measurements."

The Section of the DQE TM entitled "PARCCs" discusses the data usability.

#### **RCRA Programs Branch Comment # 11**

Appendix E, Data Quality Evaluation, Page 6, Completeness: Completeness is the percentage of valid measurements out of the total number of measurements made. In the second sentence, change "(34/1067)" to "(1031/1067)." The percent completeness (97%) is still correct.

#### **Navy Response:**

The completeness ratio will be changed from (34/1067) to (1031/1067) while maintaining the percent completeness at 97%.

#### **RCRA Programs Branch (Enclosure 1) Comment**

Please include the above information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses.

#### **Navy's Second Response**

The text has been changed from (34/1067) to (1031/1067) in Appendix E of the Draft Final Groundwater Baseline Investigation Report, as stated in the original Navy Response.

#### **ERRATA Comment # 1**

Appendix E, Data Quality Evaluation, Exhibit 5 - Change in Data Qualification by Validation: The first three rows on Page 1 of 6 are repeated as the first three rows on all the remaining pages. Please correct this formatting error.

#### **Navy Response:**

The first three rows on Page 1 of 6 repeat as part of a formatting error and will be corrected.

#### **ERRATA (Enclosure 1) Comment**

Please include the above information in the revised Groundwater Baseline Investigation Report, to be submitted to include the information in your Responses.

#### **Navy's Second Response**

The repeat of the first three rows on Page 1 of 6 has been corrected in the Draft Final Groundwater Baseline Report, as stated in the original Navy Response.

**CERCLA COMMENTS ATLANTIC FLEET WEAPONS TRAINING FACILITY  
GROUNDWATER BASELINE INVESTIGATION AT THE U.S. EASTERN MANEUVER  
AREA, VIEQUES, PUERTO RICO**

**GENERAL COMMENTS**

**EPA CERCLA Comment # 1**

Our understanding of this document is that it was developed in order to determine if four sentinel monitoring wells on the western boundary of the Eastern Maneuver Area have been impacted by site activities. The timing of this document is somewhat confusing, as these four sentinel monitoring wells, RCRA-1, RCRA-2, RCRA-3, and RCRA-4, are also identified in the draft final Work Plan and Sampling and Analysis Plan for Soil and Groundwater Background Investigation (May 19, 2004); this implies that these wells have already been evaluated and found to be unimpacted by site contamination. Please clarify the intent of the two documents and how these four sentinel monitoring wells can be identified for both purposes.

**Navy Response:**

The intent/objective of the Groundwater Baseline Investigation Report as stated in *Section 1, Introduction*, is to characterize the quality of groundwater and provide a preliminary assessment of whether contaminants are migrating through the groundwater from the former Naval facility. The objective of the Background Investigation is to estimate the range of inorganic constituent concentrations that are present in the facility-wide background conditions for the media investigated.

**EPA CERCLA (Enclosure 1) Comment**

The comment has been adequately addressed.

**Additional CERCLA Comments from Enclosure 3**

The comment response is confusing. The same four wells are included in both investigations. The Groundwater Baseline Investigation is using these four wells to determine if contaminants are migrating from the former naval facility. The Background Investigation is using these 4 wells to establish the range of inorganics under background conditions. If the wells have been impacted by migrating contamination, how can they be used in the database to establish background conditions? The response does not address the concerns raised about the four wells.

**Navy's Second Response:**

The Background Investigation scope has changed. Groundwater will not be evaluated in the Background Investigation. The four monitoring wells along the western perimeter will be used only for the Groundwater Baseline Investigation. However, the data from these wells suggest their inorganic concentrations are likely representative of background conditions.

### EPA CERCLA Comment # 2

When providing groundwater sampling results, a table should always be included that summarizes field parameters in the wells just before sampling. As there were only 4 wells sampled in the present case, the data was reviewed in the appendix. In the future, please include such a table to facilitate review of the data.

#### *Navy Response:*

The groundwater sampling data sheets are provided in Appendix D of the report with all of the field parameters collected prior to sampling. A table will be added to *Section 2.2.3.2, 2004 Groundwater Baseline Investigation Sampling*, listing the final parameters. Turbidity will be discussed with respect to filtered versus unfiltered samples. The new Table 2-1 is presented in Attachment C.

### EPA CERCLA (Enclosure 1) Comment

The comment has been adequately addressed.

#### *Navy's Second Response:*

The original Navy Response indicates that turbidity will be discussed with respect to filtered versus unfiltered samples. However, the 1999 Hydrogeologic Investigation Report indicates the turbidity meter was not functioning properly during sampling for total and dissolved metals (Baker, 1999). Further, the total and dissolved metals data (Table 3-1) do not suggest the need for interpretation with respect to turbidity measurements.

