Baker

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June 21, 2011

U.S. Environmental Protection Agency - Region II
290 Broadway – 22nd Floor
New York, New York 10007-1866

Attn: Mr. Adolph Everett, P.E.
Chief, RCRA Programs Branch

Re: Contract N62470-10-D-3000
IQC for A/E Services for Multi-Media
Environmental Compliance Engineering Support
Delivery Order (DO) JM01
U.S. Naval Activity Puerto Rico (NAPR)
EPA I.D. No. PR2170027203
Revised Final Phase I RCRA Facility Investigation Work Plan for SWMU 79

Dear Mr. Everett:

Michael Baker Jr., Inc. (Baker), on behalf of the Navy, is pleased to provide you with one hard copy and one electronic copy on CD of the replacement pages for the Final Phase I RCRA Facility Investigation Work Plan for SWMU 79. These replacement pages make up the Revised Final Phase I RCRA Facility Investigation Work Plan for SWMU 79. Directions for inserting the replacement pages into the Final Phase I RCRA Facility Investigation Work Plan for SWMU 79 are provided for your use.

This document is being submitted in accordance with EPA comments dated March 11, 2011. The Navy responses to these comments are attached for your review.

If you have questions regarding this submittal, please contact Mr. Mark Davidson at (843) 743-2124. Additional distribution has been made as indicated below.

Sincerely,
**MICHAEL BAKER JR., INC.**

Mark E. Kimes

Mark E. Kimes, P.E.
Activity Coordinator

MEK/vk
Attachments

cc: Ms. Debra Evans-Ripley, BRAC PMO SE (letter only)
Mr. David Criswell, BRAC PMO SE (letter only)
Mr. Mark E. Davidson, BRAC PMO SE (1 hard copy and 1 CD)
Mr. Pedro Ruiz, NAPR (1 CD)
Mr. Tim Gordon, US EPA Region II (1 hard copy and 1 CD)
Mr. Carl Soderberg, US EPA Caribbean Office (1 hard copy and 1 CD)
Ms. Bonnie Capito, NAVFAC Atlantic – Code EV42 (1 hard copy)
Ms. Gloria Toro, PREQB (1 hard copy and 1 CD)
Ms. Wilmarie Rivera, PREQB (1 CD)
Mr. Felix Lopez, US F&WS (1CD)
Ms. Brenda Smith, TechLaw, Inc. (1 CD)
Ms. Pat Dixon, U.S. Coast Guard (2 hard copies and 1 CD)

**NAVY RESPONSES TO EPA COMMENTS DATED MARCH 11, 2011**
**FINAL PHASE I RCRA FACILITY INVESTIGATION WORK PLAN**
**SWMU 79 (NAVY OPERATIONS ON CABRAS ISLAND) DATED DECEMBER 15, 2010**

*(Regulator comments are provided in italics, while the Navy responses are provided in regular print.)*

## EPA COMMENTS

## GENERAL COMMENTS

***General Comment 1.*** *The Work Plan is lacking several elements required by EPA Requirements of Quality Assurance Project Plans (QAPP), dated March 2001 (QA/R-5). These elements are necessary to evaluate the proposed Work Plan:*

- *Laboratory specific information including standard operating procedures (SOPs) for subsampling, sample preparation, and analysis; method detection limits; reporting limits (RLs); quality control (QC) acceptance limits; analytical calibration procedures and acceptance criteria; and corrective actions should the calibration/QC criteria be exceeded must be provided for the currently proposed analytical methods. Ensure that laboratory RLs are provided alongside the screening values.*

- *Project specific completeness goals for both the field and laboratory have not been provided. In addition, the Work Plan does not indicate if any proposed samples are deemed critical to this investigation.*

- *Field SOPs have not been provided for XRF, including sample preparation and analysis.*

- *There is no project specific discussion of how precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) measures will be incorporated into a data quality assessment, how completeness will be measured for this project, or if an evaluation of significant trends and biases will be included as part of a data quality assessment.*

- *The Work Plan indicates the data validator will be determined at a later date. Per EPA QA/R-5, the data validator and independence from data generation activities must be ensured.*

*Revise the Work Plan to provide this information.*

**Navy Response to EPA General Comment 1:** The Navy plans to implement this investigation at NAPR in accordance with the EPA approved Master Project Management Plan (PMP), Master Data Collection Quality Assurance Plan (DCQAP), Data Management Plan (DMP), and Master Health and Safety Plan (HASP) for NAPR (Baker, 1995. Final RCRA Facility Investigation Management Plans, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. September 14, 1995. Coraopolis, Pennsylvania.) The EPA approved the work plan on September 25, 1995. These Master Plans define acceptable data requirements and error levels associated with the field and analytical portions of this investigation. Therefore, to maintain consistency with past Navy work under the Consent Agreement, this work plan has been revised using the Navy's EPA approved Master Plans for this facility.

In response to previous comments by the EPA on Phase I RFI Work Plans for SWMUs 62 and 71 (see the April 17, 2008 letter from Baker on behalf of the Navy to the EPA); the Navy provided an evaluation of the Master Project Plans (Baker, September 14, 1995) in relation to the QA/R-5 requirements ("EPA Requirements for Quality Assurance Project Plans." EPA/240/B-01/003. [EPA, March 2001]). Table 1

of the April 17, 2008 letter provides a map between the DCQAP sections, the work plan content and the sections required by QA/R-5 and illustrates that although there are format and minor content differences, the DCQAP is generally consistent with and includes all of the main elements required by QA/R-5. For example, data validation is discussed in Section 10 of the DCQAP and PARCCS measures are discussed in Section 4 of the DCQAP; and forms and checklists are provided in the tables and appendices of the DCQAPP. Some additional examples of forms and checklists that may be found in the DCQAP are shown in the following table:

| Item | Location in the DCQAP |
|---|---|
| System Audit Checklist | Table 12-1 |
| Test Boring Record | Appendix B – SOP F101 – Borehole and Sample Logging |
| Typical Monitoring Well Construction Details and Test Boring and Well Construction Records | Appendix B – SOP F103 – Monitoring Well Installation |
| Chain of Custody Form | Appendix B – SOP F302 – Chain of Custody |
| Sample Label | Appendix B – SOP F302 – Chain of Custody |
| Data Validation Checklists | Appendix D – Data Validation Methodologies |

There are a number of new forms that are primarily associated with groundwater sampling. These include the Well Detail and Sampling Log, the Low Flow Purge Data Sheet and the Daily Meter Calibration Record. The new groundwater sampling and equipment calibration forms will be included as an appendix to the Phase I RFI Work Plan for SWMU 79. The field procedures for operation, sample preparation and analysis using the XRF also will be included in the appendix.

