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October 14, 2010

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  
Final Full RCRA Facility Investigation Work Plan for SWMU 62

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 provided on CD of the Final Full RCRA Facility Investigation Work Plan for SWMU 62. This document is being submitted in accordance with EPA comments dated August 24, 2010. 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/lp  
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 Toro, PR EQB (1 hard copy and 1 CD)  
Ms. Wilmarie Rivera, PR EQB (1 CD)  
Ms. Bonnie Capito, NAVFAC Atlantic – Code EV42 (1 hard copy)  
Mr. Felix Lopez, US F&WS (1CD)  
Mr. Brenda Smith, TechLaw, Inc. (1 CD)

**NAVY RESPONSES TO EPA COMMENT LETTER DATED AUGUST 24, 2010  
DRAFT FULL RCRA FACILITY INVESTIGATION WORK PLAN  
SWMU 62 (FORMER BUNDY DISPOSAL AREA) DATED JUNE 18, 2010**

**EPA COMMENTS**

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

**General Navy Response:** The main objective of this Full RFI Work Plan is to delineate contaminants detected in the Phase I RFI and to define the likely source areas of contamination. Therefore, the objectives of the Draft Full RFI in Section 1.3 will be edited to delete the third bullet. The third bullet states that the Full RFI will further evaluate the potential for human health and ecological risks. Rather, further evaluation of the potential for human health and ecological risks will be conducted as part of the Corrective Measures Study (CMS) investigation. Additionally, statistical background analyses for inorganic chemicals exceeding one or more of the human health and ecological screening values will be conducted in conjunction with the risk assessments as part of the CMS. Therefore, Figure 4-1 – Statistical Analysis Process will be deleted and Section 4.6.3 Background Screening values will be edited since statistical analysis will not be conducted during the Full RFI. References to conducting a human health/ecological risk assessment or statistical background analysis as part of the Full RFI will be deleted from the Work Plan. However, Preliminary Conceptual Models are provided for human health and ecological receptors and are included in a new Section 2.3 – Preliminary Conceptual Models for Ecological and Human Receptors in the Work Plan. The human health and ecological screening values that are discussed within the Work Plan will be used as a tool to determine if a release has occurred, and to delineate and define the extent of contamination after the proposed sampling program is completed.

**GENERAL COMMENTS**

*1. According to Section 1.3, Objectives, one of the objectives of the Full RCRA Facility Investigation is to conduct a general inventory of the types of debris within the vicinities of the proposed sample locations. A detailed methodology for this task has not been discussed in Section 3.0, Scope of Investigation. Revise the Work Plan to provide a discussion for how this task will be completed.*

**Navy Response:** Section 3.0 will be revised to include a subsection entitled “Debris Inventory” and will include the following information: “A description of the type (i.e., concrete, metal, etc.) of surficial debris in the immediate vicinity (within 10 to 15 feet) of a sample location will be recorded in the field logbook for the purpose of identifying potential local sources of metals contamination. The locations of significant pieces of debris or debris piles, as judged by the field manager, will be verified with a GPS.”

*2. Subsurface soil samples collected below three feet should not be included in the future soil data set for comparison to soil screening values. Soil deeper than three feet is not considered environmentally available to potential terrestrial receptors, except in the presence of fossorial mammals or if subsurface soil may be excavated to become surface soil, neither of which appears to be the case at SWMU 62. The literature-based toxicological benchmarks selected as screening*

*values (Table 4-1) are based on surface soil (0 to 1 foot) and subsurface soil (1 to 3 feet). Soil samples collected more than three feet below the surface need to be removed from the future data set and should not be used for comparison to ecological soil screening values. The text needs to be modified to reflect this distinction.*

**Navy Response:** Note Section 4.6.1 specifies that ecological soil screening values are intended only for screening chemicals in surface soil (0 to 1-foot depth interval) and subsurface soil (1 to 3-foot depth interval). Section 4.6.2 has been modified to include that the selected human health screening values are intended for screening chemicals in surface soil (0 to 1-foot depth interval) and subsurface soil (1 to 10-foot depth interval).

