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FINAL PHASE I RCRA FACILITY INVESTIGATION WORK PLAN SWMU 75 - BUILDING 803

For NAVAL ACTIVITY PUERTO RICO
EPA I.D. No. PR2170027203
CEIBA, PUERTO RICO

Prepared for:

Department of the Navy
NAVFAC SOUTHEAST
North Charleston, South Carolina

Prepared by:

Michael Baker Jr., Inc.
Moon Township, PA

Contract No. N62470-07-D-0502
DO 0002

December 20, 2007

IQC for A/E Services for Multi-Media Environmental Compliance Engineering Support

FINAL

PHASE I RCRA FACILITY INVESTIGATION WORK PLAN
SWMU 75 - BUILDING 803

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DECEMBER 20, 2007

Prepared for:

DEPARTMENT OF THE NAVY
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North Charleston, SC

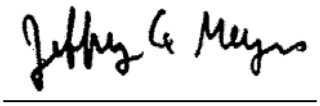
Under:

Contract No. N62470-07-D-0502
DELIVERY ORDER 0002

Prepared by:

MICHAEL BAKER JR., INC.
Moon Township, Pennsylvania

I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that this document and its attachments were prepared either by me personally or under my direction or supervision in a manner designed to ensure that qualified and knowledgeable personnel properly gather and present the information contained therein. I further certify, based on my personal knowledge or on my inquiry of those individuals immediately responsible for obtaining the information, that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowingly and willfully submitting a materially false statement.

Signature 

Name: Jeffrey G Meyers

Title: BRAC Env. Coordinator

Date: December 20, 2007

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LIST OF ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
Baker	Michael Baker Jr., Inc.
bgs	below ground surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response and Liability Act
CERFA	Community Environmental Response Facilitation Act
CRQL	Contract Required Quantitation Limit
DI	deionized water
DO	Delivery Order
DPT	Direct Push Technology
DRO	Diesel Range Organics
Eco-SSL	Ecological Soil Screening Level
ECP	Environmental Condition of Property
ERA	Ecological Risk Assessment
FID	flame ionization detector
FMTUD	Facility Management Transportation and Utility Division
GIS	Geographic Information System
GPS	Global Positioning System
GRO	Gasoline Range Organics
IDW	Investigation Derived Waste
LANTDIV	Navy Facilities Engineering Command, Atlantic Division
MSL	Mean Sea Level
µg/ft^2	micrograms/square foot
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/100cm^2	milligrams per 100 centimeters squared
mg/kg	milligrams per kilogram
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NAPR	Naval Activity Puerto Rico
NAVFAC	Navy Facilities Engineering Command
NFESC	Naval Facilities Engineering Service Center
NSRR	Naval Station Roosevelt Roads
PCB	Polychlorinated biphenyls
PID	photo ionization Detector
PMO	Program Management Office

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

PRG	Preliminary Remediation Goal
PR LRA	Puerto Rico Local Reuse Authority
PSI	Physical Site Inspection
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SE	Southeast
SOP	Standard Operating Procedure
SVOC	Semivolatile Organic Compounds
SWMU	Solid Waste Management Unit
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control Act
UCL	Upper Confidence Limit of the mean
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound

1.0 INTRODUCTION

This document describes the activities required for the implementation of a Phase I Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI) at Solid Waste Management Unit (SWMU) 75 – Building 803 located at Naval Activity Puerto Rico (NAPR), formerly Naval Station Roosevelt Roads (NSRR) Ceiba, Puerto Rico (Figure 1-1).

This work plan has been prepared by Michael Baker Jr., Inc. (Baker), for the Navy Base Realignment and Closure (BRAC) Program Management Office (PMO) Southeast (SE) office under contract with the Naval Facilities Engineering Command (NAVFAC) SE (Contract Number N62470-07-D-0502, Delivery Order [DO] 0002).

1.1 NAPR Description and History

NAPR, formerly the Naval Station Roosevelt Roads (NSRR), occupies over 8,800 acres on the northern side of the east coast of Puerto Rico (see Figure 1-1), along Vieques Passage with Vieques Island lying to the east about 10 miles off the harbor entrance. NAPR also occupies the immediately adjacent islands of Piñeros and Cabeza de Perro, as presented on Figure 1-2. The northern entrance to NAPR is about 35 miles east along the coast road (Route 3) from San Juan. The property consists of 3,938 acres of upland (developable) property and 4,955 acres of environmentally sensitive areas including wetlands, mangrove, and wildlife habitat. The closest large town is Fajardo (population approximately 37,000), which is about 5 miles north of NAPR off Route 3. Ceiba (population approximately 17,000) adjoins the west boundary of NAPR (see Figure 1-1).

The facility was commissioned in 1943 as a Naval Operations Base, and finally re-designated as a Naval Station in 1957. NSRR operated as a Naval Station from 1957 until March 31, 2004. NSRR has undergone operational closure as of March 31, 2004 and has been designated as Naval Activity Puerto Rico. NAPR will continue until the real estate disposal/transfer is completed. The mission of NAPR is to protect the physical assets remaining, comply with environmental regulations, and sustain the value of the property until final disposal of the property.

In anticipation of operational closure of NSRR, the Naval Facilities Engineering Command, Atlantic Division (LANTDIV) prepared Phase I/Phase II Environmental Condition of Property (ECP) Reports to document the environmental condition of NSRR. Section 8132 of fiscal year 2004 Defense Appropriations Act, signed into law on September 30, 2003, directed that NSRR be disestablished within 6 months, and that the real estate disposal/transfer be carried out in accordance with procedures contained in the BRAC Act of 1990. This legislation requires that the base closure be conducted in accordance with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), as amended by the Community Environmental Response Facilitation Act (CERFA).

The Draft Phase I Environmental Condition of Property Report dated March 31, 2004 (LANTDIV, 2004) identified new sites at NAPR based on the results of a review of records, an analysis of historic aerial photographs, physical site inspections, and interviews with persons familiar with past and current operations and activities. The new ECP sites had not been previously identified or investigated under existing environmental program areas. A Phase II ECP field investigation was conducted in April 2004 to conduct environmental sampling to determine if a release/disposal actually occurred at any of the Phase I ECP sites recommended for further evaluation in the Phase I ECP and, if so, whether any potential risk to human health was present. The Final Phase I/II ECP recommended additional sampling (to be undertaken as part of the RCRA Program) at several sites to permit a more detailed assessment (NAVFAC Atlantic, 2005).

The United States Environmental Protection Agency (USEPA) issued a RCRA 7003 Administrative Order on Consent (USEPA Docket No. RCRA-02-2007-7301), identifying SWMU 75 (formerly referred to as ECP 21) as having documented releases of solid and/or hazardous waste and hazardous constituents, and requires the submittal to the USEPA for their approval an acceptable work plan to complete the equivalent to a Phase I RFI. Following a public comment period the Consent Order became effective on January 29, 2007. This document meets the requirements for a phase I RFI work plan.

1.2 Site Location and History

SWMU 75, the pump house for the emergency fire deluge system, is located in the waterfront area next to Pier 3, as shown on Figure 1-3. The ECP Phase I physical site inspection (PSI) identified releases of suspected waste oil and diesel fuel throughout the floor of the building, as well as numerous discarded oil filters. The floor of the building is constructed with an access area/manway that leads directly into Ensenada Honda via a subsurface concrete trench, as shown on Figure 1-3.