The analytical methods, analyte lists, detection limits, etc. may have changed to some degree since publication of the DCQAP. Consequently, the Phase I RFI Work Plans contain the following tables specifying the sampling and analytical program requirements so that data of sufficient quality for future risk management decisions is collected:

- Table 3-1 Summary of Sampling and Analytical Program – Environmental Samples
- Table 3-2 Method Performance Limits
- Table 3-3 Summary of Sampling and Analytical Program – QA/QC Samples and IDW Samples

The information provided in these tables has been reviewed against screening levels and have been determined to generally meet these levels. Table 3-2 has been revised to include preparation methods. Soil screening values are presented on Tables 4-1. Groundwater and surface water screening values are presented on Table 4-2. In addition, a table with sediment screening values (Table 4-3) was added for easy comparison to the analytical method detection limits. These quantitation limits have also been reviewed by an analytical laboratory to ensure that they can be met. In all cases, the quantitation limits are the lowest achievable by the laboratory for the specified analytical method. These tables are then provided to the analytical laboratory subcontractor as part of their scope of work so that the laboratory is clearly aware of the analytical requirements of the project. Additionally, only laboratories capable of providing an acceptable Laboratory Quality Manual (LQM) will be selected for this project. The LQM will be provided on request (after selection of the analytical laboratory).

This evaluation (presented in the April 17, 2008 letter), which was approved by EPA on May 13, 2008, indicated that the Phase I RFI Work Plan structure, with reference to the 1995 Master Project Plans and inclusion of project-specific tables summarizing the sampling and analysis program for environmental and QA/QC samples and method performance limits, and other factors as discussed in the April 17, 2008

letter, when taken together provide the information and guidance necessary for the project team to generate good quality data and to use that data for developing risk management based recommendations and decisions. The structure of the Phase I RFI Work Plan for SWMU 79 is in accordance with the QA/R-5 QAPP requirements.

The procedures for sample preparation and analysis for the XRF are provided in Section 3.1.2. The procedures for operation of the XRF device are provided in Appendix E.

**EPA Evaluation of the Response to EPA General Comment 1:** *The response partially addresses the comment. However, because the laboratory has not been selected, laboratory specific standard operating procedures (SOPs), quality control (QC) limits, and quantitation limits (QLs) have not been included in the Work Plan. Additionally, Table 3-2 states that the QLs listed for soil are based on wet weight and that the quantitation limits calculated by the laboratory on a dry weight basis will be higher. Since screening levels are based on dry weight calculations, it is unclear whether the chosen laboratory's dry weight QL will be able to meet screening levels. Ensure that when a laboratory is selected, laboratory specific SOPs, QC limits, and QLs are included in the draft Phase I RFI Report as an addendum. Also, in the draft Phase I RFI Report, when developed, clarify how it was ensured that the laboratory was able to meet screening levels when reporting results are on a dry weight basis.*

**Navy Response:** To help ensure that screening levels are met, required quantitation limits are provided to the laboratory as part of their contractual scope of work. Upon the selection of the subcontracted analytical laboratory for this investigation, laboratory specific SOPs and QC limits will be reviewed to confirm they will be able to meet the applicable screening levels. The analytical laboratory's specific SOPs, QC limits, and QLs will be included as an appendix to the draft Phase I RFI Report. Additionally, upon further review of Table 3-2, it was discovered that outdated QLs were included in error for SW-846 Method 6020A (ICP/MS) analysis of groundwater. Therefore, Table 3-2 has been revised to include the most current QLs available for Method 6020A.

***General Comment 6.*** *Ensure that contract-required quantitation limits (QLs) are low enough to meet human health and ecological screening criteria. Revise the Work Plan to show that QLs will be low enough to meet data quality standards for risk assessment purposes. The requested revision can be easily addressed by updating tables to compare the QLs to applicable human health and ecological screening values.*

**Navy Response to EPA General Comment 6:** The human health screening values (Regional Screening Levels) and ecological screening values are provided in Tables 4-4 and 4-1 to 4-3, respectively. Quantitation limits are provided in Table 3-2. The information provided in the tables has been reviewed against project-specific screening levels and has been determined to generally meet these levels. In all cases, the quantitation limits are the lowest achievable by the laboratory for the specified analytical method. The project-specific screening values are then provided to the analytical laboratory subcontractor as part of their scope of work so that the laboratory is clearly aware of the analytical requirements of the project.

**EPA Evaluation of the Response to EPA General Comment 6:** *The response partially addresses the comment. The Work Plan has been revised to include the human health screening values (i.e., Regional Screening Levels [RSLs] and Maximum Contaminant Levels [MCLs]) in Table 4-4 for volatile organic compounds (VOCs) and metals. However, semivolatile organic compound (SVOC) human health screening values are not present in Table 4-4. Additionally, VOCs are not proposed for analyses and should not be included in Table 4-4. Finally, the footnotes in Table 4-4 reference the May 2010 RSLs. Note that the RSLs were updated in November 2010. In the draft Phase I RFI Report, when developed,*

*please include the human health screening values for SVOCs in Table 4-4 and ensure that the most current RSLs are used in the RFI.*

**Navy Response:** Table 4-4 has been revised to include screening values for SVOCs. The most current version of the RSLs available at the time the SWMU 79 Phase I RFI is completed will be used for screening purposes.