In reference to the presentation of analytical data from the Phase I RFI in Appendix C, while all analytical data from subsurface soil samples are presented in one table, those data collected greater than three feet bgs were not compared to ecological screening values. Rather, data collected from depths greater than three feet bgs were compared only to human health screening values and background screening values. However, in order to provide greater clarity in the presentation of tabulated data in the Full RFI, subsurface soil samples will be separated according to depth. Specifically, as part of the Full RFI, subsurface soil samples collected from one to three feet will be included in a separate subsurface soil data set to be compared to ecological screening values, human health screening values, and background screening values. Subsurface soil samples collected from 3 to 10 feet bgs will be included in a separate subsurface soil data set for comparison to human health screening values and background. In the unlikely event that subsurface soil samples are collected below 10 feet bgs, those samples will also be segregated in their own data set and compared to background screening values only.

*3. Section 2.2.2 (Page 2-2) of the Work Plan mentions that some of the Phase I RFI soils were analyzed for Polychlorinated Biphenyls (PCBs). Neither the discussion in Section 2.2.2 nor subsequent sections of the Work Plan mention PCBs. Clarify why PCBs have been eliminated from the investigation.*

**Navy Response:** Section 2.2.2 (page 2-3) states that no organic compounds detected in surface or subsurface soil exceeded screening criteria, indicating that PCBs were either not detected or detected below screening criteria. As shown in Appendices B and C of the Work Plan, PCBs were not detected in either the Phase II ECP investigation or the Phase I RFI. Therefore, analysis of PCBs was not included in the Full RFI. Section 2.2.2 will be revised to state that because PCBs were not detected in any of the previous investigations, it is not included in the analysis program for the Full RFI.

*4. The Work Plan does not specify that exceedances of human health and/or ecological risk-based screening criteria warrant the need for a Human Health Risk Assessment (HHRA) and/or Ecological Risk Assessment (ERA) if complete exposure pathways exist. Clarify that exceedances of risk-based screening criteria warrant a HHRA and/or ERA. In addition, provide any other decision criteria that will be used to prompt a HHRA or ERA.*

**Navy Response:** As discussed in the Navy's general response to USEPA comments, Section 1.3 of the Draft Full RFI Work Plan will be revised to eliminate further evaluation of the potential for human health and ecological risk as a stated objective. The need for a HHRA and ERA was identified by the Phase I RFI, which concluded that impacts to the environment have occurred at SWMU 62 based on the presence of chemical concentrations in soil greater than human health/ecological screening values and background screening values. The proposed sampling

program for the Full RFI will attempt to delineate the extent of contamination detected at the SWMU during the Phase I RFI by 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 the site moving to a CMS and preparation of a CMS Work Plan. A HHRA and ERA will be conducted as part of the CMS. The CMS work plan will present the specific methodology that will be employed for conducting the human health and ecological risk assessments. The first paragraph of Section 4.7 will be revised as follows:

Information from the physical and analytical results (nature and extent of contamination) will be synthesized into conclusions regarding site conditions. Recommendations will be made from these conclusions as to whether a Corrective Measures Study (CMS) is needed or the SWMU can proceed toward corrective action complete. If the conclusions from the Full RFI indicate exceedances of human health and/or ecological screening values and background screening values, then the Full RFI Report will recommend moving the SWMU to a CMS with the preparation of a Draft CMS Work Plan. A HHRA and ERA will be conducted as part of the CMS and the CMS Work Plan will present the specific methodology that will be employed for conducting these assessments.

*5. Consistent with EPA guidance and following agreements with the Navy, inorganics that exceed human health risk-based screening criteria cannot be eliminated from the quantification of risk and hazard regardless of background concentrations. Specifically, the EPA raised this issue in a comment letter dated January 23, 2009 on the Draft Final Correctives Measure Study for Solid Waste Management Unit (SWMU) 68. The Navy responses to the EPA comment letter, dated June 12, 2009, stated that chemicals detected above risk-based screening criteria will be retained as Chemicals of Potential Concern (COPCs) and assessed under total baseline conditions. The Navy's responses further stated that those chemicals at or below background levels (non-site related) will be discussed as part of the risk characterization and then exit the risk assessment process. This approach is consistent with U.S. Navy Human Health Risk Assessment Guidance (available at <http://www-nmcphc.med.navy.mil/downloads/ep/Chapters%201-12.pdf>). Note that this approach appears to be acceptable based on EPA's approval letter dated August 6, 2009 on the Final Correctives Measure Study for SWMU 68 (Baker, 2009b).*