The Phase I ECP investigation confirmed that SWMU 75 consisted of Building 803, not Building 976, an open-aired structure that consists of hose racks located just east of Building 803, as previously thought. During the PSI, numerous stains, oil filters and three batteries were also observed on the floor within Building 803. In addition, there are three access doors on the roof of Building 803 for removal and installation of the pumps inside the building. The doors to Building 803 and the roof access doors were all observed to be open to the outside elements.

The Final Phase I/II Environmental Condition of Property Report concluded that SWMU 75 has been impacted by past and present operations at NAPR. The results of the ECP Phase II Investigation indicated that the SWMU was characterized as presenting a low potential risk to human health. Even though lead concentrations exceeded the Toxic Substance Control Act (TSCA) standard for residential lead-based paint dust, the risk to human health is low due to the highly unlikely scenario that this building would be used for residential purposes. The potential ecological risk was undetermined.

During the ECP investigation, wipe samples were also collected and analyzed for various constituents based on visual observations. Figure 1-3 shows the building where samples were collected during this investigation. Appendix A presents photographs taken during the ECP investigation.

1.3 Objectives

The purpose of this work plan is to describe the activities necessary to obtain data to verify whether activities within Building 803 at SWMU 75 have resulted in releases to the environment. A Phase I RFI is required as outlined in the NAPR RCRA 7003 Administrative Order on Consent issued by the USEPA Region II. This RCRA Order provides for further investigation at this SWMU including the development of a work plan, field investigation, and reporting on the findings of the investigation with recommendations of future actions necessary to ensure protection of human health and the environment.

The investigation area at SWMU 75 is shown on Figure 1-3. An investigation consisting of the collection of surface and subsurface soil samples will be performed at SWMU 75 to further characterize impacts to the environment outside of the building. Based on analysis of the wipe samples collected during the Phase I/II ECP, surface and subsurface soil samples around Building 803 will be collected to evaluate whether releases of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and inorganics have occurred to the surrounding environment.

1.4 Organization of the Work Plan

This work plan is organized into seven sections. Section 1.0 of this document includes the site history and objectives of this RFI. Section 2.0 provides a description of the current conditions and usage of the site, as well as a summary of previous investigations. Section 3.0 provides a description of the scope of investigations for the upcoming fieldwork. The proposed scope of investigations includes a soil sampling and analysis program, and quality assurance/quality control (QA/QC) samples, as well as other investigation considerations. The reporting activities that will be conducted following the completion of the field investigation are described in Section 4.0. Section 5.0 discusses the proposed project schedule that will be followed for this Phase I RFI. The site management structure that will be utilized during this investigation, including project team responsibilities and field reporting requirements, is presented in Section 6.0, while Section 7.0 presents the report references.

2.0 CURRENT CONDITIONS AND SITE BACKGROUND

The following sections provide a discussion of the current conditions that exist at SWMU 75 along with previous investigation findings from the Phase I/II ECP investigation.

2.1 Current Site Conditions/Usage

Building 803 is currently not utilized; the records review indicates that the area was used as a pump house for the emergency fire deluge system. The building is located next to Pier 3 in the waterfront area of the base. The building is located in a developed area characterized with high impervious surfaces, level topography, and grassy vegetation. The western side of the building faces Pier 3, and the Ensenada Honda. The northern face of the building contains a large electrical transformer connected to the building that extends out several meters. A four foot swath of grass separates the eastern face of the building from an open storage area to the northeast. The southern face of the building is grassy and contains a manhole. Physical conditions found in the interior of Building 803 are described in Section 2.2 below.

During the physical site inspection of the facility it was noted that the building has three access doors on the roof for removal and installation of the pumps inside the building. It was noted that these access ways were left open to outside elements. In addition, the building contains access/manway doors in the floor that lead directly into the Ensenada Honda.

The operational closure of Naval Station Roosevelt Roads occurred on March 31, 2004. Appendix A contains a photographic log taken during the Phase I/II ECP investigation.

2.2 Previous Investigations

During the Phase I/II ECP investigation performed in 2004, investigators noted numerous discarded oil filters, stains on the floor, three discarded batteries just inside the door to the facility, and evidence of previous releases of suspected waste oil and diesel fuel. As a result of the physical site inspection, investigators collected four wipe samples from the floor and walls of the interior of the building (NAVFAC Atlantic, 2005). It should be noted that the number and locations of wipe samples were determined in the field based on visual observations of site conditions (e.g., chemical staining), as proposed in the decision tree for this site found within the Final Phase I/II ECP Work Plan (LANTDIV, 2004b).

Three wipe samples on the floor (21E-WS01 through 21E-WS03) and one wipe sample on a wall inside the building (21E-WS04, see Appendix A photographs for sample locations) were collected utilizing laboratory-supplied containers with gauze pads soaked in the appropriate solution based on the analysis requested. The samples were submitted to a fixed-based laboratory for analysis of Appendix IX SVOCs, polychlorinated biphenyls (PCBs), and metals. Results of these analyses are presented in Appendix B.

Organic detections consisted of two SVOCs, which were both consistent with an emergency fire pump house.

Inorganic detections varied by at least five orders of magnitude, but all inorganic analytes were detected. As a point of reference for evaluating the magnitude of lead concentrations in the wipe samples, the data may be compared to Section 403 of TSCA, which specifies a limit of lead on the floor of a residence to be less than 40 micrograms/square foot ($\mu g/ft^2$). This concentration converts to 0.0043 milligrams per 100 centimeters squared ($mg/100cm^2$). All concentrations of lead on surfaces

in Building 803 exceeded the TSCA standard for residential lead-based paint dust.

Based on the analytical results of the Phase I/II ECP investigation, it has been determined that additional analysis of the environment at SWMU 75 needs to be undertaken to determine whether contamination from Building 803 has been released to the outside environment. To achieve this, additional sampling will be performed to investigate whether operations from inside the building has caused a release to the outside environment. In addition, this analysis will be used to determine whether VOCs, or other inorganics are present at the site, to provide more data points for determination of possible human health or ecological risks from previous SWMU activities, and to provide data for additional site characterization.

3.0 SCOPE OF INVESTIGATION

Surface and subsurface soil samples will be collected from SWMU 75 as part of the Phase I RFI. As noted in the analysis presented in Appendix B and discussed in Section 2.2, during the ECP investigation, little contamination was discovered within the interior of the building at the locations where releases were significant enough to be visible on the concrete floor and surfaces. Therefore, it is unlikely that significant contamination could have migrated to the exterior environment to Ensenada Honda or vertically migrated to the groundwater within the site. Therefore, analysis of groundwater, surface water, and sediments will not be undertaken at this time. If analysis performed as part of this Phase I RFI indicates that past activities at this site have impacted the surface and subsurface soil, then further investigation and analysis of groundwater, surface water, and sediments will be proposed under a full RFI investigation.

Sampling locations presented in this section were based on site topography, site features, historical operational features of the facility, and the results from the ECP Phase II Investigation. The subsections that follow outline the specific sampling protocol.

