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May 26, 2011

U.S. Environmental Protection Agency - Region II  
290 Broadway – 22<sup>nd</sup> 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 Full RCRA Facility Investigation Work Plan for SWMU 71

Dear Mr. Everett:

Michael Baker Jr., Inc. (Baker), on behalf of the Navy, is pleased to provide you with one hard copy of the replacement pages for the Final Full RFI Work Plan for SWMU 71, Naval Activity Puerto Rico for your review and approval. These replacement pages make up the Revised Final Full RFI Work Plan for SWMU 71. Directions for inserting the replacement pages into the Final Full RFI Work Plan for SWMU 71 are provided for your use. Also included with the copy of the replacement pages is one electronic copy provided on CD of the Revised Final Full RFI Work Plan for SWMU 71. This document is being submitted in accordance with EPA comments dated February 24, 2011. The Navy responses to these comments are attached for your review. Additional distribution has been made as indicated below.

If you have questions regarding this submittal, please contact Mr. Mark Davidson at (843) 743-2124.

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

A handwritten signature in black ink that reads "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)  
Mr. Gloria Torro, PR EQB (1 hard copy and 1 CD)  
Ms. Bonnie Capito, NAVFAC Atlantic – Code EV42 (1 hard copy)  
Ms. Wilmarie Rivera, PR EQB (1 CD)  
Mr. Felix Lopez, US F&WS (1CD)  
Ms. Brenda Smith, TechLaw, Inc. (1 CD)

**NAVY RESPONSES TO EPA COMMENTS DATED FEBRUARY 24, 2011  
FINAL FULL RCRA FACILITY INVESTIGATION WORK PLAN  
SWMU 71 (FORMER QUARRY DISPOSAL SITE) DATED OCTOBER 21, 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 (QA/R-5), dated March 2001. For example:*

- *Laboratory specific information (e.g., laboratory specific standard operating procedures, reporting limits (RLs), quality control (QC) limits, and analytical calibration criteria) has not been provided.*
- *Specific procedures for data verification and validation have not been provided.*
- *There is no discussion of how precision, accuracy, representativeness, comparability and completeness and sensitivity (PARCCS) measures will be incorporated into a data quality assessment, or if an evaluation of significant trends and biases will be included as part of a data quality assessment.*
- *Examples of all forms and checklists to be used have not been provided (e.g., chain-of-custody forms, sample labels, audit checklists, data validation checklists).*
- *There is no discussion of corrective action procedures.*

*Revise the Work Plan to provide the level of detail as discussed in QA/R-5.*

**Navy Response:** 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; 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

The analytical methods, analyte lists, detection limits, etc. may have changed to some degree since publication of the DCQAP. Consequently, the Full 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 Summary of Sampling and Analytical Program – QA/QC Samples
- Table 3-3 Method Performance Limits

The information provided in these tables has been reviewed against screening levels and have been determined to generally meet these levels. Table 3-3 has been revised to include preparation methods. Ecological screening values are presented on Tables 4-1 and 4-2. In addition, a table with Human Health Screening Values (Table 4-3) and NAPR Background Screening Values (Table 4-4) were 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 Full RFI Work Plan for SWMUs 71 is identical to the Phase I RFI structure and therefore meets the QA/R-5 QAPP requirements.

**EPA Evaluation of Response to 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 3-3 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 Work Plan as an addendum. Also, revise the Work Plan to clarify how it can be ensured that the laboratory will be able to meet screening levels when reporting results are on a dry weight basis.*

**Navy Response:** As indicated in our previous 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 Full RFI Report. Additionally, upon further review of Table 3-3, it was discovered that outdated QLs were included in error for SW-846 Method 6020A (ICP/MS) analysis of groundwater. Therefore, Table 3-3 has been revised to include the most current QLs available for Method 6020A.

**General Comment 2.** *The data quality objectives (DQOs) presented in the Work Plan are not sufficiently detailed. For example, decision rules and boundaries of the study have not been defined. In addition, the rationale for the number, type, and location of the samples is not sufficiently explained. The level of information contained in the seven-step DQO process described in EPA's Guidance on Systematic Planning Using the Data Quality Objectives Process (QA/G-4), dated February 2006, should be provided. Revise the Work Plan to provide more detailed DQOs.*

**Navy Response:** Although the seven-step DQO process was not applied rigorously, elements essential to the process (with the exception of statistically determining the number of samples) have been considered in the development of the sampling design. Because the investigation is designed to determine the extent of impacts that have occurred to soil at the site, the sample locations have been selected to reflect the most likely impacted areas based on site history and professional judgment. All samples are grab samples with locations biased towards meeting the project objective of determining the extent of contamination. Detailed sampling rationale, including the number and location of samples from each media, specific rationale for each sample, sampling procedures, and associated laboratory analyses is provided in Section 3.1.