*Ensure that the Work Plan is revised to reflect these previous agreements to maintain consistency among all HHRAs performed at Naval Activity Puerto Rico (NAPR) SWMUs and demonstrate compliance with EPA-recommended risk assessment methodologies. HHRAs conducted for NAPR SWMUs should quantify risk and hazard for any and/or all inorganic compounds that exceed residential or industrial health-based screening criteria. Further, the uncertainty analysis, presented as part of the risk characterization, should include a refinement of risk. This refined risk evaluation should present a breakdown of the total risk as site-related risk and background risk. This will provide the basis for exiting such inorganic COPCs from the HHRA process (i.e., show that such inorganic COPCs should exit at the end of Tier 2, Baseline HHRA, and not continue to the Tier 3 process, risk assessment for selection of remedial alternatives).*

*With respect to ecological risk assessments, the Navy's approach is generally consistent with EPA guidance because inorganic compounds are not excluded based on background in Step 2 (Tier 1) of the Navy's ERA process, and Step 3.a (Tier 2) does include a refinement of risk based on statistical background comparisons (much like the refinement of risk conducted as part of the HHRA uncertainty analysis).*

**Navy Response:** The Navy offers the following points of clarification relative to this comment. As discussed in the Navy’s general response to USEPA comments, the Full RFI analytical data will not be statistically compared to background analytical data as part of the Full RFI. Instead, Full RFI analytical data will be compared to the background-screening values (i.e., ULM background concentrations) presented within the Revised Final II Summary Report for Environmental Background Concentrations of Inorganic Compounds, Naval Activity Puerto Rico, Ceiba, Puerto Rico [Baker, 2010]), as well as human health and ecological screening values, to define the extent of contamination that was detected by the Phase I RFI. Exceedances of human health and/or ecological screening values and background screening values will result in the site moving to a CMS with the preparation of a Draft CMS Work Plan; a HHRA and ERA will be conducted as part of the CMS as detailed in the CMS Work Plan

Inorganic concentrations below background levels will be eliminated from further consideration as site-related contaminants in the Full RFI. However, this does not eliminate them from the quantification of risk in the event an HHRA is warranted. Rather, in HHRA’s conducted for NAPR all chemicals detected above risk-based screening criteria, regardless of whether those chemicals are at or below background, are retained as COPCs and evaluated quantitatively as part of the total baseline HHRA. In addition, a refinement of total site (where the term “site” refers to the SWMU under evaluation) risk addressing the contribution of background to risk (i.e., risks from those chemicals at or below background levels [non-site related]) would be included as part of the uncertainty analysis and risk characterization. Those chemicals whose SWMU-specific concentrations and associated risk/hazard are attributable to background would then exit the risk assessment process, which is consistent with *U.S. Navy Human Health Risk Assessment Guidance*.

*6. The Work Plan does not discuss the potential biota at SWMU 62 that could be exposed to contaminants in soil or groundwater. Revise the Work Plan to specify that biota at or hydrologically downgradient from SWMU 62 will be discussed in the subsequent RFI Report.*

**Navy Response:** The Work Plan will be revised to include two new subsections (Sections 2.1.1 and 2.1.2), which will provide a discussion of the habitats and biota that may occur at SWMU 62 and surrounding areas. As previous investigations have not documented the specific habitats and biota at SWMU 62, the discussion will rely primarily on literature-based information for Puerto Rico and NAPR. As part of the Full RFI field investigation, specific vegetation and biota (if any) observed at SWMU 62 will be documented. A new section, Section 3.3.9 – Vegetation and Biota Documentation will be added to the discussion of field activities in the Work Plan.