A summary of the sampling and analytical program for this investigation is provided in Table 3-1. The proposed sampling locations for SWMU 75 are shown on Figure 3-1. The samples that will be collected as part of the Phase I RFI are as follows:

- Five surface soil samples will be collected from five boring locations as shown on Figure 3-1.
- Ten subsurface soil samples will be collected from the five boring locations. A minimum of two samples will be collected from any area of suspected contamination and the other will be obtained just above the groundwater interface. If suspected contamination is noticed in multiple samples, additional samples will be obtained from the boring location.

Soil borings are not proposed north of the building, which is not accessible to personnel or drill rigs because it is an enclosed area immediately abutting the wall of the building, where electrical transformers are present.

Samples of surface water or sediment will not be collected from the salt-water intake underneath Building 803 because no evidence on the building floor suggests that wastes may have been discharged at this location. There appears to be no visual evidence that the nearby manway/hatch to the salt-water intake was used to discharge wastes. Therefore, additional wipe samples of the building floor around the manway/hatch are not required. In fact, wipe samples from the nearest stained area on the building floor indicated the presence of only minor concentrations of bis(2-ethyl hexyl)phthalate and no evidence of gross oil or grease release associated with the operation or maintenance of the nearby pump motors. Consequently, because there are no indications that wastes were discharged into the salt-water intake, no sampling along the salt-water intake pathway or from the Ensenada Honda at the entrance for surface water to the salt-water intake is proposed.

3.1 Soil Sampling and Analysis Program

Surface and subsurface soil samples will be collected from SWMU 75. The following outlines the specific sampling protocol.

As shown on Figure 3-1, five soil borings are proposed to be advanced at various locations surrounding Building 803 to determine if any contamination identified inside Building 803 has migrated to the exterior. All soil borings for this RFI will be advanced using standard direct push technology (DPT) methods. Subsurface samples will be collected from two-foot intervals and care

will be taken to achieve maximum recovery so that a good stratigraphic profile can be developed. A boring log will be maintained during the sampling program. One surface soil sample (0 to 1 foot below ground surface [bgs]) and two subsurface soil samples [based on flame ionization detector (FID)/ photo ionization detector (PID), olfactory and visual screening and just above the water table] will be collected from each boring location. A boring log will be prepared indicating lithology, water occurrence, flame ionization detector (FID)/photo ionization detector (PID) readings, and miscellaneous (visual and olfactory) observations for each boring location. Surface and subsurface soil samples will be analyzed for Appendix IX VOCs and SVOCs, and inorganics, and total petroleum hydrocarbons (TPH) gasoline range organics (GRO) and diesel range organics (DRO), as presented in Table 3-1.

All soil sampling locations will be flagged in the field and will be surveyed for horizontal location utilizing a portable GPS unit.

The surface soil samples will be obtained from a depth of 0 to 1 foot bgs with a stainless steel spoon. The subsurface soil samples will be obtained using Macro-Cores® (see SOP F102 in Baker, 1995).

The soil sample designations will be as follows. For example, one of the soil borings will be designated 75SB01. Extensions to the sample identification will reflect the depth at which the sample was obtained. For the purposes of this work plan, two-foot discrete depths will be used except for surface soil. Sample identification extensions will follow the pattern shown below.

75SB01-00 – SWMU 75 Sample
75SB01-00 – Soil Boring Sample
75SB01-00 – Soil boring location identifier
75SB01-00 - 0 to 1 foot bgs (surface soil) sampling interval

Subsurface soil samples will be designated as follows:

75SB01-01 - 1 to 3 feet bgs
75SB01-02 - 3 to 5 feet bgs, etc.

The actual sample depth will be determined in the field.

Samples will be packed in ice and shipped next day air to the “fixed base” laboratory. Because of previously encountered delays associated with sample shipments from Puerto Rico to the United States, additional insurance to cover re-sampling costs should be claimed on the bill of laden. At least one member of the field team will remain on the island until verification by the laboratory of receipt of all shipments. This will minimize any potential re-sampling costs associated with mobilization. Tracking numbers for each shipment will be forwarded to the project manager for assisting in verification of receipt.

Following sample collection, each borehole will be backfilled with the remaining soil to the extent practicable in order to minimize the burden of waste disposal. The surface of the borehole will be patched with bentonite grout.

All analysis at the laboratory will be performed using current methodologies as presented in Table 3-2. All analytical work performed on the mainland of the United States must be certified by a licensed Puerto Rico chemist. The specific laboratory and third party validator, as well as a certified licensed chemist from Puerto Rico, will be determined at a later date and this information will be provided to the USEPA in a letter.

3.2 Quality Assurance/Quality Control Samples

Field specific quality assurance/quality control (QA/QC) procedures are given below. QA/QC samples will be analyzed for parameters as shown in Table 3-1 and 3-3 by methods presented in Table 3-2.

QA/QC samples collected during these investigations will include equipment rinsate samples, field blanks, trip blanks, field duplicates, and matrix spike/matrix spike duplicate (MS/MSD). QA/QC requirements for the investigations are identified in the sample matrix presented in Table 3-3, and will be collected and processed as follows.

Equipment rinsate blanks will be collected daily from reusable (non-dedicated and non-disposable) sampling equipment during the sampling event. Initially, samples from every other day should be analyzed. If analytes relevant to the project are detected in any equipment rinsate blank, the remaining rinsate blanks will be analyzed. As an added level of QA/QC, a rinsate blank will also be collected from each batch of disposable sampling tools, such as stainless steel spoons, Macro Core liners, etc. The results from the blanks will be used to verify that decontamination of reusable equipment has rendered them free of cross-contaminating chemicals at levels of concern for the site. These results will also be used to verify that disposable sampling tools are free of contaminants at levels of concern for the site. This comparison is made during data validation, and the equipment rinsate blank is analyzed for the same parameters as the related samples.

Three field blank samples consisting of lab grade deionized water (DI) used in the collection of the equipment rinsate sample, store bought DI water (if any), and potable water from NAPR used for decontamination of equipment will be collected if they are used during this investigation..

Trip blank samples will accompany collected VOCs, and TPH GRO samples to the laboratory. One trip blank sample will accompany each cooler containing samples to be analyzed for VOCs and TPH GRO.

Soil sample field duplicates will be homogenized and split and collected at a frequency of ten percent.

Analysis of duplicate and blanks associated with soil sampling will include Appendix IX VOCs, SVOCs, and metals, along with analysis for TPH GRO and DRO.

MS/MSD samples are collected to evaluate the matrix effect of the sample upon the analytical methodology. An MS and MSD must be performed for each group of samples of a similar matrix (e.g., surface soil). MS/MSD samples will be collected at a frequency of five percent per media.

3.3 Data Validation

All mainland laboratory data generated by the investigation will be subjected to independent, third party, validation. The USEPA Region II Data Validation SOP procedures will be followed. The specific data validator will be determined at a later date.

3.4 Other Investigation Considerations

During the investigation, the following activities will be performed:

- Utility Clearance
- Investigation Derived Waste (IDW) Management
- Decontamination
- Surveying
- Health and Safety Procedures
- Chain of Custody

3.4.1 Utility Clearance

If this work plan is initiated while NAPR is still under operation, the following procedure needs to be followed to obtain utility clearance. Fifteen days prior to the initiation of the proposed fieldwork, a digging permit request will be submitted to the Facility Management Transportation and Utility Division (FMTUD) of the Public Works Department at NAPR. Utilities are identified on the Geographic Information System (GIS) utility layer, and all proposed soil borings locations will be cleared by the base utility department.