***General Comment 12.*** *Section 2.2.1, [Environmental Condition of Property] ECP Study, indicates that PAHs were detected in surface soil during the ECP study in 2009. Twelve (12) soil borings are proposed for the current investigation, and samples will be collected for PAHs. However, the locations of these additional borings are contingent upon the results of the field screening for metals, not on previous locations of PAH detections. Therefore, it is unclear how the extent of PAH contamination will be determined if the sampling locations do not target areas where PAHs were previously detected, or where historical operations are likely to have impacted soil with PAHs. Revise the Work Plan to indicate how the extent of PAH contamination will be adequately delineated with the proposed activities, or propose additional sampling with the objective of delineating the extent of PAHs.*

**Navy Response to EPA General Comment 12**: Section 3.1.3 of the work plan has been revised to indicate that of the twelve proposed soil borings to be advanced at SWMU 79, only five (5) will be field determined based off the evaluation of the XRF analysis. Seven (7) of the proposed twelve soil borings are at predetermined locations, as shown on Figure 3-2. These seven predetermined locations shown in the Phase I RFI Work Plan are based on locations of previous detections of PAHs, as well as previous site reconnaissance.

**EPA Evaluation of Response to EPA General Comment 12:** *The response to this comment is adequate at face value; however, none of the seven new pre-determined boring locations appears to be located in an area where polynuclear aromatic hydrocarbons (PAHs) were previously detected. For example, Table 2-2, Summary of Detected Laboratory Results – Surface Soil – Phase II ECP Report, identifies PAH exceedances in surface soil sample CABSS01. The location of CABSS01 is shown on Figure 2-7, Phase I/II ECP Sample Locations. The sample is located on the northern edge of Launch Pad 1794. Figure 3-2, Pre-Determined Soil Boring Locations, does not show any soil borings located at Launch Pad 1794, in the near vicinity of sample CABSS01. Therefore, it is unclear how the PAH exceedances at this location will be adequately delineated. Please address this concern in the draft Phase I RFI report. The draft Phase I RFI report should also identify any areas where additional delineation of PAHs is necessary.*

**Navy Response:** Upon further review, three pre-determined boring locations have been relocated around surface soil sample CABSS01 to adequately determine the extent of contamination around the northern edge of Launch Pad 1794. For clarification purposes, the Work Plan has been revised to reflect these changes. The sixth paragraph of Section 3.1.3 of the Phase I RFI Work Plan has been revised to state the following:

> All samples (except those requiring TPH GRO analysis) must be homogenized prior to being submitted to the laboratory for fix-based analysis. The soil collected will be prepared by homogenizing the individual aliquot in a disposal aluminum pan, using a disposable stainless steel spoon. The surface and subsurface samples will be analyzed for Appendix IX metals, and perchlorate as presented in Table 3-1. In addition, three pre-determined soil boring locations (79SB88, 79SB89, and 79SB90) will be analyzed for Appendix IX low level SVOCs and three pre-determined soil boring locations (79SB91, 79SB92 and 79SB93) will be analyzed for TPH DRO/GRO, as presented in Table 3-1. Soil boring locations 79SB88, 79SB89, and 79SB90 are

located at the northern edge of Launch Pad 1794. These three borings surround CABSS01 where PAH exceedances were identified during the ECP investigation and will determine the extent of contamination around the northern edge of Launch Pad 1794. Soil boring locations 79SB91, 79SB92, and 71SB93 are located northwest of Building 2037. These three borings surround CABSS04 where TPH exceedance was identified during the ECP investigation and will determine the extent of contamination northwest of Building 2037. The soil samples intended for TPH GRO analysis will be collected as grab samples to minimize volatilization. Three 5-gram subsamples will be collected per sample location using a Terra Core™ sampler and placed into separate pre-weighed 40-mL VOA vials (one pre-preserved with methanol and the remaining two with deionized water) containing a magnetic stir bar. The sealed vials will be packed in coolers and placed on ice to maintain a temperature of 4° Celsius.

Figure 3-2 has been updated to show the revised locations of pre-determined soil borings. Table 3-1 has been revised to include the appropriate analysis for the relocated pre-determined soil borings.

**SPECIFIC COMMENTS**

***Specific Comment 3.*** *Section 2.1, Current Site Conditions and Use, Page 2-1: This section indicates that an underground storage tank (UST), associated with Building 2037, is located within SWMU 79, but the Work Plan does not provide any specific details on this UST. The UST's age, construction, current status, and current or historical contents should be described in this section. Additionally, the location of this UST should be shown on a site plan. The Work Plan should also clarify whether any of the proposed sample locations will specifically address potential leaks from this UST. Revise the Work Plan to describe the UST's age, construction, dates of use, and current or historical contents, and identify the location of the UST on a site plan. Additionally, revise the Work Plan to indicate whether any samples will be collected to specifically investigate potential releases from this UST.*

**Navy Response to EPA Specific Comment 3:** Additional information is provided in Section 2.2.1 concerning the UST at Building 2037. The location of this UST is now shown on Figures 1-3 and 2-7.

**EPA Evaluation of the Response to EPA Specific Comment 3:** *The response is partially adequate. Additional information on the underground storage tank (UST) associated with Building 2037 has been provided in Section 2.2.1, ECP Study, however, this section does not state whether the tank is empty. Additionally, new information provided in Section 2.2.1 indicates that the tank was installed in 1997 to replace a removed tank at that location. It is unknown whether any sampling was conducted during the previous tank's removal, or whether any evidence of impact was observed during the tank removal. In the draft Phase I RFI Report, please clarify the current status of the existing tank, and to provide further detail on the removal of the former tank at this location.*

**Navy Response:** Further details regarding the status of the existing tank and removal of the former tank associated with Building 2037, if available will be provided in the draft Phase I RFI Report.