Project decision conditions include comparing analytical data to human health-, ecological-, and background-based screening values. Exceedances of human health and/or ecological screening values and background screening values will result in a recommendation that the site move to a CMS with an initial step being preparation of a CMS Work Plan. A HHRA and ERA will be conducted as part of the CMS. Although human health and ecological risk assessments will not be conducted during the Full RFI, the Full RFI Work Plan was developed with input from our human health and ecological risk assessors to assure that the investigation will provide the data that is needed for future risk management decisions. The human health and ecological risk assessors review the sampling (number, frequency, location and collection methods) and analytical programs (analytical methods, parameter lists, detection limits) and compare applicable screening values to method performance limits to maximize the usability of the resultant data. The decision criteria for this project (comparison of environmental media analytical results to screening criteria), is discussed extensively in Sections 4.6.1, 4.6.2 and 4.6.3 of the Full RFI Work Plan. Additional data quality criteria are provided in Section 4.1.1.2 (data quality levels) and Section 14.3 (data completeness and other criteria) of the approved final DCQAP. Based on the above, no revisions to the text of the Full RFI Work Plan for SWMU 71 are required.

**EPA Evaluation of the Response to EPA General Comment 2:** *The response partially addresses the comment. However, the decision process behind the selection of sample locations and depths and why it will address study goals is not clearly stated. Revise the Work Plan to include a more specific rationale behind why the number and locations of samples is sufficient to meet study goals.*

**Navy Response:** The following paragraphs have been added to Section 3.0 of the Work Plan:

At each Phase I RFI soil boring location where soil sample results exceed applicable screening values, four soil boring locations surrounding the previous exceedance location were identified to provide a sufficient number of samples to horizontally delineate PAH and/or metals exceedances within the respective soil interval. If the soil sample interval from the previous Phase I RFI analytical results were above screening levels, then the same soil sample interval will be sampled from the four sample locations to horizontally delineate the exceedance. It was determined that four additional borings would give enough radial coverage to horizontally delineate the extent of exceedance within this soil column zone. In addition, the 1 to 3 ft bgs sampling interval at all proposed boring locations will be sampled to supplement future ecological risk evaluations because it is considered a biologically active zone. If there are no Phase I RFI analytical results (i.e. 71SB05) below applicable screening levels in the soil column below the detected exceedance, then an additional boring (i.e. 71SB49) will be offset two feet from the previous boring and the interval immediately below the exceedance will be collected to delineate the vertical extent of contamination. In this case, the boring will be offset two feet to minimize impact to the existing monitoring well.

In order to provide sufficient radial coverage within the 1985 polygon in the upper portion of the SWMU, three additional borings (71SB28 through 71SB30) will be advanced. In the lower portion of SWMU 71, four additional surface soil samples will be located within and down gradient of historical polygon features identified in the Phase I ECP. Surface soil from these four locations will be collected to supplement future risk evaluations. Soil sample frequency and analysis are presented in Section 3.1. Overall, the total number of samples proposed is intended to provide sufficient data to assist any future risk management decision.

The locations of proposed monitoring wells are based on Phase I RFI analytical results and the expected south and southeast flow of groundwater. Samples are proposed up gradient of Phase I RFI sample locations to determine the potential source of metals detected in groundwater. In addition, samples located down gradient of Phase I RFI locations are intended to provide confirmation that elevated metals concentrations are absent in the groundwater south of Langley Drive.

**General Comment 3.** *Section 3.1 indicates that surface soil samples will not be collected in the Lower Area of SWMU 71 since “the areas surrounding the Commissary Building and parking lot are assumed to be disturbed to a depth of about one foot bgs because of construction activities, thus surface soil is unrepresentative of surface soil and the SWMU that may have had a release from SWMU activities.” However, it is not clear how the assumption that soils are disturbed was determined and whether the extent of these disturbed soils encompassed all proposed sampling locations. In addition, no information was provided to establish that these disturbed soils are not impacted from SWMU activities. Revise the Work Plan to provide further details explaining why surface soils in the Lower Area of SWMU 71 will not be collected and analyzed.*

**Navy Response:** The issue of surface soil sampling in the lower area of SWMU 71 was evaluated during preparation of the Phase I Work Plan and is documented in the approved Revised Final Phase I Work Plan

for SWMU 71 (Baker, 2008). Surface soil in the lower area is not considered representative of SWMU releases to the surface and therefore will not be sampled.