3.4.2 Investigation Derived Wastes

The generation of IDW associated with soil sampling, including soil cuttings and decontamination fluids, will be collected and stored temporarily in 55-gallon drums. However, the soil cuttings from the subsurface soil sampling 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.

Two IDW samples will be collected during this investigation. One composite aqueous sample will be collected from all drums containing decontamination fluid (from sampling equipment, and one composite soil sample will be collected from any drums containing cuttings. The samples will be analyzed for parameters as shown in Table 3-3, as well as by methods presented in Table 3-2. These samples will provide the necessary data to dispose of the generated IDW at an appropriate disposal facility. Upon completion of the field program, the drums will be moved and stored at a secure location by the contractor. The soil and water IDW will be removed and disposed of from the site by an approved vendor upon receipt and review of the IDW sample analytical data.

3.4.3 Decontamination

All reusable (non-dedicated and non-disposable) soil sampling equipment will be decontaminated between each sampling location in accordance with SOPS F501 and F502 (Baker, 1995). The drill rig will be decontaminated before arriving at the site and before leaving the site. The remaining contaminant-free sampling equipment and materials utilized during this investigation will be disposed of appropriately.

3.4.4 Surveying

All sampling locations will be surveyed. Traditional survey equipment or a survey grade global positioning system (GPS) unit will be utilized to obtain vertical (+/- 0.01 foot) and horizontal (+/- 0.1 foot) locations of the sampling locations.

3.4.5 Health and Safety Procedures

The health and safety procedures previously presented in the RFI Management Plans (Baker, 1995) will be employed during this investigation

3.4.6 Chain-of-Custody

Chain-of-Custody procedures will be followed to ensure a documented, traceable link between measurement results and the sample/parameter that they represent. These procedures are intended to provide a legally acceptable record of sample preparation, storage, and analysis.

To track sample custody transfers before ultimate disposition, sample custody will be documented using a similar chain-of-custody form as presented in the RFI Management Plans (Baker, 1995). A chain-of-custody form will be completed for each shipment in which the samples are shipped. After the samples are properly packaged, the shipping container will be sealed and prepared for shipment to the analytical laboratory.

4.0 RFI INVESTIGATION REPORT

This section outlines the reporting activities that are associated with the field investigation. The reports shall include at a minimum:

- Introduction and Site Background
- SWMU Investigation
- Physical Characteristics of Study Area
- Nature and Extent of Contamination
- Conclusions and Recommendations
- References

The Phase I RFI reports sections are discussed in the following subsection.

4.1 Introduction

The introduction will consist of a discussion of the site location, its current conditions and its historical background, including any investigations conducted at the SWMU. The introduction will also provide a regulatory framework for NAPR and the SWMU.

4.2 SWMU Investigation

The investigation methodologies employed to fulfill the Phase I RFI work plan objectives for the SWMU will be discussed. The sample locations, sample collection and handling procedures, QA/QC procedures, and analytical methods used will be described. This section will also discuss any problems encountered including any deviations from the work plan and problem resolution.

4.3 Physical Characteristics of Study Area

The physical characteristics of the SWMU will be recorded in the field. Those observations will be photographically recorded and summarized in this section.

4.4 Nature and Extent of Contamination

The nature and extent of contamination section will present analytical results and interpretation of the data. The surface soil and subsurface soil analytical data will be screened against USEPA Region IX Residential and Industrial Preliminary Remediation Goals (PRGs). Analytical data for surface soil and subsurface soil collected from the 1 to 3-foot depth interval also will be compared to ecological soil screening values previously developed for use in ecological risk assessments (ERAs) at NAPR (Baker, 2006a and 2006b). The ecological soil screening values will be updated as necessary to reflect current information from the literature (i.e., ecological soil screening levels [Eco-SSLs] available at http://www.epa.gov/ecotox/ecossl/). Analytical data for subsurface soil collected from deeper depth intervals (e.g., 3 to 5-feet bgs) will not be compared to ecological soil screening values since these depths are not likely to represent a significant exposure point for ecological receptors (most heterotrophic activity and soil invertebrates occur on the surface or within the oxidized root zone [Suter II, 1995]).

For a given medium (surface soil and subsurface soil), analytical data for inorganic chemicals exceeding one or more of the screening values (human health or ecological) will be statistically compared to background analytical data in accordance with Navy guidance (Naval Facilities Engineering Service Center [NFESC], 2002). The background analytical data used in the statistical evaluations will be those contained in the Revised Final Summary Report for Environmental

Background Concentrations of Inorganic Compounds (Baker, 2006c). The process that will be used to statistically evaluate the data is depicted in Figure 4-1. As shown by the figure, statistical evaluations will include descriptive summaries of each data set (range of detected values, range of non-detected values, maximum, mean, and 95 percent upper confidence limit [UCL] of the mean concentrations), statistical tests on the mean/median of the distributions (i.e., student's t-test, Gehan test, Satterthwaite's t-test, or Wilcoxon rank sum test), statistical tests on the right tail of the distributions (i.e., quantile test and slippage test), and proportional statistics (two-sample test of proportions). The significance level (the probability criteria for rejecting the null hypotheses that data sets were sampled from the same population) will be set at 0.05 for all statistical tests in accordance with Navy guidance (NFESC, 2002).

The results of the screening and statistical evaluations will be presented on tables and figures with textual explanation. Results of QA/QC procedures also will be presented within the nature and extent of contamination section.

4.5 Conclusions and Recommendations

Information from the nature and extent of contamination will be synthesized into conclusions regarding whether the releases detected within Building 803 have impacted the surrounding outside environment. Recommendations will be made from these conclusions as to whether a full RFI is needed or the SWMU can proceed toward a determination of Corrective Action Complete.

5.0 SCHEDULE

A schedule for the implementation of this work plan for SWMU 75 is provided as Figure 5-1.

It should be noted that this schedule is dependent upon USEPA review time. Many other factors can also extend the schedule such as resampling if further re-characterization is required, weather delays in the field, delays in Navy funding or if consensus cannot be reached on how the USEPA's comments are to be incorporated.

6.0 SITE MANAGEMENT

An organization chart presenting the proposed staffing for this project is provided on Figure 6-1. This section also outlines the responsibilities and reporting requirements of field personnel and staff.

6.1 Project Team Responsibilities

Mr.Mark Kimes, P.E., Activity Coordinator for all work in Puerto Rico, will manage the Baker Project Team. His responsibilities will be to direct the technical performance of the project staff, costs and schedule, ensuring that QA/QC procedures are followed during the course of the project. He will maintain communication with the BRAC PMO SE, Navy Technical Representative (NTR), Mr. Mark Davidson. Mr. John Mentz will administer overall QA/QC for this project.

The field activities of this project will consist of one field team managed by the Geologist, Mr. Joseph Burawa. Mr. Burawa's responsibilities include directing the field team and subcontractors. Mr. Rick Aschenbrenner, P.E. will direct the reporting effort associated with the field investigation, ensuring that all necessary staffing is utilized to assist in developing the Phase I RFI Report for SWMU 75.

6.2 Field Reporting Requirements

The Geologist will maintain a daily summary of each day's field activities. The following information will be included in this summary:

- Contractor and subcontractor personnel on site
- Major activities of the day
- Samples collected
- Problems encountered
- Other pertinent site information

The Geologist will receive direction from the Project Manager regarding any changes in scope of the investigation.