***Specific Comment 13.*** *Section 3.1.2.1, XRF Testing, Page 3-3: This section discusses the XRF analytical procedure but does not describe the number of XRF readings to be collected per bag. Additionally, if multiple readings will be collected per bag, it is unclear if the XRF will be moved or if all readings will be collected from one location. Revise this section to provide more detailed discussion regarding XRF analysis. Alternatively, if this information is located in an SOP, provide a specific reference to where it can be found.*

**Navy Response to EPA Specific Comment 13:** Section 3.1.2.1 describes the XRF readings to be collected. All readings, per sample location, will be read and recorded at the location where the sample

was collected. Section 3.1.2.1 also provided a more detailed discussion regarding the XRF analysis / procedure. Detailed information on the operation of the XRF device can be found in Appendix E.

**EPA Evaluation of Response to EPA Specific Comment 13:** *The response does not address the comment. The response and revised text do not indicate the number of x-ray fluorescence (XRF) readings that will be collected per sample (i.e., typically three readings are collected). Also, the response states, "All readings, per sample location, will be read and recorded at the location where the sample was collected." However, the original comment intended to request that the Final Phase I Work Plan specify if each reading will be collected at the same location within the sample jar (e.g., top of jar, bottom of jar, etc.). Please submit as an Addendum to the Phase I RFI Work Plan that indicates the number of XRF readings that will be collected per sample, the location of where the readings will be collected in the sample jar, and ensure that the XRF procedures identify how sample concentrations will be determined if multiple readings are collected per sample.*

**Navy Response:** Soil samples for XRF analysis will be thoroughly homogenized, as stated in Section 3.1.2.1. The following text has been added to the beginning of the third paragraph of Section 3.1.2.1 to provide clarification:

> Once the sample has been placed into a 16 oz clear glass, wide mouth jar, the top of the jar is covered with a thin plastic film to protect the probe window. The XRF analyst will then obtain at least two measurements from the top of the jar in accordance with instrument manufacturer's directions, as detailed in Appendix E. If the relative percent difference between measurements is greater than or equal to 20 percent, the sample will be re-homogenized and the XRF testing procedure will be repeated. When the relative percent difference between measurements is less than 20 percent, the average of the measurements will be used as the representative results for that sample.

The following will be added to the fourth paragraph of Section 3.1.2.1:

> All measurements and results will be recorded in the dedicated field logbook as well as auto-saved in the XRF device for downloading after the entire XRF sampling event.

***Specific Comment 14.*** *Section 3.1.2.2, Data Evaluation, Page 3-3: The last sentence of the first paragraph states that additional samples may be collected and analyzed by XRF if the evaluation determines that additional samples are required. The Work Plan has not indicated what requirements must be met in order to collect additional samples (i.e., concentrations exceed applicable screening levels, etc.). If additional samples are required, the Work Plan should state what approach will be employed to locate these samples. For instance, the Work Plan should indicate whether a step-out approach will be utilized, collecting additional samples east, west, north, and south of a sample that exhibits a screening criterion exceedance, or whether some other approach will be used. Revise the Work Plan to state what requirements must be met in order to collect additional samples for XRF analysis, and describe the approach that will be employed for this additional sampling.*

**Navy Response to EPA Specific Comment 14**: The biased-grid sampling approach that will be used for soil sample collection ensures that the areas of interest will be sufficiently sampled to meet the objectives of a Phase I RFI. However, it may be desirable at some locations, based on a review of the field screening results, to collect additional screening samples to provide better resolution regarding the extent of contamination. When additional information / samples are desired (i.e. to delineate areas of high contamination) the step-out approach will be used at intervals determined practical in the field. The step-out approach will be in the four directions directly north, south, west and east of the sample point where

additional information is desired. Additional samples will continue until it is deemed necessary (i.e. samples of low contamination are found).

**EPA Evaluation of Response to EPA Specific Comment 14:** *The response partially addresses the comment; however, more information is needed. The response indicates that a step-out approach will be employed if additional samples are needed. The response should clarify when additional samples are needed (i.e., concentrations exceed applicable screening levels, etc.) rather than including a general statement that indicates additional samples will be collected to "delineate areas of high contamination." Furthermore, the response should specify the spacing of the step-out sample locations (i.e., every ten feet, 20 feet, etc.) to ensure consistency rather than a generalized statement that spacing will be determined by whatever is "practical in the field." Please submit as an Addendum to the Phase I RFI Work Plan incorporating the above. Also, in the draft Phase I RFI Report, when developed, please discuss the criteria and other details regarding the approach for determining when and where to collect additional samples.*

**Navy Response:** Section 3.1.2.2 has been revised to include the following:

> When additional information/samples are desired (i.e. to delineate areas where concentrations exceed applicable screening levels, etc.) the step-out approach will be used at an interval half the distance of adjacent sample locations. This approach will ensure that additional samples do not overlap existing/proposed sample locations and the additional information obtained between sample locations will further refine the biased-grid sampling approach. The step-out approach will be in the four directions directly north, south, west and east of the sample point where additional information is desired. The step-out approach will be adjusted as appropriate based on field conditions, location of structures, etc.

***Specific Comment 18.*** *Section 3.1.3, Surface & Subsurface Soil Sampling Program for Fixed-Base Analysis, Page 3-3: The text does not state at what depth the subsurface samples will be collected from. Below the sub heading Subsurface soil samples will be designated as follows: the first sample will be labeled 1-3 feet bgs and the second will be 3-5 bgs and the actual sample depth will be determined in the field. Table 3-1 only lists two samples, namely 0.0-1.0 and 1.0-3.0 ft bgs. Clearly state at what depth the subsurface soil samples will be collected from and specify that the ranges presented are only "target" depths subject to change depending on field conditions.*

**Navy Response to EPA Specific Comment 18:** Section 3.1.3 has been revised to indicate at what depth subsurface samples will be collected from. Also, refer to Navy Response to EPA Specific Comment 16.