**EPA Evaluation of the Response to EPA General Comment 3:** *The response is not adequate. The lack of surface soil sampling at the Lower Area portion near/adjacent to the Commissary Building and parking lot represents a data gap for a human health risk assessment (HHRA). While a HHRA will not be conducted as part of the RFI, the data collected as part of the RFI should be sufficient to support a defensible HHRA should a HHRA and Corrective Measures Study (CMS) be necessary. It is acknowledged that these soils were disturbed during the construction of the parking lot and Commissary Building and that subsurface samples are proposed in the Lower Area, and both surface and subsurface soils are proposed in the Upper Area. However, the proposed surface soil samples in the Upper Area are located more than 160 feet north of the Commissary Building and parking lot. Additionally, it is important to understand the potential exposures to site receptors contributing from both the Upper and Lower Areas. As an example, site receptors encountering the parking lot may be exposed to dust derived from surface soil for both areas. Also, even if the risk and hazard associated to surface soil collected from the Lower Area does not represent a risk and hazard above 1E-06 or 1.0, respectively, it is necessary to understand the cumulative exposures at SWMU 71. Should a HHRA be conducted, the lack of surface soil sampling of the Lower Area would represent a data gap and would likely undermine the HHRA conclusions.*

**Navy Response:** Although the Navy believes that the surface soil near/adjacent to the Commissary Building and parking lot is not representative of SWMU-specific operations at the time the SWMU was active, surface soil samples will be collected as requested by this comment to supplement future risk evaluations. Because PAHs and metals have been identified as the site contaminants in both the Upper Area and Lower Area of the SWMU, surface soil analysis will consist of Appendix IX low-level PAHs and metals.

The second bullet point in Section 1.3 was revised to state the following:

- At the request of USEPA, determine whether low-level PAHs and metals are present in the surface soil located in the lower portion of SWMU 71.

Table 3-1 was revised to include additional surface soil sampling. Figure 3-2 was revised to show locations of proposed surface soil samples in the lower area.

A fourth bullet point has been added to Section 3.1 to state the following:

- Four surface soil sample locations (71SS01 through 71SS04) are proposed within and down gradient of the historical polygon features identified in the Phase I ECP. Sampling within these identified areas of former site activity is limited due to location of the Commissary Building. Surface soil (0 to 1 ft bgs) samples will be collected at each location to supplement future risk evaluations. Surface soil analysis will consist of Appendix IX low-level PAHs and metals, similar to that of soils throughout the SWMU.

Section 3.4.2 has been revised to include the collection of equipment rinsate samples from stainless steel spoons for surface soil collection.

Table 3-2 has been revised to include the comment “Macro Core Acetate Liner/Stainless Steel Spoons”

for one equipment rinsate sample.

**General Comment 4.** *The Work Plan does not provide an adequate rationale for the proposed soil sampling depths. For example, Section 3.1 often indicates that contamination was detected above screening criteria from 7 to 9 feet (ft) below ground surface (bgs); however, no soil samples at greater depths (e.g., 9 to 11 ft bgs) have been proposed to vertically delineate contamination. Further, the text often proposes sampling at the 1 to 3 ft bgs interval, without a clear rationale for the selection of this sampling interval, especially given prior statements regarding historical soil disturbance associated with construction activities. Revise the Work Plan to provide sufficient rationale for selection of soil sampling depths, and to clarify why vertical delineation of contamination has not been proposed.*

**Navy Response:** Section 3.1 provides specific rationale for the soil sampling program. The 1 to 3 foot bgs interval is sampled for use in future ecological risk evaluations because it is considered a biologically active zone. Additionally, please refer to Navy response to PREQB comments No. 6a through 6c for revisions to the soil sampling program. Appropriate revisions will be included in Section 3.1.

**EPA Evaluation of the Response to EPA General Comment 4:** *The response does not appear to be adequate. Several bullets in Section 3.1, Soil Sampling and Analysis Program, indicate that contamination was previously detected at the seven to nine feet below ground surface (bgs) interval. It is unclear why sampling is not proposed at the nine to 11-foot bgs interval to assist with vertical delineation of contamination. Revise this section to clearly specify the depths at which samples will be collected and provide justification for selection of those intervals. In particular, collection of samples from the nine to 11-foot bgs interval should be considered in the vicinity of soil borings 71SB04 and 71SB05. Further, indicate under what conditions the field geologist would select an interval other than that specified in the Work Plan. Please note that it is inherent in any field investigation program that field conditions may be encountered that do not allow for collection of samples as planned (i.e., because of refusal, low sample recovery, etc.). Without further explanation provided in the text as requested, it should be noted that justification for any field modifications made will need to be provided, and the rationale for the alternate sample location chosen will need to be supported (i.e., sample point/location moved to an alternative location but that the alternative location is still representative of data gaps being filled, or collection of a sample from a higher or lower interval as conditions allow, and why the interval selected is representative of the original conditions being assessed).*

**Navy Response:** At soil boring location 71SB04, subsurface soil samples were collected from the 1.0 to 3.0, 7.0 to 9.0, and 15.0 to 17.0 feet bgs depth intervals. Arsenic and cobalt were detected at concentrations in excess of both background and residential RSLs in the 7 to 9 foot bgs interval; however, none of the detected metals exceeded their respective screening criteria in the 15 to 17 foot bgs interval. The data from the 15 to 17 foot bgs depth interval provides a lower bound to the vertical extent of suspected contamination at this location. Consequently, it was proposed to collect the Full RFI samples from the same depth interval as the suspected contamination (i.e., 7 to 9 feet bgs) to delineate the horizontal extent of subsurface soil contamination; data from the 7.0 to 9.0 foot bgs interval also will be useable in future human health risk assessments, whereas data from greater than 10 feet bgs typically is not included in the risk evaluation because of a lack of a complete exposure pathway.