7.0 REFERENCES

Baker Environmental, Inc. (Baker). 2006a. Final Additional Data Collection Report and Screening-Level Ecological Risk Assessment and Step 3a of the Baseline Ecological Risk Assessment at SWMUs 1 and 2, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. Coraopolis, Pennsylvania. May 18, 2006.

Baker. 2006b. Final Additional Data Collection Report and Screening-Level Ecological Risk Assessment and Step 3a of the Baseline Ecological Risk Assessment at SWMU 45, Naval Activity Puerto Rico, Ceiba, Puerto Rico. Coraopolis, Pennsylvania. January 11, 2006.

Baker. 2006c. Revised Final Summary Report for Environmental Background Concentrations of Inorganic Compounds, Naval Activity Puerto Rico, Ceiba, Puerto Rico. Coraopolis, Pennsylvania. October 17, 2006.

Baker. 1995. Final RCRA Facility Investigation Management Plans, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. September 14, 1995.

Naval Facilities Engineering Command, Atlantic Division (LANTDIV). 2004. Draft Phase I Environmental Condition of Property, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. March 31, 2004. Norfolk, Virginia.

LANTDIV. 2004b. Draft Phase II Environmental Condition of Property Work Plan, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. April 30, 2004. Norfolk, Virginia.

Naval Facilities Engineering Command Atlantic (NAVFAC Atlantic). 2005. Final Phase I/II Environmental Condition of Property, Former U.S. Naval Station Roosevelt Roads, Ceiba, Puerto Rico. Norfolk, Virginia.

Naval Facilities Engineering Service Center (NFESC). 2002. Guidance for Environmental Background Analysis. Volume I: Soil. NFESC User's Guide UG-209-ENV. April 2002.

Suter II, G.W. 1995. Guide for Performing Screening Ecological Risk Assessments at DOE Facilities. Oak Ridge National Laboratory, Environmental Restoration Division, ORNL Environmental Restoration Program. ES/ER/TM-153.

TABLES

TABLE 3-1

SUMMARY OF SAMPLING AND ANALYTICAL PROGRAM
SWMU 75 - PUMP HOUSE FOR THE EMERGENCY FIRE DELUGE SYSTEM
PHASE I RFI WORK PLAN
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

		Fixed Based Analytical Lab Analysis					
Media	**Sample Depth (ft bgs)**	App IX VOCs	App IX SVOCs	App IX Metals (Total)	TPH GRO	TPH DRO	**Comment**
Surface Soil Samples							
75SB01-00	0.0 - 1.0	X	X	X	X	X	
75SB02-00	0.0 - 1.0	X	X	X	X	X	
75SB03-00	0.0 - 1.0	X	X	X	X	X	
75SB04-00	0.0 - 1.0	X	X	X	X	X	
75SB05-00	0.0 - 1.0	X	X	X	X	X	
75SB05-00D	0.0 - 1.0	X	X	X	X	X	Duplicate
75SB05-00MS/MSD	0.0 - 1.0	X	X	X	X	X	Matrix Spike/Matrix Spike Duplicate
Subsurface Soil Samples[(2)]							
75SB01-XX[(1)]	TBD	X	X	X	X	X	
75SB01-XX[(1)]	TBD	X	X	X	X	X	
75SB02-XX[(1)]	TBD	X	X	X	X	X	
75SB02-XX[(1)]	TBD	X	X	X	X	X	
75SB03-XX[(1)]	TBD	X	X	X	X	X	
75SB03-XX[(1)]	TBD	X	X	X	X	X	
75SB04-XX[(1)]	TBD	X	X	X	X	X	
75SB04-XX[(1)]	TBD	X	X	X	X	X	
75SB05-XX[(1)]	TBD	X	X	X	X	X	
75SB05-XX[(1)]	TBD	X	X	X	X	X	
75SB05-XXD[(1)]	TBD	X	X	X	X	X	Duplicate

Notes:

[(1)] - XX is the designator for the depth interval from which the sample will be collected (i.e., 01 = 1-3 ft bgs, or 02 = 3-5 ft bgs, etc.)

[(2)] - Although two subsurface soil samples are proposed per boring, additional subsurface soil will be collected if areas of staining or other indicators of contamination are encountered at multiple depths. In this event, the number of duplicate and MS/MSD samples outlined in Section 3.2 will be adjusted.

ft bgs - feet below ground surface.
TBD - To be determined in the field

TABLE 3-2

METHOD PERFORMANCE LIMITS
APPENDIX IX COMPOUND LIST AND CONTRACT
REQUIRED QUANTITATION LIMITS (CRQL)
PHASE I RFI WORK PLAN SWMU 75
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Volatiles	Quantitation Limits*		Method Number
	Water (µg/L)	Low Soil (µg/kg)	
Acetone	25	50	8260B/5030B (soil)
Acetonitrile	40	200	8260B/5030B (soil)
Acrolein	20	100	8260B/5030B (soil)
Acrylonitrile	20	100	8260B/5030B (soil)
Benzene	1.0	5.0	8260B/5030B (soil)
Bromodichloromethane	1.0	5.0	8260B/5030B (soil)
Bromoform	1.0	5.0	8260B/5030B (soil)
Bromomethane	1.0	10	8260B/5030B (soil)
Carbon Disulfide	1.0	5.0	8260B/5030B (soil)
Carbon Tetrachloride	1.0	5.0	8260B/5030B (soil)
Chlorobenzene	1.0	5.0	8260B/5030B (soil)
Chloroethane	1.0	10	8260B/5030B (soil)
Chloroform	1.0	5.0	8260B/5030B (soil)
Chloromethane	1.0	10	8260B/5030B (soil)
Chloroprene	1.0	5.0	8260B/5030B (soil)
3-Chloro-1-propene	1.0	5.0	8260B/5030B (soil)
1,2-Dibromo-3-chloropropane	1.0	10	8260B/5030B (soil)
Dibromochloromethane	1.0	5.0	8260B/5030B (soil)
1,2-Dibromoethane	1.0	5.0	8260B/5030B (soil)
Dibromomethane	1.0	5.0	8260B/5030B (soil)
trans-1,4-Dichloro-2-butene	2.0	10	8260B/5030B (soil)
Dichlorodifluoromethane	1.0	5.0	8260B/5030B (soil)
1,1-Dichloroethane	1.0	5.0	8260B/5030B (soil)
1,2-Dichloroethane	1.0	5.0	8260B/5030B (soil)
trans-1,2-dichloroethene	1.0	5.0	8260B/5030B (soil)
1,1-Dichloroethene	1.0	5.0	8260B/5030B (soil)
Methylene Chloride	5.0	5.0	8260B/5030B (soil)
1,2-Dichloropropane	1.0	5.0	8260B/5030B (soil)
cis-1,3-Dichloropropene	1.0	5.0	8260B/5030B (soil)
trans-1,3-Dichloropropene	1.0	5.0	8260B/5030B (soil)
Ethyl benzene	1.0	5.0	8260B/5030B (soil)
Ethyl methacrylate	1.0	5.0	8260B/5030B (soil)
2-Hexanone	10	25	8260B/5030B (soil)
Iodomethane	5.0	5.0	8260B/5030B (soil)
Isobutanol	40	200	8260B/5030B (soil)
Methacrylonitrile	20	100	8260B/5030B (soil)
2-Butanone	10	25	8260B/5030B (soil)
Methyl methacrylate	1.0	5.0	8260B/5030B (soil)
4-Methyl-2-pentanone	10	25	8260B/5030B (soil)
Pentachloroethane	5.0	25	8260B/5030B (soil)
Propionitrile	20	100	8260B/5030B (soil)
Stryene	1.0	5.0	8260B/5030B (soil)
1,1,1,2-Tetrachloroethane	1.0	5.0	8260B/5030B (soil)
1,1,2,2-Tetrachloroethane	1.0	5.0	8260B/5030B (soil)
Tetrachloroethene	1.0	5.0	8260B/5030B (soil)
Toluene	1.0	5.0	8260B/5030B (soil)
1,1,1-Trichloroethane	1.0	5.0	8260B/5030B (soil)
1,1,2-Trichloroethane	1.0	5.0	8260B/5030B (soil)
Trichloroethene	1.0	5.0	8260B/5030B (soil)