*7. The Work Plan does not summarize the approach and methodology to be used in any subsequent HHRA and/or ERA, should such analyses be warranted. For completeness, the Work Plan should, at a minimum:*

- *Provide a Conceptual Site Model (CSM) for human and ecological receptors (i.e., show sources, potentially complete exposure pathways, and receptors).*
- *Provide a brief discussion of exposure assumptions.*
- *Clarify how COPCs will be identified.*
- *Clarify how non-detected compounds will be evaluated.*
- *Summarize standard EPA and/or Navy risk assessment approaches (as appropriate).*
- *Reference risk assessment guidance documents.*

*Revise the Work Plan to include additional details regarding how human health and ecological risk will be quantitatively evaluated, if warranted, by the analytical data screening.*

**Navy Response:** As discussed in previous Navy responses, the Full RFI will not include a HHRA and ERA. These evaluations will be presented as part of the CMS. Exceedances of human health and/or ecological screening values and background screening values will result in the site moving to a CMS with the preparation of a Draft CMS Work Plan. Specific methodology that will be used to conduct the HHRA and ERA will be presented in the CMS Work Plan. As such, the Navy does not believe it is necessary to present this information within the Full RFI Work Plan. However, to support the proposed Full RFI sampling program, preliminary conceptual models for human and ecological receptors have been developed and presented within a new subsection to Section 2.0 (i.e., Section 2.3). The preliminary conceptual models outline potential sources of contaminants, transport pathways, exposure media, potential exposure routes, and receptor groups.

*8. 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 [SOPs], 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 on how data will be verified or validated.*
- *There is no discussion of how precision, accuracy, representativeness, comparability, completeness and sensitivity (PARCCS) measures will be incorporated into a usability report 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:

<b>Item</b>	<b>Location in the DCQAP</b>
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 Table 4-1. In addition, a table with Human Health Screening Values (Table 4-2) and NAPR Background Screening Values (Table 4-3) have been added for easy comparison to the analytical method detection limits. These quantitation limits have also been reviewed by the 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 to USEPA 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 Plans for SWMU 62 is identical to the Phase I RFI structure and therefore meets the QA/R-5 QAPP requirements.

9. *The data quality objectives (DQOs) presented in the Work Plan are insufficiently 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 62 are required.

10. *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 RLs 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.*

**Navy Response:** The human health screening values (Regional Screening Levels) and NAPR background screening values, will be provided in the work plan as new tables (i.e., Tables 4-2 and 4-3, respectively).

11. *The Work Plan references outdated SW-846 analytical methods (e.g., 6020, 6010B, 7470A/7471A); newer versions of the methods (6020A, 6010C, 8270D, 7470B/7471B) are available. Revise the Work Plan to reference the most updated analytical methods.*

*Alternatively, revise the Work Plan to indicate QC procedures and criteria presented in the current methods will be used.*

**Navy Response:** Table 3-3 of the Work Plan will be revised to reflect updated SW-846 analytical methods.

*12. The Work Plan does not provide an adequate rationale for the proposed soil sampling depths. For example, Section 3.1 indicates that surface samples will be collected. However, there is no discussion on why the proposed sample numbers, type, and locations are sufficient to address study goals. Revise the Work Plan to provide a more detailed rationale for the proposed sampling.*

**Navy Response:** The Navy disagrees with this comment. Section 3.1 contains a bulleted list explaining the rationale for soil sampling locations and the analytical program.

*13. Figure 4-1 and Section 4.6.3 indicate that a statistical process will be used to evaluate the data generated during this effort. However, it appears that sample locations are judgmental and not random. Therefore, statistical analysis is not appropriate. Revise the Work Plan to clarify this apparent discrepancy.*

**Navy Response:** The Navy offers the following points of clarification relative to this comment. As discussed in the Navy's general response to EPA comments, as well as the Navy's response to EPA General Comment No. 5, Full RFI analytical data will not be statistically compared to background soil data sets (background data sets for surface soil and subsurface soil are presented within the [Revised Final II Summary Report for Environmental Background Concentrations of Inorganic Compounds, Naval Activity Puerto Rico, Ceiba, Puerto Rico](#) [Baker, 2010]). Instead, the Full RFI analytical data will be compared to ULM background concentrations derived from the background data sets presented within the above referenced document. The data sets presented within the background report, ULM background concentrations, as well as the ecological and human health screening values discussed in Sections 4.6.1 through 4.6.3, will be compared to the Full RFI analytical data to determine if the proposed sampling effort delineated the extent of soil contamination detected during the Phase I RFI. It is noted that the background data sets presented within the Background Report have been approved by the EPA and are not populated with analytical data for samples collected from areas of contamination.