**EPA Evaluation of Response to EPA Specific Comment 18:** *The response addresses the comment; however, the revised approach for subsurface soil sampling outlined in Section 3.1.3 is inadequate. Section 3.1.3, Surface & Subsurface Soil Sampling Program for Fixed-Base Analysis, on Page 3-5 states, "If FID/PID screening and visual/olfactory observations do not indicate contamination at the surface soil sample, then the subsurface soil samples for laboratory analysis will be collected at the 2-foot interval immediately above the water table." This approach would be appropriate only if FID/PID screening and visual/olfactory observations do not indicate contamination in any of the soil intervals screened during boring installation. If signs of impact are observed below the surface soil sample, a sample should be collected from the interval at which signs of impact were observed. Please submit as an Addendum to the Phase I RFI Work Plan revisions to Section 3.1.3 reflecting this procedure. If that approach is not followed during implementation of the Phase I RFI Work Plan, follow-up sampling may be necessary.*

**Navy Response:** The approach for subsurface soil sampling outlined in Section 3.1.3 has been revised to state the following:

> If FID/PID screening and visual/olfactory observations do not indicate contamination at any of the soil intervals screened during boring installation, then the subsurface soil samples for laboratory analysis will be collected at the 2-foot interval immediately above the water table.

***Specific Comment 19.*** *Section 3.1.4, Monitoring Well Installation, Page 3-6: Paragraph two of the text states, "The wells will be developed until the discharged water runs relatively clear of fine-grained materials." The text further indicates that typical limits placed on well development may include, "Clarity of water based on visual determination." Since the clarity of the water is a qualitative measure that could be subjective based on the person making observations, it is recommended that three to five borehole volumes be removed to ensure proper development, at a minimum. Additionally, it is recommended that all of the bulleted items in this section be performed to ensure proper well development. If a criteria cannot be achieved, an explanation should be provided in the well development records. Revise the Work Plan to indicate that all of the bulleted items will be performed during well development.*

**Navy Response to EPA Specific Comment 19:** Section 3.1.4 has been revised as requested, with modifications to the remaining bullets:

> To ensure proper well development, the bulleted items listed in this Monitoring Well Installation section will be performed during well development:
>
> - A maximum borehole volume (typically three to five borehole volumes plus the amount of any water added during the drilling or installation process)
> - A maximum time period (typically two hours for shallow wells)
> - A record of the well development will be completed to document the development process.
> - Based on knowledge of the site geology a minimum of 24 hours is required between well development and sampling.

**EPA Evaluation of Response to EPA Specific Comment 19:** *The response partially addresses the comment. While the intent is understood, the first two bullets of the response are incomplete. The first bullet should be revised to state, "A maximum borehole volume (typically three to five borehole volumes plus the amount of any water added during the drilling or installation process) will be removed." A similar revision is needed for the second bulleted item. Please insure that during the Phase I RFI investigations, those procedures are followed during the Monitoring Well Installation, and describe this in the draft Phase I RFI report.*

**Navy Response:** Section 3.1.4 has been revised for completeness:

> Typical limits placed on well development will include clarity of water based on visual determination and any one or a combination of the following:
>
> - A maximum time period observed (typically two hours for shallow wells).

- A maximum borehole volume removed (typically three to five borehole volumes plus the amount of any water added during the drilling or installation process).

- Stability of pH, specific conductance, and temperature measurements (typically less than ten percent change between three successive measurements).

- Clarity based on turbidity measurements (typically less than 20 Nephelometric Turbidity Units [NTU]).

A record of the well development will be completed to document the development process. Monitoring well installation and well development procedures will be conducted following the procedures in Final RCRA Facility Investigation Management Plans (Baker, 1995).

***Specific Comment 29.*** *Section 3.4.3, Investigation Derived Waste Management, Page 3-12: The investigation derived waste (IDW) sampling procedures are insufficiently detailed. For example:*

- *It is unclear if IDW will be combined from multiple borings into one 55-gallon drum or if each boring will have its own drum.*
- *The section states that soil cuttings from subsurface soils will be placed back into the boring from which they came, unless contamination is present. As much as possible, soils last out of the hole will be returned first, thereby, approximating original stratigraphy. However, it is unclear how soils will be returned to the correct boring and in the correct order if soil cuttings are collected and stored temporarily in 55-gallon drums. In addition, it is unclear how it will be known if soil is contaminated at the time of boring installation.*
- *This section does not discuss management of used personal protective equipment (PPE) or disposable boring installation and sampling equipment.*
- *The section does not indicate how each aliquot of IDW will be collected, and how these aliquots will be combined for the composite sample.*
- *Finally, since volatiles will be analyzed, the Work Plan does not specify how composite samples are collected to reduce the analyte loss.*

*Revise the Work Plan to provide a more detailed IDW management plan.*

**Navy Response to EPA Specific Comment 29:** The soil cuttings associated with subsurface soil sampling will be placed back into the location where the cuttings were collected immediately after the subsurface soil samples are collected unless contamination is indicated, as determined by the field geologist. If contamination is indicated, the soil cuttings associated with that soil boring will be stored temporarily in a 55-gallon drum. All soil cuttings for soil borings that show evidence of contamination will be placed in the same drum with proper label on the drums exterior. There will not be one drum for each soil boring and a composite sample will be collected and submitted for analysis. The text in Section 3.4.3 has been edited to clarify the IDW procedures.

Section 3.4.3 will be revised to include the following information:

A composite soil sample will be compiled from individual discrete (grab) samples of equal volume collected from each of the 55-gallon drums of containerized IDW soil. Each individual discrete soil sample will be placed into a disposable aluminum pie pan (or other appropriate container) and thoroughly homogenized prior to filling the appropriate laboratory provided sample containers. The solids sample will be analyzed for toxicity characteristic leaching procedure (TCLP) metals, TCLP volatiles, and reactivity, corrosivity, and ignitability (RCI) as shown on Table 3-3, using methods presented in Table 3-2.