TABLE 3-2

METHOD PERFORMANCE LIMITS
APPENDIX IX COMPOUND LIST AND CONTRACT
REQUIRED QUANTITATION LIMITS (CRQL)
PHASE I RFI WORK PLAN SWMU 75
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Volatiles (Cont.)	Quantitation Limits* Water (µg/L)	Quantitation Limits* Low Soil (µg/kg)	Method Number
Trichlorofluoromethane	1.0	5.0	8260B/5030B (soil)
1,2,3-Trichloropropane	1.0	5.0	8260B/5030B (soil)
Vinyl Acetate	2.0	10	8260B/5030B (soil)
Vinyl Chloride	1.0	10	8260B/5030B (soil)
Xylene	2.0	10	8260B/5030B (soil)
Semivolatiles	**Quantitation Limits* Water (µg/L)**	**Quantitation Limits* Low Soil (µg/kg)**	**Method Number**
Acenaphthene	10	330	8270C
Acenaphthylene	10	330	8270C
Acetophenone	10	330	8270C
2-Acetylaminofluorene	10	330	8270C
4-Aminobiphenyl	20	330	8270C
Aniline	20	660	8270C
Anthracene	10	330	8270C
Aramite	10	330	8270C
Benzo(a)anthracene	10	330	8270C
Benzo(b)fluoranthene	10	330	8270C
Benzo(k)fluoranthene	10	330	8270C
Benzo(g,h,i)perylene	10	330	8270C
Benzo(a)pyrene	10	330	8270C
Benzyl alcohol	10	330	8270C
Bis(2-chloroethoxyl)methane	10	330	8270C
Bis(2-chloroethyl)ether	10	330	8270C
Bis(2-ethylhexyl)phthalate	10	330	8270C
4-Bromophenyl phenyl ether	10	330	8270C
Butylbenzylphthalate	10	330	8270C
4-Chloroaniline	20	660	8270C
4-Chloro-3-methylphenol	10	330	8270C
2-Chloronaphthalene	10	330	8270C
2-Chlorophenol	10	330	8270C
4-Chlorophenyl phenyl ether	10	330	8270C
Chrysene	10	330	8270C
3&4 Methylphenol	10	330	8270C
2-Methylphenol	10	330	8270C
Diallate	10	330	8270C
Dibenzofuran	10	330	8270C
Di-n-butyl phthalate	10	330	8270C
Dibenzo(a,h)anthracene	10	330	8270C
o-Dichlorobenzene	10	330	8270C
m-Dichlorobenzene	10	330	8270C
p-Dichlorobenzene	10	330	8270C
3,3'-Dichlorobenzidine	20	660	8270C
2,4-Dichlorophenol	10	330	8270C
2,6-Dichlorophenol	10	330	8270C
Diethylphthalate	10	330	8270C
p-(Dimethylamino)azobenzene	10	330	8270C
7,12-Dimethyl benz(a)anthracene	10	330	8270C
3,3-Dimethyl benzidine	20	1,700	8270C
2,4-Dimethylphenol	10	330	8270C
alpha, alpha-Dimethylphenethylamine	2,000	67,000	8270C

TABLE 3-2

METHOD PERFORMANCE LIMITS
APPENDIX IX COMPOUND LIST AND CONTRACT
REQUIRED QUANTITATION LIMITS (CRQL)
PHASE I RFI WORK PLAN SWMU 75
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Semivolatiles (Cont.)	Quantitation Limits*		Method Number
	Water (µg/L)	Low Soil (µg/kg)	
Dimethyl phthalate	10	330	8270C
m-Dinitrobenzene	10	330	8270C
4,6-Dinitro-2-methylphenol	50	1,700	8270C
2,4-Dinitrophenol	50	1,700	8270C
2,4-Dinitrotoluene	10	330	8270C
2,6-Dinitrotoluene	10	330	8270C
Di-n-octylphthalate	10	330	8270C
1,4-Dioxane	10	330	8270C
Dinoseb	10	330	8270C
Ethylmethanesulfonate	10	330	8270C
Fluoranthene	10	330	8270C
Fluorene	10	330	8270C
Hexachlorobenzene	10	330	8270C
Hexachlorobutadiene	10	330	8270C
Hexachlorocyclopentadiene	10	330	8270C
Hexachloroethane	10	330	8270C
Hexachlorophene	5,000	170,000	8270C
Hexachloropropene	10	330	8270C
Indeno(1,2,3-cd)pyrene	10	330	8270C
Isophorone	10	330	8270C
Isosafrole	10	330	8270C
Methapyrilene	2,000	67,000	8270C
3-Methylcholanthrene	10	330	8270C
Methyl methanesulfonate	10	330	8270C
2-Methylnaphthalene	10	330	8270C
Naphthalene	10	330	8270C
1,4-Naphthoquinone	10	330	8270C
1-Naphthylamine	10	330	8270C
2-Naphthylamine	10	330	8270C
2-Nitroaniline	50	1,700	8270C
3-Nitroaniline	50	1,700	8270C
4-Nitroaniline	50	1,700	8270C
Nitrobenzene	10	330	8270C
2-Nitrophenol	10	330	8270C
4-Nitrophenol	50	1,700	8270C
4-Nitroquinoline-1-oxide	20	3,300	8270C
n-Nitrosodi-n-butylamine	10	330	8270C
n-Nitrosodiethylamine	10	330	8270C
n-Nitrosodimethylamine	10	330	8270C
n-Nitrosodiphenylamine	10	330	8270C
n-Nitrosodi-n-propylamine	10	330	8270C
n-Nitrosomethylethylamine	10	330	8270C
n-Nitrosomorpholine	10	330	8270C
n-Nitrosopiperidine	10	330	8270C
5-Nitro-o-toluidine	10	330	8270C
bis-(2-chloroisopropyl)ether	10	330	8270C
Pentachlorobenzene	10	330	8270C
Pentachloronitrobenzene	10	330	8270C
n-Nitrosopyrrolidine	10	330	8270C