At soil boring location 71SB05, subsurface soil samples were collected from the 1.0 to 3.0 and 7.0 to 9.0 feet bgs depth intervals. Arsenic was detected in samples from both intervals at concentrations in excess of both background and residential and industrial RSLs; benzo(a)pyrene was detected above the residential RSL in the 7.0 to 9.0 feet depth interval and above both the residential and industrial RSLs in the 1.0 to 3.0 foot bgs depth interval. Note that the arsenic concentrations are very close to the

background concentration and may in fact represent natural background variation rather than site contamination; however, a sufficient number of samples was not available in the Phase I RFI to verify this. It is also acknowledged that a sample from a deeper interval was not collected from this location to provide a lower bound to the vertical extent of contamination. Based on the above, the Navy proposes revising the sampling approach such that an additional boring (71SB49) will be advanced and offset approximately two feet from 71SB05. By offsetting the boring two feet, monitoring well 71SB05 will not be adversely impacted. Deep subsurface soil from the 9.0 to 11.0 ft bgs interval will be sampled at 71SB49 to delineate the vertical extent of contamination associated with 71SB05. Deep subsurface soil from the four soil borings proposed for installation around location 71SB05 will be collected from the 7.0 to 9.0 foot bgs depth interval to delineate the horizontal extent of contamination.

As this comment indicates, field conditions may be encountered that do not allow for the collection of samples as planned. Deviations from the work plan/field modifications will be documented in the field logbook and explained in the Full RFI Report.

The following revisions were incorporated into the work plan:

- Table 3-1 was revised to include additional soil boring 71SB49 and to clearly specify the proposed depths at which samples will be collected. Figure 3-2 was revised to show the location of soil boring 71SB49.
- The sixth bullet point in Section 3.1 was revised to state the following:

Arsenic and cobalt were detected above background and residential SLs in subsurface soil (at 7-9 ft bgs) from Phase I RFI sample location 71SB04. However, none of the detected metals exceeded their respective screening criteria in the 15 to 17 ft bgs interval. The data from the 15 to 17 ft bgs depth interval provides a lower bound to the vertical extent of suspected contamination at this location.

- The seventh bullet point in Section 3.1 was revised to state the following:

Two subsurface soil samples will be collected per boring. Shallow (1 to 3 ft bgs) subsurface soil samples will be collected from each proposed boring. Deep subsurface soil from each proposed boring will be collected from the 7.0 to 9.0 foot bgs depth interval to delineate the horizontal extent of contamination. A subsequent interval beyond 7.0 to 9.0 ft bgs was not sampled at 71SB05; consequently, the lower bound of suspected contamination has not been established. Therefore, one soil boring (71SB49) will be advanced approximately two feet south of 71SB05 and a subsurface soil sample will be collected from the 9.0 to 11.0 ft bgs depth interval. This subsurface sample will be analyzed for Appendix IX metals and Appendix IX low-level PAHs to investigate these contaminants at this lower interval.

- The first paragraph in Section 3.0 was revised to state the following:

It should be noted that field conditions may be encountered that do not allow for the collection of samples as planned. Sampling locations may be adjusted in the field as necessary. Deviations from the work plan/field modifications will be documented in the field logbook by the sampling team and explained in the Full RFI Report.

**General Comment 5.** *The Work Plan does not provide adequate details on monitoring well installation. For example, Section 4.1 indicates that a minimum of only 6 inches of bentonite would be used for very shallow wells; however, it is unclear why limiting the amount of bentonite would be necessary, since the anticipated depth of boring refusal is 16 to 29 feet bgs. Similarly, Section 4.1 indicates that the thickness of sand above the well screen may be reduced. Revise the Work Plan to provide additional well installation details and provide anticipated depth of water information to support any limitations on sand or bentonite usage.*

**Navy Response:** The second paragraph of Section 3.2 Monitoring Well Installation provides specific well construction requirements. Included in this discussion are minimum tolerances for the thickness of sand and bentonite in the event that shallow or perched groundwater is encountered. No revisions to the text of the Full RFI Work Plan for SWMU 71 are required.

**EPA Evaluation of the Response to EPA General Comment 5:** *The response appears to be partially adequate. Given that the anticipated depth of boring refusal is 16 to 29 feet bgs, it appears unlikely that installation of very shallow wells will be necessary. Indicate the well depth and location that is considered to be “very shallow.” In addition, Section 3.2, Monitoring Well Installation, does not indicate the minimum length of well screen that will be used. Revise this section to include this information.*

**Navy Response:** The installation of very shallow monitoring wells is dependent on the depth to groundwater below ground surface. It is possible that shallow depth to groundwater will be encountered at proposed wells 71SB46 through 71SB48 due to the close proximity of the wetlands at the southern portion of the site.