The IDW composite aqueous sample will be collected similar to the soil composite sample with the exception that the individual discrete (grab) samples of equal volume collected from each of the 55-gallon drums of containerized IDW water will be placed directly into the appropriate laboratory provided sample containers. The water samples will be analyzed for VOS, metals, and RCI as shown in Table 3-3, using methods presented in Table 3-2.

**EPA Evaluation of Response to EPA Specific Comment 29:** *The response partially addresses the comment. Some items of concern have been clarified; however, the response does not address management of used personal protective equipment (PPE) or disposable boring installation and sampling equipment. Additionally, the response does not specify how composite samples are collected to reduce loss of volatiles. It is noted, however, that these two issues are addressed appropriately in Section 3.4.3, Investigation Derived Waste Management, of the Final Phase I RFI Work Plan. As such, no additional revision to the Final Phase I RFI Work Plan is necessary.*

**Navy Response:** As cited by the later portion of this comment, Section 3.4.3 already addresses the identified issues. No revisions are required.

***Specific Comment 33.*** *Section 4.0, Reporting, Pages 4-1 through 4-8: This section does not indicate that a data quality assessment will be included in the final report. Revise this section to specify that a data quality assessment will be part of the final report, and specify what will be included in the data quality assessment (e.g., an evaluation of PARCCS, significant trends and biases, comparing data to DQOs to ensure questions were addressed, etc.).*

**Navy Response to EPA Specific Comment 33:** The following statement will be added to Section 4.7.

All data from the laboratory will be certified by a Puerto Rican Chemist and laboratory data will be validated to ensure data usability. Only usable data will be included in the evaluation and the conclusions and recommendations sections of the report. Data validation reports will be included as an appendix to the Full RFI report and will discuss:

- Overall Evaluation of the Data
- Potential Usability Issues
- Data Completeness
- Technical Holding Times
- Initial and Continuing Calibrations
- Method and QC Blanks
- Laboratory Control Samples
- Matrix Spikes
- Quantitation and Data Qualifications

**EPA Evaluation of Response to EPA Specific Comment 33:** *The response partially addresses the comment. Please assure that the data validation reports (DVRs) in the draft Phase I RFI report include discussions on surrogates, internal standards, post digest spikes, field duplicates, the extent of outlier exceedances, which results were affected, and how results were qualified.*

**Navy Response:** Section 4.7 has been revised to state the following:

> The data validation reports in the Phase I RFI report will include discussions on surrogates, internal standards, post digest spikes, field duplicates, the extent of outlier exceedances, which results were affected, and how results were qualified.

***Specific Comment 34.*** *Section 4.6.2, Human Health Screening Values, Pages 4-7 and 4-8: Human health screening values (i.e., Regional Screening Levels [RSLs], federal drinking water maximum contaminant levels [MCLs]) and background screening values are discussed in this section; however, these screening values have not been presented in the Work Plan. Verification that the laboratory RLs will be able to meet screening values cannot be performed without a presentation of all screening values to be used. Revise the Work Plan to provide all screening criteria to allow for comparison to analytical results.*

**Navy Response to EPA Specific Comment 34:** The human health screening values (Regional Screening Levels) and ecological screening values are provided in Tables 4-4 and 4-1 to 4-3, respectively. Quantitation limits are provided in Tables 3-2. The information provided in these tables has been reviewed against project-specific screening levels and has been determined to generally meet these levels. The quantitation limits have also been reviewed by an analytical laboratory to ensure that they can be met. In all cases, the quantitation limits are the lowest achievable by the laboratory for the specified analytical method.

**EPA Evaluation of Response to EPA Specific Comment 34:** *The response addresses the comment. However, the screening criteria tables provided in the revised document require revision as described below:*

- *Table 4-2 is titled Groundwater Screening Values but surface water screening values are presented on the table. Revise the title of the table to reflect the screening values presented.*
- *Table 4-4, Human Health Screening Values, does not present screening values for SVOCs, perchlorate, or Total Petroleum Hydrocarbons Diesel Range Organics/Gasoline Range Organics (TPH DRO/GRO). Revise Table 4-4 to include screening values for these constituents since site media will be analyzed for these constituents.*

**Navy Response:** The title of Table 4-2 has been revised to clarify that the surface water screening values shown on that table will be used for groundwater screening. Table 4-4 has been revised to include screening values for SVOCs, perchlorate, and TPH DRO/GRO.

***Specific Comment 39.*** *Table 4-1 Soil Screening Values and Table 4-2 Groundwater Screening Values and Table 4-3 Sediment Screening Values: These three tables include screening values for VOCs, even though VOCs are not proposed for analysis. Remove all VOC screening values from these tables to avoid confusion.*

**Navy Response to EPA Specific Comment 39:** All references to VOC screening values were removed from the Work Plan and Tables 4-1, 4-2, and 4-3.

**EPA Evaluation of the Response to EPA Specific Comment 39:** *The response partially addresses the comment. Screening values for VOCs have been removed from Tables 4-1 through 4-3, but remain present in Table 4-4. Revise Table 4-4 to remove VOC screening values from it, to avoid confusion.*

**Navy Response:** VOC screening values have been removed from Table 4-4 as requested by this comment.

***Specific Comment 40.*** *Table 4-3 Sediment Screening Values: Several sediment screening values, mainly SVOCs, were found to exceed their QL presented in Table 3-2. The QL for these analytes must be brought down below the screening values to allow detected analytes to be compared to their sediment screening values. The QLs for these analytes must be adjusted accordingly.*

**Navy Response to EPA Specific Comment 40:** The ecological sediment screening values provided in

the work plan as Table 4-3. The quantitation limits are provided in Table 3-2. The Navy is aware that some of the reporting limits exceed the ecological sediment screening levels. The analytical laboratory chosen for analyzing the samples will provide the lowest reporting limits possible. For this Phase I RFI, all compounds exceeding screening values will be identified and discussed in the data evaluation section of the report. For future ecological risk assessments (ERA) that may be conducted as part of a CMS, the risks for non-detected chemicals will be quantified. If necessary, non-detected chemicals with maximum reporting limits greater than ecological screening values will be identified as ecological chemicals of potential concern (COPCs) in Step 2 of a screening-level ERA (SERA) and undergo additional evaluation in Step 3a of a baseline ecological risk assessment (BERA).