*14. The Work Plan indicates surface soils from 0 to 1ft below ground surface (bgs) and subsurface soils from 1 to 3 ft bgs and 5 to 7 ft bgs will be collected. However, the Work Plan does not discuss how representative sub samples of the intervals will be obtained for analysis. Revise the Work Plan to discuss field and laboratory subsampling procedures.*

**Navy Response:** Field and laboratory subsurface sampling procedures are discussed in Section 3.1 of the Work Plan. Specifically, the second paragraph of Section 3.1 states that subsurface soil samples will be collected using a 66DT Geoprobe® drill rig capable of direct push and augering and that soil samples will be collected continuously from the ground surface to refusal using a 4-foot long Macro Core Sampler to advance the borings. The text also states that all pertinent sampling information (e.g., lithology, water occurrence, photoionization detector [PID] measurements and sampling information) will be recorded in a field logbook. The third paragraph states that all subsurface soil samples will be analyzed for Appendix IX metals. Finally, paragraphs six and seven describe the process for sample shipment to the laboratory, analysis at the laboratory, and subsequent third-party data validation.

## SPECIFIC COMMENTS

*1. Section 3.3.3, Investigation Derived Waste Management, Page 3-4: This 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, since samples will be analyzed off-site it is unclear how it will be known if soil borings do not contain any contamination. Revise this section to clarify these points.*

**Navy Response:** 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 manager based on PID screening and visual/olfactory signs of contamination. If contamination is indicated, the soil cuttings associated with that soil boring will be stored temporarily in a 55-gallon drum. All the soil cuttings for soil borings that show evidence of contamination will be placed in the same drum (there will not be one drum for each soil boring) and a composite sample will be collected and submitted for laboratory analysis. The text in Section 3.3.3 will be edited to clarify the IDW procedures.

*2. Section 3.3.3, Investigation Derived Waste (IDW) Management, Page 3-4: More detailed IDW sampling procedures should be provided. The Work Plan should indicate how each aliquot of IDW will be collected for soil and water, and how these aliquots will be combined for the composite sample. In addition, the Work Plan should discuss how representative samples are obtained from the composite drum sampling. Revise the Work Plan to provide this information.*

**Navy Response:** Section 3.3.3 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 decontaminated stainless-steel bowl (or other appropriate container) and thoroughly homogenized prior to filling the appropriate laboratory provided sample containers. However, the IDW grab sample for VOC analysis will be collected directly from soil exhibiting the highest potential impact based on visual and olfactory observations and screening results obtained during the investigation. The soil samples will be analyzed for toxicity characteristic leaching procedure (TCLP) metals, and reactivity, corrosivity, and ignitability (RCI) as shown in Table 3-2, using methods presented in Table 3-3.

The IDW composite water samples 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 Appendix IX metals and RCI as shown in Table 3-2, using methods presented in Table 3-3.

3. Section 3.3.5, *Surveying, Pages 3-4 to 3-5*: This section indicates that a global positioning system (GPS) will be used to locate samples. However, it is unclear what accuracy will be used. Revise the Work Plan to indicate the accuracy of the field grade GPS.

**Navy Response:** Section 3.3.5 will be revised to indicate that the field grade GPS used at NAPR can achieve sub-meter accuracy.

4. Section 3.3.7, *Chain-of-Custody, Page 3-5*: This section states that chain-of-custody procedures will be followed. However, these procedures have not been provided in the Work Plan. Revise this section to provide the chain-of-custody procedures to be followed.

**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 29, 1995. The procedures for the chain-of-custody forms are in the PMP; a reference to this document will be added to the chain-of-custody text in Section 3.3.7.