The first paragraph of Section 3.2 was revised to state the following:

Specific monitoring well construction requirements are provided in this subsection. In the event groundwater is encountered approximately 3 feet bgs or less, installation of a very shallow well will be considered. Proposed monitoring wells 71SB46 through 71SB48 are located near wetlands where it is possible a very shallow well will be necessary. Requirements for very shallow monitoring wells are further discussed within this subsection.

The length of screen in a monitoring well is designed to meet the Low Stress (Low-Flow) Purging and Sampling Procedure which identifies a maximum screen interval of ten feet. The low-flow sampling procedure does not specify a minimum length of well screen.

The second paragraph of Section 3.2 was revised to state the maximum length of well screen:

Monitoring wells will be installed in soil borings advanced with the 66DT Geoprobe rig. Monitoring wells (including very shallow monitoring wells) will consist of a 4-1/4 inch diameter, Schedule 40 polyvinyl chloride (PVC) riser with a maximum 10-foot screen to comply with low-flow sampling procedures.

**General Comment 7.** *Although discussed in Section 4.6 of the Work Plan, human health screening values (i.e., Regional Screening Levels (RSLs), federal drinking water maximum contaminant limits (MCLs)) and background screening values have not been presented in the Work Plan. Only ecological screening levels were presented. Verification that the laboratory reporting limits will be able to meet screening level*

values cannot be performed without a presentation of all of the screening values to be used. Revise the Work Plan to provide all screening criteria to allow for comparison to analytical results. Ensure that laboratory reporting limits (RLs) are also provided alongside the screening values.

**Navy Response:** The human health screening values (Regional Screening Levels and MCLs) and NAPR background screening values, will be provided in the work plan as new tables (i.e., Tables 4-3 and 4-4, respectively).

**EPA Evaluation of the Response to EPA General Comment 7:** *The response is adequate; however, Table 4-3, Human Health Screening Values, does not include a screening value for pesticides or total petroleum hydrocarbons (TPH)/diesel range organics (DRO). Given that the footnotes of Table 3-1 indicate at least one groundwater sample (Sample 71GW04) will also be analyzed for these parameters, Table 4-3 should include the associated screening values. Revise Table 4-3 to include screening values for pesticides and TPH DRO, or alternatively, resolve any associated discrepancies. Additionally, ensure that the latest Regional Screening Levels (RSLs) are used in the RFI.*

**Navy Response:** Table 4-3 was revised to include groundwater screening values for pesticides and TPH DRO as indicated in footnote (4) of Table 3-1. Additionally, Table 4-3 was revised to include groundwater screening values for VOCs and TPH gasoline range organics (GRO) as indicated in footnote (5) of Table 3-1. The most current version of the RSLs available at the time the SWMU 71 Full RFI is completed will be used for screening purposes.

**General Comment 15.** *MCLs will be used to screen groundwater data; however, MCLs are not solely risk-based. Groundwater exceedances of risk-based screening criteria warrant an HHRA unless land use controls and/or institutional controls are in place at SWMU 71 to prevent consumption of groundwater (e.g., residential development). Further, if a HHRA is warranted, note that groundwater COPCs should be selected based on the applicable Tap Water RSL and not the MCL.*

**Navy Response:** MCLs will be used only as one of the screening tools in the Full RFI. As indicated in Section 4.6.2, USEPA Regional Tap Water SLs and inorganic background levels also will be used for groundwater screening in the Full RFI for SWMU 71. It is acknowledged in Section 4.6.2.2 that MCLs are not solely risk-based. Note that it is not the objective of the Full RFI to evaluate the potential for human health risks. Further evaluation of the potential for human health risks will be conducted as part of a CMS investigation. In HHRA's conducted for NAPR, only risk-based screening criteria are used in the COPC selection process. As such, MCLs are not used to identify groundwater COPCs. No revisions to the text of the Full RFI Work Plan for SWMU 71 are required.

**EPA Evaluation of the Response to EPA General Comment 15:** *The Navy's response does not fully address the intent of EPA General Comment 15. EPA and TechLaw are aware that Section 4.6.2, Human Health Screening Values, indicates that Tap Water RSLs will be used in the Full RFI screening for groundwater, but acknowledges that Maximum Contaminants Levels (MCLs) will also be used. The intent of EPA General Comment 15 was to recommend that where EPA Tap Water RSLs are more protective than MCLs, EPA Tap Water RSLs be used in determining and delineating the nature and extent of contamination in groundwater. Given that a HHRA will not be conducted as part of the RFI, it is important the RFI data evaluation confirms or justifies the decisions about whether or not SWMU 71 will be recommended for a CMS. It is recommended that such justifications be risk-based for all media; therefore, the use of EPA Tap Water RSLs rather than MCLs (when EPA Tap Water RSLs are more protective) is recommended. While MCLs are the regulatory limit, delineating to the EPA Tap Water*