TABLE 3-2

METHOD PERFORMANCE LIMITS
APPENDIX IX COMPOUND LIST AND CONTRACT
REQUIRED QUANTITATION LIMITS (CRQL)
PHASE I RFI WORK PLAN SWMU 75
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Semivolatiles (Cont.)	Quantitation Limits*		Method Number
	Water (µg/L)	Low Soil (µg/kg)	
Pentachlorophenol	50	1,700	8270C
Phenacetin	10	330	8270C
Phenanthrene	10	330	8270C
Phenol	10	330	8270C
1,4-Phenylenediamine	2,000	1,700	8270C
2-Picolin	10	330	8270C
Pronamide	10	330	8270C
Pyrene	10	330	8270C
Pyridine	50	330	8270C
Safrole	10	330	8270C
1,2,4,5-Tetrachlorobenzene	10	330	8270C
2,3,4,6-Tetrachlorophenol	10	330	8270C
o-Toluidine	20	330	8270C
1,2,4-Trichlorobenzene	10	330	8270C
2,4,5-Trichlorophenol	10	330	8270C
2,4,6-Trichlorophenol	10	330	8270C
1,3,5-Trinitrobenzene	10	330	8270C
Total Petroleum Hydrocarbons	**Quantitation Limits***		**Method Number**
	Water (µg/L)	**Low Soil (µg/kg)**	
TPH DRO	100	3300	8015B
TPH GRO	50	250	8015B

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis, will be higher.

µg/L - micrograms per liter.

µg/kg - micrograms per kilogram.

TABLE 3-2

METHOD PERFORMANCE LIMITS
APPENDIX IX COMPOUND LIST AND CONTRACT
REQUIRED QUANTITATION LIMITS (CRQL)
PHASE I RFI WORK PLAN SWMU 75
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Inorganics	Method Number	Quantitation Limits* Water (µg/L)	Quantitation Limits* Low Soil (mg/kg)	Method Description
Antimony	6010B	20	2.0	Inductively Coupled Plasma
Arsenic	6010B	10	1.0	Inductively Coupled Plasma
Barium	6010B	10	1.0	Inductively Coupled Plasma
Beryllium	6010B	4.0	0.4	Inductively Coupled Plasma
Cadmium	6010B	5.0	0.5	Inductively Coupled Plasma
Chromium	6010B	10	1.0	Inductively Coupled Plasma
Cobalt	6010B	10	1.0	Inductively Coupled Plasma
Copper	6010B	20	2.0	Inductively Coupled Plasma
Lead	6010B	5.0	0.5	Inductively Coupled Plasma
Mercury	7470A/7471A	0.2	0.02	Cold Vapor AA
Nickel	6010B	40	4.0	Inductively Coupled Plasma
Selenium	6010B	10	1.0	Inductively Coupled Plasma
Silver	6010B	10	1.0	Inductively Coupled Plasma
Thallium	6010B	10	1.0	Inductively Coupled Plasma
Tin	6010B	10	5.0	Inductively Coupled Plasma
Vanadium	6010B	10	1.0	Inductively Coupled Plasma
Zinc	6010B	20	2.0	Inductively Coupled Plasma

RCRA Metals	Method Number	Quantitation Limits* Soil (mg/kg)	Quantitation Limits* Water (µg/L)	Method Description
Arsenic	6010B(3050B/3010A)	1.0	10	Inductively Coupled Plasma
Barium	6010B(3050B/3010A)	1.0	10	Inductively Coupled Plasma
Cadmium	6010B(3050B/3010A)	0.50	5	Inductively Coupled Plasma
Chromium	6010B(3050B/3010A)	1.0	10	Inductively Coupled Plasma
Lead	6010B(3050B/3010A)	0.50	5.0	Inductively Coupled Plasma
Mercury	7470A/7471A	0.020	0.20	Cold Vapor AA
Selenium	6010B(3050B/3010A)	1.0	10	Inductively Coupled Plasma
Silver	6010B(3050B/3010A)	1.0	10	Inductively Coupled Plasma

Notes:

* Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis, will be higher.

µg/L - micrograms per liter.

mg/kg - milligrams per kilogram.

TABLE 3-3

SUMMARY OF SAMPLING AND ANALYTICAL PROGRAM
QA/QC AND IDW SAMPLES
PHASE I RFI WORK PLAN SWMU 75
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

	Aqueous Samples Analysis Requested							Solid Samples Analysis Requested		
Media	App IX VOCs	App IX SVOCs	App IX Metals (Total)	TPH DRO	TPH GRO	Benzene	RCRA Metals	Benzene	RCRA Metals	**Comment**
Trip Blank Samples										
75TB01	X[(1)]				X[(1)]					
75TB02	X[(1)]				X[(1)]					
75TB03	X[(1)]				X[(1)]					
Equipment Rinsate Samples										
75ER01	X	X	X	X	X					
75ER02	X	X	X	X	X					
75ER03	X	X	X	X	X					
Field Blank Samples										
75FB01	X	X	X	X	X					Lab Grade Deionized Water
75FB02	X	X	X	X	X					Store Bought Distilled Warer
75FB03	X	X	X	X	X					NAPR Potable Water
IDW Samples										
75IDW01						X	X			Aqueous
75IDW02				X				X	X	Solid

Note:
[(1)] - The analysis required for this sample will be dependent on which samples are being accompanied in the cooler.

FIGURES

K:_SOUTHNAVFAC\111626 DO2\Task 5 – RFI Work Plans\SWMU 75 RFI\CAD\ 111626_75_01.dwg