### EPA CERCLA Comment # 3

The first step in performing a DQE should be to review the project's Data Quality Objectives (DQOs) and the sampling design. The DQOs provide the context for understanding the purpose of the data collection effort and establish the qualitative and quantitative criteria for assessing the quality of the data set for the intended use. The sampling design provides important information about how to interpret the data. EPA Guidance (provided by EPA QA/G-9, Guidance for Data Quality Assessment available at <http://www.epa.gov/quality1/qs-docs/g9-final.pdf>), specifies that the quality of the data should be evaluated based upon its intended use. The DQE should describe the process used to accomplish this.

#### *Navy Response:*

Qualitative and quantitative criteria are established by the analytical methods and evaluated by Region II data validation guidelines. The measurement of data quality generated is evaluated by examination of precision, accuracy, representativeness, completeness, and comparability within the scope of the specific project objectives.

### EPA CERCLA (Enclosure 1) Comment

The comment has been adequately addressed.

#### **EPA CERCLA Comment # 4**

The DQE, as described by these Appendices, did not attempt to quantify the decision error attained by the collected data. In order to be able to draw conclusions from the data, it is necessary to quantify the error and determine whether the sampling design accomplished the required confidence level.

#### **Navy Response:**

The sampling was not based on statistical design; it was intended to collect samples at locations where contamination was most likely to be identified.

#### **EPA CERCLA (Enclosure 1) Comment**

The comment has been adequately addressed.

#### **EPA CERCLA Comment # 5**

Although this DQE does perform a thorough analysis of the quality of the specific data points it does so without addressing the overall trends presented by the results and its relationship with the project goals. Data QA/QC is only one of the aspects of determining whether the data collection and analysis process for this project attained the project goals. Please refer to the EPA QA/G-9 document cited above for guidance.

#### **Navy Response:**

The use of data trend plotting and other means to translate analytical data into a statistical model was not the approach agreed to with the regulators.

#### **EPA CERCLA (Enclosure 1) Comment**

The comment has been adequately addressed.

### **SPECIFIC COMMENTS:**

#### **EPA CERCLA Comment # 6**

Section 1.2, Summary of Previous Investigations, page 1-2: The report indicates that 11 groundwater monitoring wells were installed at the property line such that groundwater samples could be obtained for laboratory analysis and that eight piezometers were used to collect groundwater elevation measurements to assess groundwater flow direction. Further, the report notes that in addition to sampling the 11 wells (including the four RCRA wells) along the western property boundary for explosive-derived compounds, the Navy also sampled the wells for metals. The Groundwater Baseline Investigation Report only includes the data from the four RCRA wells (as noted in the Introduction, page 1-1) and indicates that only water elevation measurements were obtained from the remaining eight monitoring wells. This contradiction needs to be corrected. If there are additional groundwater data available then they should be made available. Of special

interest to the BTAG would be any groundwater chemistry data from NW-1 (the monitoring well located in closest proximity to the north coast of the island) and from NW-7/NW-8 (the monitoring wells located in closest proximity to the south end of the island).

**Navy Response:**

As stated in the second paragraph of Section 1.2, page 1-2 of the Groundwater Baseline Investigation Report, and Section 1.1.2, page 1-3 of the Groundwater Baseline Investigation Work Plan, all of the groundwater quality data from 11 well samples collected in 1999 are presented in a report titled *The Results of the Hydrogeologic Investigation, Vieques Island, Puerto Rico* (Baker, 2000) which was presented to EPA on March 16, 2000. The 1999 data from the RCRA wells were presented in the Groundwater Baseline Investigation Report for comparison to the groundwater samples collected from the RCRA wells in 2004. Table 3-1 has been reformatted for clarification. This updated table is presented in Attachment C.

**EPA CERCLA (Enclosure 1) Comment**

The comment has been adequately addressed.

**Additional CERCLA Comments from Enclosure 3**

It is still not clear whether the groundwater "quality" data includes contaminant data especially from MW-1 (located closest to the northern part of the coastline) or MW-7 (located closest to the southern part of the coastline). Also the Navy noted that Table 3-1 has been updated for clarification but this table still only includes data from the 4 RCRA wells.

**Navy's Second Response:**

An Analytical Summary Table of Explosive Compounds and Metals Data from the August 1999 sampling event has been added to Appendix H in the Draft Final Groundwater Baseline Investigation Report. In addition, text summarizing the results has been added to Section 3.3 of the Draft Final Report. The data are included in Appendix H for informational purposes only. The scope of work for the Groundwater Baseline Investigation only included the sampling and evaluation of the four RCRA wells. These additional laboratory data (ie. NW wells) were collected under a different scope of work with different objectives by a previous investigator and are included in a different report (Baker, 1999).