*RSL, when RSLs are more protective than MCLs, will allow for a more protective data evaluation in the RFI in support of a decision for/against performing a CMS. Revise the Work Plan to clarify that EPA Tap Water RSLs will be used to delineate any groundwater contamination when EPA Tap Water RSLs are more protective than MCLs, or alternatively, provide justification for not following this approach either in the Work Plan or the RFI Report.*

**Navy Response:** The Navy concurs with this comment. Groundwater analytical data generated as part of the full RFI investigation will be compared to MCLs, Tap Water RSLs and background (where applicable for selected metals); the most stringent of these for a given parameter will be used as the basis for delineating groundwater contamination. The first paragraph of Section 4.6.2 was revised to state the following:

In the case of groundwater comparison to human health screening criteria conducted as part of the Full RFI, the Regional Tap Water SLs will be used to delineate the nature and extent of contamination in groundwater when the Regional Tap Water SLs are more protective than MCLs.

## **SPECIFIC COMMENTS**

**Specific Comment 6.** *Section 3.1, Soil Sampling and Analysis Program, Page 3-2: The second item on this page indicates that arsenic and cobalt exceeded screening criteria in subsurface soil (at 7 to 9 ft bgs) from Phase I RFI sample location 71SB04, but the text indicates that the proposed samples in the vicinity of this boring will be collected from 1 to 3 ft bgs and from 7 to 9 ft bgs (or from an alternate interval) based on the discretion of the field geologist. Since the metals contamination was located from 7 to 9 ft bgs, it is unclear why an alternate interval would be appropriate. Revise the Work Plan to provide clarification regarding this matter.*

**Navy Response:** The phrase “or from an alternate interval” is included to cover the contingency that a sample cannot be collected from the specified interval (i.e., because of refusal, low sample recovery, etc.). No revisions to the text of the Full RFI Work Plan for SWMU 71 are required.

**EPA Evaluation of the Response to EPA Specific Comment 6:** *The response appears to be partially adequate. Given that contamination was detected at the seven to nine feet bgs interval, revise the text to state that a sample will be collected from this interval unless field conditions do not allow it (i.e., because of refusal, low sample recovery, etc.), and if this occurs, provide the decision rationale that will be used to collect an alternative but representative sample.*

**Navy Response:** Section 3.1 was revised to state the following:

Two subsurface soil samples will be collected per boring, one from the 1 to 3 ft bgs interval and the other from 7.0 to 9.0 ft bgs unless field conditions do not allow (because of refusal, low sample recovery, etc.), at which time a representative sample will be collected from an alternative interval and/or alternate location based on the discretion of the field geologist. Deviations from the work plan/field modifications will be documented in the field logbook and explained in the Full RFI Report.

**Specific Comment 14.** *Section 4.0, Reporting, Pages 4-1 through 4-7: 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:** 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 14:** *The response appears partially adequate. However, the response text should be included in Section 4.0. Additionally, ensure that the data validation reports 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. Revise Section 4.0 to provide this information.*

**Navy Response:** Section 4.7 was revised to include the following text:

All data discussed within this section 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

The data validation reports in the Full RFI Report should 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.

## PREQB COMMENTS

### PREQB Evaluation of Page-Specific Comment 6:

Page 3-2, Section 3.1, Lower Area:

- e. *Bullets 1 to 4: Please clarify why soil that may have been graded or reworked during construction activities is being excluded from investigation. If soil was impacted by past releases and then moved around an area, elevated concentrations of contamination would still be associated with the past release, similar to natural fate and transport mechanisms moving contamination away from an original release. Please note exclusion of surface soil from investigation is also discussed on Page 3-3, in the second full paragraph.*

**Navy Response:** Navy Response: As indicated in the approved Revised Final Phase I Work Plan for SWMU 71 (Baker, April 2008), surface soil in the lower area is not considered representative of the SWMU releases to the surface and therefore will not be sampled.

PREQB Evaluation of Response: *Please clarify if soil was brought in during construction activities or whether soil was only reworked. If soil was only reworked, surface soil sampling is warranted. As discussed in our original comment, if soil was impacted by past releases and then moved around an area, elevated concentrations of contamination could still be associated with the past release, similar to natural fate and transport mechanisms moving contamination away from an original release. A Full RCRA Facility Investigation needs to evaluate the extent of contamination in addition to completing a release assessment. Surface soil should be sampled to evaluate whether elevated concentrations of chemicals of potential concern are present that could pose an unacceptable risk to human health or the environment.*

**Navy Response:** Although the Navy believes that the surface soil is not representative of SWMU-specific operations at the time the SWMU was active, surface soil samples will be collected as recommended by this comment to supplement future risk evaluations. Please see Navy Response to EPA Evaluation of Response to EPA General Comment 3 within this document.