5. Section 4.0, *Reporting, Pages 4-1 through 4-4*: This section does not indicate that a data quality assessment (DQA) will be included in the final report. Revise this section to specify that a DQA will be included in the final report. Further, revise the Work Plan to discuss what will be included in the DQA.

**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

6. Section 4.6.3, *Background Screening Values, Page 4-4*: It is unclear if the background screening values were calculated from results that include areas of contamination. In order to represent true background, on-site concentrations that are statistically elevated (e.g., due to contamination) should be removed from the background calculations. Revise the Work Plan to clarify if contaminated areas are included in the calculation of background screening levels.

**Navy Response:** Refer to the Navy's general response to EPA comments and response to EPA General Comment No. 5.

7. Section 4.7, *Conclusions and Recommendations*, Page 4-4: This section states that data obtained during the field effort will be incorporated into the web based Geographic Information System (GIS) currently residing on the NAPR project team web site. However, it is unclear how the data will be incorporated into the database, or if the database is compared to the hard copy data to ensure its accuracy. In addition, it is unclear if validation qualifiers will be entered into the database to ensure qualifications are considered when using the database (i.e., especially if data are rejected during validation). Revise the Work Plan to discuss how data is incorporated into the database, how the accuracy of the database is ensured, and to clarify if the validation qualifiers are entered in the database.

**Navy Response:** The text in Section 4.7 will be revised to clarify that validated data with the validation qualifiers are checked against the hard copies of the validation reports before the database is uploaded to the NAPR website.

8. Section 6.1, *Project Team Responsibilities*, Page 6-1: This section does not provide the responsibilities of all the project team members (e.g., data validator). Revise the Section to provide a list of all the members of the project as well as their responsibilities.

**Navy Response:** The project team personnel primarily responsible for the project are listed in Section 6.1. The Work Plan was prepared with the understanding that an as yet undetermined third party would be responsible for laboratory analysis, data validation, etc. Since these are variable depending on the bidding process, the Navy disagrees with adding this information into the work plan since it is undetermined until the project bidding is completed.

9. Table 3-1, *Summary of Sampling and Analytical Program - Environmental Samples*: This table indicates that subsurface field duplicates and matrix spike/matrix spike duplicates will be collected from the 5 to 7 ft bgs interval. However, Section 3.1 of the Work Plan indicates that previous studies show that samples from 5 to 7 ft bgs did not exhibit metals contamination. It is suggested that field QC samples be collected from the 1 to 3 ft bgs interval as the associated results will be more useful in evaluating the site conditions where higher concentrations of metals are expected (e.g., heterogeneity, interferences, etc.).

**Navy Response:** Table 3-1 will be revised to change the collection of the QC samples (field duplicate and matrix spike/matrix spike duplicate) to the 1 to 3 ft bgs interval.

10. Table 3-1, *Summary of Sampling and Analytical Program - Environmental Samples*: The footnotes appear to provide contradictory information. Footnote<sup>(1)</sup> specifies that the 5 to 7 ft bgs interval will be sampled unless other contamination is encountered at different intervals. However, footnote<sup>(2)</sup> indicates that if other intervals are contaminated, they will also be sampled. Revise footnote<sup>(1)</sup> to clarify conditions under which the 5 to 7 ft bgs interval will not be sampled.

**Navy Response:** Footnote<sup>(1)</sup> of Table 3-1 will be revised as follows:

<sup>(1)</sup> Samples will be collected from 5 to 7 feet bgs, unless indicators of contamination are encountered at other depths, in which case additional samples will be collected.

11. Table 3-3, *Method Performance Limit*: Selenium has an ecological surface soil screening value below the quantitation limits (QL) presented in Table 3-3. However, the table does specify how results below the QL will be reported or if they will be qualified. Revise the table to clarify

*this and to specify that selenium has a screening level lower than the QL. In addition, clarify why potentially more sensitive methods for selenium were not proposed.*

**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 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 chemicals of potential concern (COPCs) in Step 2 of the screening-level ERA (SERA) and undergo additional evaluation in Step 3a of the baseline ecological risk assessment (BERA).