**EPA CERCLA Comment # 7**

Section 2, Field Investigation Activities, page 2-1: In the second paragraph on this page, the text states that the monitoring wells were analyzed for the Appendix IX metals. This list is a typical list used by RCRA, and contains the following 17 metals: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, thallium, tin, vanadium, and zinc. CERCLA typically uses the TAL list for metals, which includes the Appendix IX metals plus aluminum, calcium, iron, magnesium, manganese, potassium, and sodium. It is suggested that the list of metals be

expanded to include the additional 6 metals that would be included on the TAL list. This will be helpful if this area of Vieques Island is evaluated in the future under CERCLA.

**Navy Response:**

**Future sampling efforts will include an analysis for the TAL inorganics.**

**EPA CERCLA (Enclosure 1) Comment**

The comment has been adequately addressed.

**Additional CERCLA Comments from Enclosure 3**

EPA agrees with the response.

**EPA CERCLA Comment # 8**

Section 3.3.1.2, VOCs, page 3-3: The discussion of VOCs is incomplete. The text simply discounts the few exceedences of risk-based concentrations by stating that their presence "...could be from laboratory cross-contamination." Since laboratory cross-contamination would also likely impact the results of the other three sentinel monitoring wells or analytical blanks, and this was not found to be the case, it is suggested that an additional sample be collected from RCRA-3 to confirm that the detections of bromodichloromethane and chloroform are anomalous.

**Navy Response:**

**A data quality evaluation summary will be included to determine if these chlorination by-products are present in any of the QA/QC samples, and if the levels are above any screening criteria.**

**EPA CERCLA (Enclosure 1) Comment**

The comment has been adequately addressed.

**Additional CERCLA Comments from Enclosure 3**

EPA agrees with the response and will review the revised text in the next draft.

**Navy's Second Response**

**Both bromodichloromethane and chloroform are common disinfection byproducts from municipal water treatment with chlorine as stated in Section 3.3.1.2 and Section 4. There is no water treatment activity by the Navy in the area of RCRA-3. Monitoring well RCRA-3, which contained these two VOCs, is located just east and downgradient of residential area, which is supplied by municipal water.**

**The above information has been added to Section 3.3.1.2 and Section 4 of the Draft Final Groundwater Baseline Report.**

#### **EPA CERCLA Comment # 9**

Table 3-1: Some of the cells in this table are blank, such as the RCRA-3 results for dissolved vanadium, and total and dissolved zinc. Please clarify why these cells are blank.

#### **Navy Response:**

Table 3-1 has been reformatted for clarification and the missing data is added. This updated table is presented in Attachment C.

#### **EPA CERCLA (Enclosure 1) Comment**

The comment has been adequately addressed.

#### **EPA CERCLA Comment # 10**

Section 4, Summary and Conclusions, page 4-1: The report concludes that generally, groundwater north of well NW-3, located at approximately the north/south midpoint of the island, flows north toward the Atlantic Ocean and groundwater south of NW-3 flows south toward the Caribbean Sea. The report further notes constituents detected above risk-based screening levels are likely attributed to either background conditions or laboratory contamination. The additional groundwater sampling to establish background levels will allow this conclusion to be further evaluated. The possibility that former Navy activities might have an impact on groundwater quality at the northern or southern boundary of the former EMA and could be discharging contaminants to the Atlantic Ocean or Caribbean Sea should also be evaluated in the event that groundwater near these boundaries is found to contain elevated levels of site-related contaminants.

#### **Navy Response:**

It has been agreed with the agencies that the background groundwater quality for an individual site will be evaluated on a site-specific basis. In addition, groundwater contamination will also be evaluated on a site-specific basis. Should it be determined that the extent of contamination from a site is as far as the Atlantic Ocean or Caribbean Sea, the potential for discharge into the sea and the potential impacts of that discharge will be evaluated.

#### **EPA CERCLA (Enclosure 1) Comment**

The comment has been adequately addressed.

#### **Additional CERCLA Comments from Enclosure 3**

The Navy has responded that should it be determined that the extent of contamination from a site is as far as the Atlantic Ocean or Caribbean Sea, the potential for discharge into the sea and potential impacts of that discharge will be evaluated. However, it is not clear how the determination for this additional evaluation will be made. The "trigger" for this activity should be discussed.

**Navy's Second Response:**

**As noted in the original *Navy* Response, the extent of groundwater contamination will be evaluated on a site-specific basis, in accordance with site-specific workplans. If, during this evaluation, the extent of contamination is found to reach surface water bodies, such as the ocean, the potential affects of its discharge to these surface water bodies will be evaluated, in accordance with site-specific workplans (including their addenda, as appropriate).**