### PREQB Evaluation of Page-Specific Comment 12:

Page 4-3, Section 4.6.1.2: *Groundwater screening values are proposed for evaluating constituents detected in groundwater samples at the site. Please include the aquatic life criteria presented in the Puerto Rico Water Quality Standards (March 2010) as the preferential screening benchmark source.*

**Navy Response:** Section 4.6.1.2 will be revised to indicate that Puerto Rico Water Quality Standards for aquatic life will be used as the preferential screening benchmark source for groundwater. Based on the likely discharge point for SWMU 71 groundwater and the classifications for coastal and estuarine water contained in Rule 1302.1 of the Puerto Rico Water Quality Standards Regulation, Water Quality Standards for Class SB coastal and estuarine waters will be used. As indicated in Section 4.6.2.1, literature-based freshwater screening benchmarks were used as groundwater screening values for those chemicals lacking a marine and estuarine screening benchmark. Therefore, this section also will be revised to indicate that Puerto Rico Water Quality Standards for Class SD surface water will be used as the preferential screening benchmark source for those chemicals lacking a marine and estuarine value. Water Quality Standards for Class SD surface waters will be used based on the classifications for surface waters contained in Rule 1302.2. Finally, Table 4-2 will be revised as necessary to reflect the use of Puerto Rico Water Quality Standards as preferential screening benchmarks for SWMU 71 groundwater.

*PREQB Evaluation of Response: The response is acceptable. Please ensure that the reporting limits are at or below the project action limits should lower values be used based on the response to this comment.*

**Navy Response:** Required quantitation limits are provided to the laboratory as part of their contractual scope of work, to help ensure that screening levels are met. 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.

*PREQB Evaluation of Navy Responses to Comments 12 through 15 (email from Gloria Toro Agrait sent on May 11, 2011): The Navy responses to PREQB Comments 12 through 15 indicate that the Navy has not selected the laboratory and will review the selected laboratory's achievable limits to ensure they meet applicable screening levels. This response is not consistent with joint EPA and DoD guidance for UFP-QAPPs, which PREQB has indicated is the preferred work plan format. Worksheet 15 of the UFP-QAPP requires the presentation of the project action limits, along with the achievable laboratory limits, defined as "Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method (taken from the EPA and DoD March 2005 Final Workbook for Uniform Federal Policy for Quality Assurance Plans, EPA: EPA-505-B-04-900C and DoD: DTIC ADA 427486)." PREQB prefers that a table be prepared in all work plans summarizing the information included on Worksheet #15 of the UFP-QAPP to ensure that the data will meet the project action limits and that the data collected during the investigation meets data quality objectives for making site cleanup decisions. However, PREQB will defer to EPA on this issue. Also, please clarify why the revised Table 3-3 no longer includes metals which were listed in the prior version.*

**Navy Response:** The Navy recognizes that the UFP-QAPP is currently the preferred work plan format. Based on discussions between the Navy, EPA, PREQB and Baker during a conference call held on May 3, 2011, the Navy has agreed to prepare a plan for phasing-in the UFP-QAPP work plan requirements for new projects; existing projects will be completed following the format and requirements of the existing approved Master Project Plans for NAPR. The Navy is currently preparing a letter to the EPA documenting their approach for implementing the UFP-QAPP requirements.

Table 3-3 was corrected to reflect quantitation limits for barium, beryllium, cadmium, chromium and cobalt as indicated by this comment.. Additionally, Table 3-3 was revised to include the lowest screening criteria by media (soil or water) for each parameter.

#### **PREQB Evaluation of Page-Specific Comment 13:**

*Page 4-3, Section 4.6.1.2: Groundwater sampling results are proposed to be screened against surface water screening benchmarks representing dissolved concentrations. Please note that metal ambient water quality criteria presented in the Puerto Rico Water Quality Standards (March 2010) are based on total recoverable concentrations of metals. Please revise the text accordingly.*

**Navy Response:** As indicated in the Navy Response to PREQB Comment No. 12, Section 4.6.1.2 will be revised to indicate that Puerto Rico Water Quality Standards will be used as the preferential screening benchmark source for groundwater. However, as noted by PREQB Comment No. 13 above, Puerto Rico Water Quality Standards for all metals are expressed as total recoverable concentrations. Therefore, the revisions to Section 4.6.1.2 noted by the Navy Response to PREQB Comment No. 12 will include text specifying the Puerto Rico Water Quality Standards for metals are expressed as total recoverable concentrations. Table 4-2 also will be revised accordingly.

*PREQB Evaluation of Response: The response is acceptable. Please ensure that the reporting limits are at or below the project action limits should lower values be used based on the response to this comment.*

**Navy Response:** Refer to the Navy Response to PREQB Evaluation of Page-Specific Comment 12.

#### **PREQB Evaluation of Page-Specific Comment 14:**

*Page 4-6, Section 4.6.2.2: Please also include Puerto Rico's Water Quality Standards Regulation (PRWQS) in this section. Please use the more stringent of either the federal WQS or PRWQS as the enforceable groundwater standard.*

**Navy Response:** Section 4.6.2.2 will be revised to indicate that Puerto Rico Water Quality Standards will be incorporated as groundwater screening values in the Full RFI, as applicable. Further, the more stringent of the Federal MCL or PRWQS will be listed as the screening value. However, it is important to note that the PRWQS will be used only as one of the screening tools in the Full RFI, and will not be used to evaluate the potential for human health risks. Further evaluation of the potential for human health risks will be conducted as part of a CMS investigation. In HHRAs conducted for NAPR, only risk-based screening criteria are used in the COPC selection process. As such, PRWQS will not be used to identify groundwater COPCs.