*12. Table 3-3, Method Performance Limit: The Work Plan does not specify how analytes with reporting limits that exceed screening levels will be evaluated or qualified. This is particularly important since the RLs in Table 3-3 are based on wet weight results, and they will be elevated when corrected for dry weight. Finally, it is unclear if the laboratory chosen will be able to meet the reporting limits presented in the table. Revise the Work Plan to present the laboratory specific reporting limits, indicate which analytes have screening levels below the reporting limits and clarify how results will be evaluated and/or qualified if screening levels are below the reporting limit.*

**Navy Response:** The Navy is aware that some of the reporting limits exceed the screening levels. The analytical laboratory chosen for analyzing data provide the lowest reporting limits possible. The information provided in Table 3-3 has been reviewed against project-specific screening levels and have 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. 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.

It is noted that the risk assessments, conducted as part of the CMS, will evaluate non-detected chemicals. Specifically, the ERA 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. The HHRA will qualitatively evaluate non-detected chemicals as an uncertainty.

*13. Table 4-1 Ecological Soil Screening Values- The surface soil screening value given for zinc (4.6 mg/kg) from USEPA 2007d is incorrect. The correct value from this source is 46 mg/kg. The zinc screening value needs to be corrected in this table.*

**Navy Response:** Table 4-1 will be revised to correct the screening value for zinc to 46 mg/kg.

*14. Appendix C Summary of Phase 1 RFI Analytical Results- Thallium and zinc are not included in the list of metals analyzed in surface or subsurface soil samples. Yet, Table 4-1, Ecological Soil Screening Values, gives a soil screening value for both analytes. The screening values for thallium and zinc should be removed from Table 4-1 if neither compound will be included in future analyses. However, a reason needs to be provided for the removal of these two metals. Amend the text accordingly.*

**Navy Response:** Appendix C presents a summary of the detected laboratory results for analyses conducted during the Phase I RFI. Thallium was not detected in any of the surface or subsurface soil samples and therefore, does not appear on the Appendix C table. However, zinc was inadvertently omitted and will be added back to the table to correct the discrepancy. It should be noted that none of the zinc concentrations detected during the Phase I RFI exceeded any of the applicable screening criteria.

*15. Appendix C Summary of Phase I RFI Analytical Results- Several of the “Selected Ecological Surface Soil Screening Values” in Appendix C differ from the ecological soil screening values listed in Table 4-1. The lowest-available benchmark for plants, soil invertebrates, avian herbivores, avian ground insectivores, avian carnivores, and mammalian herbivores was selected as the soil screening value for each analyte and are presented in Table 4-1. The screening values in Appendix C for beryllium, cadmium, chromium, copper, lead, silver, and vanadium all exceed the values listed in Table 4-1. The selected ecological surface soil screening values used in Appendix C for soil comparison should be the same as those presented in Table 4-1. In addition, ensure that the lowest soil screening value is used in the future assessment of soil data from SWMU 62. Amend the text accordingly.*

**Navy Response:** The “Selected Ecological Surface Soil Screening Values” in Appendix C represent screening values that were current at the time the Phase I RFI was conducted. The ecological screening values presented in the Full RFI Work Plan are the screening values to be used moving forward. However, it should be noted that all applicable screening values will be updated as necessary at the time the Full RFI is conducted. No revisions to the document are necessary.

## **PREQB COMMENTS DATED AUGUST 10, 2010**

### **I. GENERAL COMMENT**

*Please consider conducting a removal of the debris to eliminate the source for continued future contamination. Note this is consistent with actions taken at other debris sites in Puerto Rico.*

**Navy Response:** The Navy will consider debris removal should it be determined that remediation is necessary.

### **II. PAGE-SPECIFIC COMMENTS**

*1. Page 2-1, Section 2.2.1, paragraph 2. Please clarify to what depths the subsurface soil samples were collected. Also note if debris was observed in the soil borings.*

**Navy Response:** Subsurface soil depths will be added as requested in the comment. Field notes from the Phase II ECP Investigation indicate that debris was not observed in the soil borings.