**Evaluation of the Response to EPA Specific Comment 40:** *The response addresses the comment. However, the text of the response has not been incorporated into the Final Phase I Work Plan. Further, it should be noted that there are some human health screening criteria provided in Table 4-4 that are also lower than the QLs specified in Table 3-2. The Navy should also indicate that a similar evaluation will be performed in the human health risk assessment if the laboratory cannot achieve the human health screening values.*

**Navy Response:** The first paragraph of Section 4.6.1 – Media-Specific Ecological Screening Values will be amended to include the following:

> In some instances, the laboratory reporting limit for a given compound may exceed the ecological sediment screening value. For this Phase I RFI, all compounds exceeding ecological screening values will be identified and discussed in the data evaluation section of the report. For future ecological risk assessments (ERA) that may be conducted as part of a CMS, the risks for non-detected chemicals will be quantified. If necessary, non-detected chemicals with maximum reporting limits greater than ecological screening values will be identified as ecological chemicals of potential concern (COPCs) in Step 2 of a screening-level ERA (SERA) and undergo additional evaluation in Step 3a of a baseline ecological risk assessment (BERA).

Similarly, the first paragraph of Section 4.6.2 – Human Health Screening Values will be amended as follows:

> In some instances, the laboratory reporting limit for a given compound may exceed the human health screening value for a given media. For this Phase I RFI, all compounds exceeding human health screening values will be identified and discussed in the data evaluation section of the report. For future human health risk assessments that may be conducted as part of a CMS, the non-detected chemicals will be evaluated qualitatively and discussed as an uncertainty.

**PREQB COMMENTS**

**EVALUATION OF RESPONSES TO PREQB COMMENTS**

**PREQB Evaluation of Specific Comment 7(a):**

*PREQB Comment 7Page 3-4, Section 3.1.3:*

a. *Please include details on how sediment samples for GRO will be collected and clarify whether samples will be collected in a coring device (i.e., TerraCores) or whether field preservation will be used.*

**Navy Response to PREQB Specific Comment 7(a):** The open water sediment sampling program is discussed in Section 3.1.6. The work plan has been corrected in removing the reference for analyzing the sediment sample for TPH DRO / GRO.

*PREQB Evaluation of Response: The original comment was referring to the correct section but incorrectly referred to "sediment" samples instead of "soil" samples. Therefore, please respond to the original comment for the collection of soil samples. Please note that the collection methods provided in the SOPs F102 and F301 in the Final RCRA Facility Investigation Management Plans (Baker, 1995) for VOC soil samples are outdated and not consistent with current procedures. Typical VOC collection procedures in solid matrices have been updated since 1995 (SW-846 method 5035 was introduced in December 1996 and the newer version of this method,5035A, was introduced in July 2002). The VOC collection procedures in solid matrices must be updated to meet current collection procedures and document the method that will be used in this work plan.*

**Navy Response:** The sixth paragraph of Section 3.1.3 has been revised to clarify soil sample collection procedures for TPH GRO:

> The soil samples intended for TPH GRO analysis will be collected as grab samples to minimize volatilization. Three 5-gram subsamples will be collected per sample location using a Terra Core™ sampler and placed into separate pre-weighed 40-mL VOA vials (one pre-preserved with methanol and the remaining two with deionized water) containing a magnetic stir bar. The sealed vials will be packed in coolers and placed on ice to maintain a temperature of 4° Celsius.

**PREQB Evaluation of Specific Comment 8:**

*PREQB Comment 8, Page 3-6, Section 3.1.4: Please include the time period between well development and groundwater sampling. As per the Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers, Office of Solid Waste and Emergency Response, EPA 542-S-02-001, May 2002, the time for a well to re-stabilize after development is dependent on site-specific geology and should be specified in the site sampling plan.*

**Navy Response to PREQB Specific Comment 8:** Section 3.1.4 provides a minimum of 24 hours is required between well development and sampling. Section 3.1.4 has been revised to delete the word "typically".

*Evaluation of Response: According to EPA's 1995 USEPA OSWER article EPA/540/S-95/504 by Puls and Barcelona, typically, one to two weeks is required for equilibration. Please provide more detail on how the timeframe of a minimum of 24 hours were determined and briefly discuss the geologic considerations for this determinations.*

**Navy Response:** The purpose of monitoring well development is to ensure removal of fine grained sediments (fines) from the vicinity of the well screen. This allows the water to flow freely from the formation into the well and also reduces the turbidity of the water during sampling. (USEPA ERT SOP 2044; October 23, 2001). Environmental industry standard is to conduct well development a minimum of 24 hours after well installation (setting of the cement/bentonite grout). The purpose of this wait time primarily is to ensure that the bentonite well seal is fully hydrated and that the cement-bentonite grout has set sufficiently so that they will not be eroded by the development process. If gentle development methods are used it is even acceptable to develop the well shortly after installation as long as the method does not interfere with the setting of the well seal (USEPA ERT SOP 2044; October 23, 2001).

The timing of groundwater sampling with respect to well installation/development is typically controlled be the fieldwork logistics and the overall project schedule. As a general practice, the groundwater monitoring well installation and development task is usually initiated as one of the first tasks during a field event and sampling of those wells is typically one of the last tasks initiated to maximize the time between development and sampling. For longer field programs, this could mean a week or more between installation/development and sampling. However, for shorter field programs, a minimum time period between installation /development and sampling of 24 hours is usually used as a rule.