*PREQB Evaluation of Response: The response is acceptable. Please ensure that the reporting limits are at or below the project action limits should lower values be used based on the response to this comment.*

**Navy Response:** Refer to the Navy Response to PREQB Evaluation of Page-Specific Comment 12.

#### **PREQB Evaluation of Page-Specific Comment 18:**

*Tables 3-3 and 4-2: Please check the quantitation limits for the aqueous samples versus the screening level presented in Table 4-2. In particular, it appears as though the quantitation limits for copper, nickel and silver exceed the ecological screening values.*

**Navy Response:** The Navy is aware that some of the reporting limits exceed the ecological surface soil screening levels. The analytical laboratory chosen for analyzing data will provide the lowest reporting limits possible. It is noted that the ERA, conducted as part of the CMS, will quantify risks for non-detected chemicals. Non-detected chemicals with maximum reporting limits greater than ecological screening values will be identified as ecological COPCs in Step 2 of the SERA and undergo additional evaluation in Step 3a of the BERA.

*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 surface water 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.*

<i>Quantitation Limits for SW-846 Method 6020A (ICP/MS)</i>						
<i>Metals by ICP/MS</i>		<i>SWMU 78 Proposed QLs</i>	<i>Lab 1 QLs</i>	<i>Lab 2 QLs</i>	<i>Lab 3 QLs</i>	<i>EPA CLP Method QLs</i>
<i>(ug/L)</i>	<i>Antimony</i>	<i>20</i>	<i>0.05</i>	<i>1.0</i>	<i>0.5</i>	<i>2</i>
<i>6020A</i>	<i>Arsenic</i>	<i>10</i>	<i>0.5</i>	<i>0.40</i>	<i>0.5</i>	<i>1</i>
	<i>Barium</i>	<i>10</i>	<i>0.05</i>	<i>50</i>	<i>0.5</i>	<i>10</i>
	<i>Beryllium</i>	<i>4.0</i>	<i>0.03</i>	<i>0.40</i>	<i>0.5</i>	<i>1</i>
	<i>Cadmium</i>	<i>5.0</i>	<i>0.03</i>	<i>0.50</i>	<i>0.5</i>	<i>1</i>
	<i>Chromium</i>	<i>10</i>	<i>0.2</i>	<i>10</i>	<i>0.5</i>	<i>2</i>
	<i>Cobalt</i>	<i>10</i>	<i>0.03</i>	<i>NA</i>	<i>0.5</i>	<i>1</i>
	<i>Copper</i>	<i>20</i>	<i>0.1</i>	<i>NA</i>	<i>0.5</i>	<i>2</i>
	<i>Lead</i>	<i>5.0</i>	<i>0.03</i>	<i>1.0</i>	<i>0.5</i>	<i>1</i>
	<i>Nickel</i>	<i>40</i>	<i>0.2</i>	<i>5.0</i>	<i>0.5</i>	<i>1</i>
	<i>Selenium</i>	<i>10</i>	<i>1.5</i>	<i>5.0</i>	<i>1</i>	<i>5</i>
	<i>Silver</i>	<i>10</i>	<i>0.03</i>	<i>0.50</i>	<i>0.5</i>	<i>1</i>
	<i>Thallium</i>	<i>10</i>	<i>0.03</i>	<i>0.20</i>	<i>0.5</i>	<i>1</i>
	<i>Tin</i>	<i>10</i>	<i>0.1</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
	<i>Vanadium</i>	<i>10</i>	<i>0.3</i>	<i>5.0</i>	<i>0.5</i>	<i>5</i>
	<i>Zinc</i>	<i>20</i>	<i>0.75</i>	<i>20</i>	<i>5</i>	<i>2</i>

(1) *Columbia Analytical Services, Kelso, Washington (DoD Certified)*

(2) *Con-test Analytical in East Longmeadow, MA*

(3) *Alpha Analytical in Westborough, MA*

**Navy Response:** As indicated in our previous response to EPA General Comment 1 (refer to Navy response to EPA Evaluation of Response to 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. The analytical laboratory's specific SOPs, QC limits, and QLs will be included as an appendix to the Draft Full RFI Report. Additionally, upon further review of Table 3-3, it was discovered that outdated QLs were included in error for SW-846 Method 6020A (ICP/MS) analysis of groundwater. Therefore, Table 3-3 was revised to include the most current QLs available for Method 6020A.