*2. Page 2-3, Section 2.2.2, paragraph 2. Please clarify what exposure parameters were used in conducting the human health risk assessment for arsenic and how this assessment differs from the exposure scenario EPA uses in calculating the residential Regional Screening Level (RSL), as EPA’s default residential exposure scenario is used in calculating the default value. Please also clarify what exposure point concentration was used for arsenic in this assessment.*

**Navy Response:** The exposure parameters, residential exposure models used in the calculation of risks, and the exposure point concentration used in the human health risk evaluation for arsenic are presented in the USEPA-approved Final Phase I RFI (Baker, 2010).

3. Page 2-3, Section 2.2.2, Paragraph 4: *The text states that only barium and cobalt in subsurface soil (specifically, 1 to 3 feet bgs) exceeded both ecological screening criteria and background screening values. However, barium exceeds both the ecological screening criteria and background at 9 to 11 feet bgs in sample 62SB03 and at 1 to 3 feet bgs in sample 62SB06. Please revise the text accordingly.*

**Navy Response:** Subsurface soil samples collected below three feet are not included for comparison to ecological screening values. Soil deeper than three feet is not considered environmentally available to potential ecological receptors. For this reason, analytical data from subsurface soil samples collected from more than three feet bgs are not compared to ecological screening criteria. The table in Appendix C correctly shows that barium detected in sample 62SB03 at 9 to 11 feet bgs only exceeds its background screening value. No revisions to the text are necessary.

4. Page 3-2, Section 3.1, Paragraph 1:

*The text states that the selection of the 1 to 3 and 5 to 7 feet bgs depth intervals for subsurface soils was based on the results from sample 62SB06 which showed metals contamination at 1 to 3 feet bgs but not at the subsequent depth interval of 5 to 7 feet bgs. However, the results in Appendix C show that barium did exceed the ecological screening criteria as well as the background screening values at the 5 to 7 feet bgs depth interval. Please clarify and revise the text accordingly.*

*Please add that field observations will include identification of debris observed in soil borings, if possible.*

**Navy Response:** As stated in response to PREQB Page-Specific Comment number 3, subsurface soil samples collected below three feet are not included for comparison to ecological screening values because soil deeper than three feet is not considered environmentally available to potential ecological receptors. No revisions to the document are required for this portion of the comment. However, Section 3.1 (page 3-2, paragraph 1) will be revised to indicate that field observations will include identification of debris observed in soil borings (as applicable).

5. Page 3-4, Section 3.3.2, Paragraph 1: *Please remove the words “and well” from this sentence, as wells are not proposed as part of this work.*

**Navy Response:** The text will be edited as requested by this comment.

6. Table 3-1: *The notes should be revised to:*

- a. *Delete TBD*

**Navy Response:** The table will be edited as requested by this comment.

- b. *Delete the “x” at the end of the abbreviation “APP”*

**Navy Response:** The table will be edited as requested by this comment.

7. Table 3-3: Please include the preparation method being used for metals in soil samples.

**Navy Response:** Table 3-3 will be revised to include the preparation methods used for metals in soil samples.

8. Page 4-1, Section 4.5: Please add identification of types of debris to what will be reported in this section, consistent with the recommendations of the Phase I RFI.

**Navy Response:** The text will be edited as requested by this comment.

9. Page 4-3, Section 4.6.2: Please update the most recent version of EPA's RSL table to May 2010.

**Navy Response:** The reference to the EPA RSL table will be updated to reflect the most recent version from May 2010.

10. Figure 4-1: EPA has a current (2010) statistical software, ProUCL, which is peer-reviewed, public domain, and vetted statistical software that is widely used at environmental sites to conduct this analysis. Please consider updating the approach presented in this figure to make use of EPA's current recommended software for conducting this type of analysis.

**Navy Response:** As noted in the Navy's general response to EPA comments, Full RFI analytical data will not be statistically compared to background soil data sets. Statistical background analyses for inorganic chemicals exceeding one or more of the human health and ecological screening values will be conducted in conjunction with the risk assessments as part of the CMS. Therefore, Figure 4-1 – Statistical Analysis Process will be deleted from the Full RFI Work Plan.