More important than the stand-time between well installation/development and groundwater sampling is the equilibration of the groundwater within the well with the surrounding aquifer. This equilibration is evaluated by monitoring the water level in the well (i.e., is the water level static?) and by measuring groundwater quality parameters during purging. Stabilization of the water quality parameters is a strong indicator that the water being purged (and ultimately sampled) is representative of the groundwater quality in the aquifer being sampled. During purging and sampling, pH, specific conductance, temperature, reduction/oxidation (redox) potential, dissolved oxygen (DO), and turbidity are monitored every five minutes. pH is a measure of the free uncomplexed hydrogen ions and reflects stable chemical conditions with a less than 0.1 change in three consecutive readings. Redox potential is a measure of the tendency of the solution to either gain or lose electrons when it is subject to change by introduction of a new species. According to low flow sampling procedures redox must be stable with less than 10 millivolts change in three consecutive readings. DO enters groundwater through diffusion of surrounding air and by aeration caused by rapid movement. DO is stabilized to less than a 10 percent change over three consecutive readings. These indicator parameters at stable conditions also suggest chemical equilibrium of the monitoring well system. If the water quality parameters are stabilized, and other low flow sampling procedures are properly followed then the resulting groundwater sample will be representative of the aquifer groundwater quality.

Reference: USEPA Environmental Response Team (ERT) Standard Operating Procedures (SOPs), SOP 2044 Monitor Well Development. October 23, 2001 as on the ERT website http://www.ert.org/mainContent.asp?section=Products&subsection=List

**PREQB Evaluation of Specific Comment 17(h):**

*PREQB Comment 17, Table 3-2:*

h. *The QLs listed for metals in aqueous samples appear very high and more appropriate for analysis via 6010C instead of 6020A. Please verify these QLs with the laboratory and/or procure a laboratory that is capable of reporting lower QLs. Most of the listed QLs appear to be high by about one order of magnitude compared to QLs typically reported by method 6020A. It is important to note that many of the aqueous metals QLs exceed the risk screening levels (ecological groundwater screening levels presented in Table 4-2 as well as the May 2010 EPA RSLs) and therefore lower QLs are really needed in order to achieve project objectives. Specific exceedance of risk screening levels are as follows:*
    i. *Antimony QL (20) > EPA Tap water RSL (1.5)*
    ii. *Arsenic QL (10) > EPA Tap water RSL (0.045)*
    iii. *Cadmium QL (5) > EPA Tap Water RSL (1.8)*
    iv. *Chromium QL (10) > EPA Tap Water RSL (0.043)*
    v. *Cobalt QL (10) > EPA Tap Water RSL (1.1)*

vi. *Vanadium QL (10) > EPA Tap Water RSL (0.26)*
vii. *Copper QL (20) > ecological groundwater screening levels (3.73)*
viii. *Nickel QL (40) > ecological groundwater screening levels (8.28)*
ix. *Silver QL (10) > ecological groundwater screening levels (0.23)*

**Navy Response to PREQB Specific Comment 17(h):** The Navy conducted a comparison of quantitation limits from different laboratories and found that the quantitation limits for Method 6020A provide lower reporting limits than Method 6010C. The Navy is aware that many of the reporting limits exceed the ecological groundwater screening levels presented in Table 4-2 as well as the May 2010 Regional Screening Levels.

*PREQB Evaluation of Response: It is PREQB's preference for the quantitation limits to meet the data quality objectives. Please note that for all metals, the QLs provided by the Navy for the 6020 analysis of aqueous samples are much higher than QLs typically observed by PREQB for this method. The table below compares typical QLs to those provided by the Navy as well as the standard EPA CLP methodology for ICP/MS. Please provide additional information as to why your lab cannot achieve typical QLs for this method.*

| ***Quantitation Limits for SW-846 Method 6020A (ICP/MS)*** | | | | | | |
|---|---|---|---|---|---|---|
| ***Metals by ICP/MS*** | | ***Proposed QLs*** | ***Lab 1 QLs*** | ***Lab 2 QLs*** | ***Lab 3 QLs*** | ***EPA CLP Method QLs*** |
| *(ug/L) 6020A* | *Antimony* | *20* | *0.05* | *1.0* | *0.5* | *2* |
| | *Arsenic* | *10* | *0.5* | *0.40* | *0.5* | *1* |
| | *Barium* | *10* | *0.05* | *50* | *0.5* | *10* |
| | *Beryllium* | *4.0* | *0.03* | *0.40* | *0.5* | *1* |
| | *Cadmium* | *5.0* | *0.03* | *0.50* | *0.5* | *1* |
| | *Chromium* | *10* | *0.2* | *10* | *0.5* | *2* |
| | *Cobalt* | *10* | *0.03* | *NA* | *0.5* | *1* |
| | *Copper* | *20* | *0.1* | *NA* | *0.5* | *2* |
| | *Lead* | *5.0* | *0.03* | *1.0* | *0.5* | *1* |
| | *Nickel* | *40* | *0.2* | *5.0* | *0.5* | *1* |
| | *Selenium* | *10* | *1.5* | *5.0* | *1* | *5* |
| | *Silver* | *10* | *0.03* | *0.50* | *0.5* | *1* |
| | *Thallium* | *10* | *0.03* | *0.20* | *0.5* | *1* |
| | *Tin* | *10* | *0.1* | *NA* | *NA* | *NA* |
| | *Vanadium* | *10* | *0.3* | *5.0* | *0.5* | *5* |
| | *Zinc* | *20* | *0.75* | *20* | *5* | *2* |

**Navy Response:** As indicated in our previous response to EPA General Comment 1 (refer to Navy response to EPA Evaluation of the Response to EPA General Comment 1 within this document), to help ensure that screening levels are met, required quantitation limits are provided to the laboratory as part of their contractual scope of work. Upon the selection of the subcontracted analytical laboratory for this investigation, laboratory specific SOPs and QC limits will be reviewed to confirm they will be able to meet the applicable screening levels. Laboratory specific SOPs and QC limits will be included as an appendix to the draft Phase I RFI Report. Additionally, upon further review of Table 3-2, it was discovered that outdated QLs were included in error for SW-846 Method 6020A (ICP/MS) analysis of groundwater. Therefore, Table 3-2 has been revised to include the most current QLs available for Method 6020A.