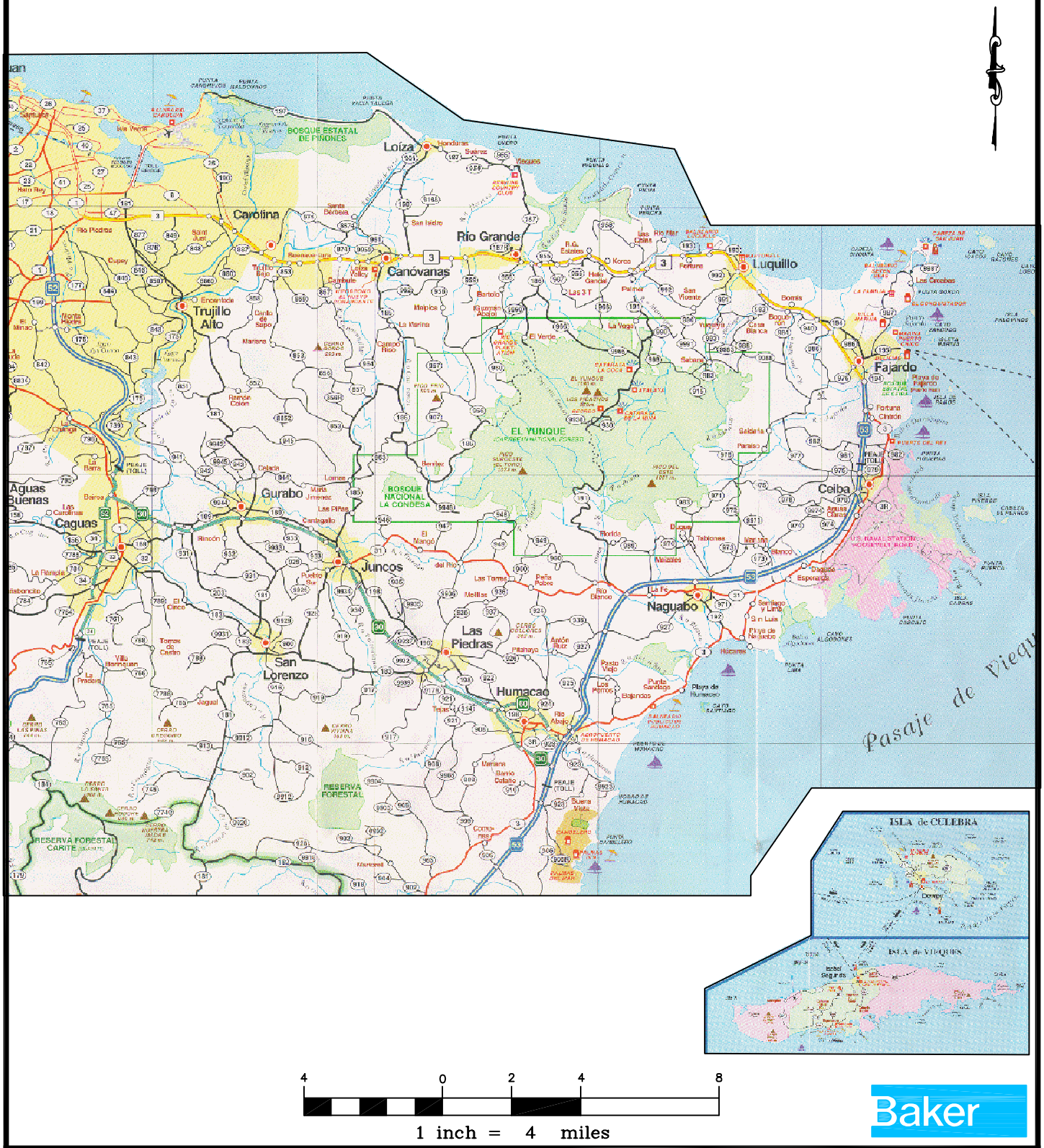
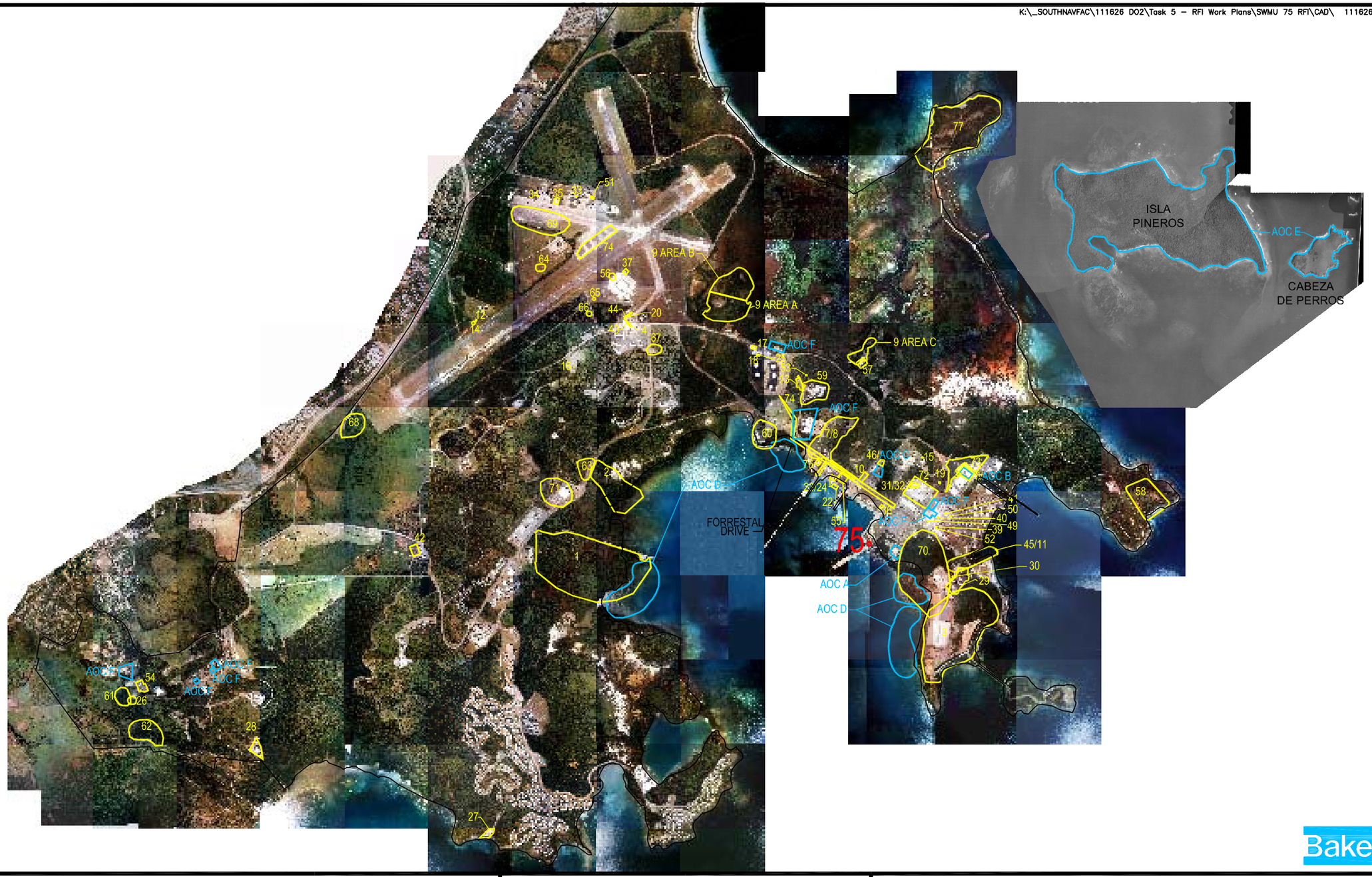


FIGURE 1–1
REGIONAL LOCATION MAP
SWMU 75–BUILDING 803
PHASE I RFI WORK PLAN

SOURCE: METRODATA, INC., 1999.

NAVAL ACTIVITY PUERTO RICO

K:_SOUTHNAVFAC\111626 DO2\Task 5 – RFI Work Plans\SWMU 75 RFI\CAD\ 111626_75_02.dwg



Baker

LEGEND

1 – SWMUs

75 – AREA PERTAINS TO THIS INVESTIGATION

AOC D – AOCs

SOURCE: GEO–MARINE, INC., SEPTEMBER 6, 2000.

3000 0 1500 3000

1 inch = 3000 ft.

FIGURE 1–2
SWMU/AOC LOCATION MAP
SWMU 75–BUILDING 803
PHASE I RFI WORK PLAN

NAVAL ACTIVITY PUERTO RICO

100 0 50 100

1 inch = 100 ft.

Baker

LEGEND

◇ – SWMU BOUNDARY

— – CONCRETE TRENCH

▭ – BUILDING 803, FOUR INTERIOR WIPE SAMPLES WERE TAKEN (PHASE II ECP 2004)

803 – BUILDING NUMBER

SOURCE: GEO–MARINE, INC., SEPTEMBER 6, 2000.

FIGURE 1–3
SITE LOCATION MAP
SWMU 75–BUILDING 803
PHASE I RFI WORK PLAN

NAVAL ACTIVITY PUERTO RICO

Baker

LEGEND

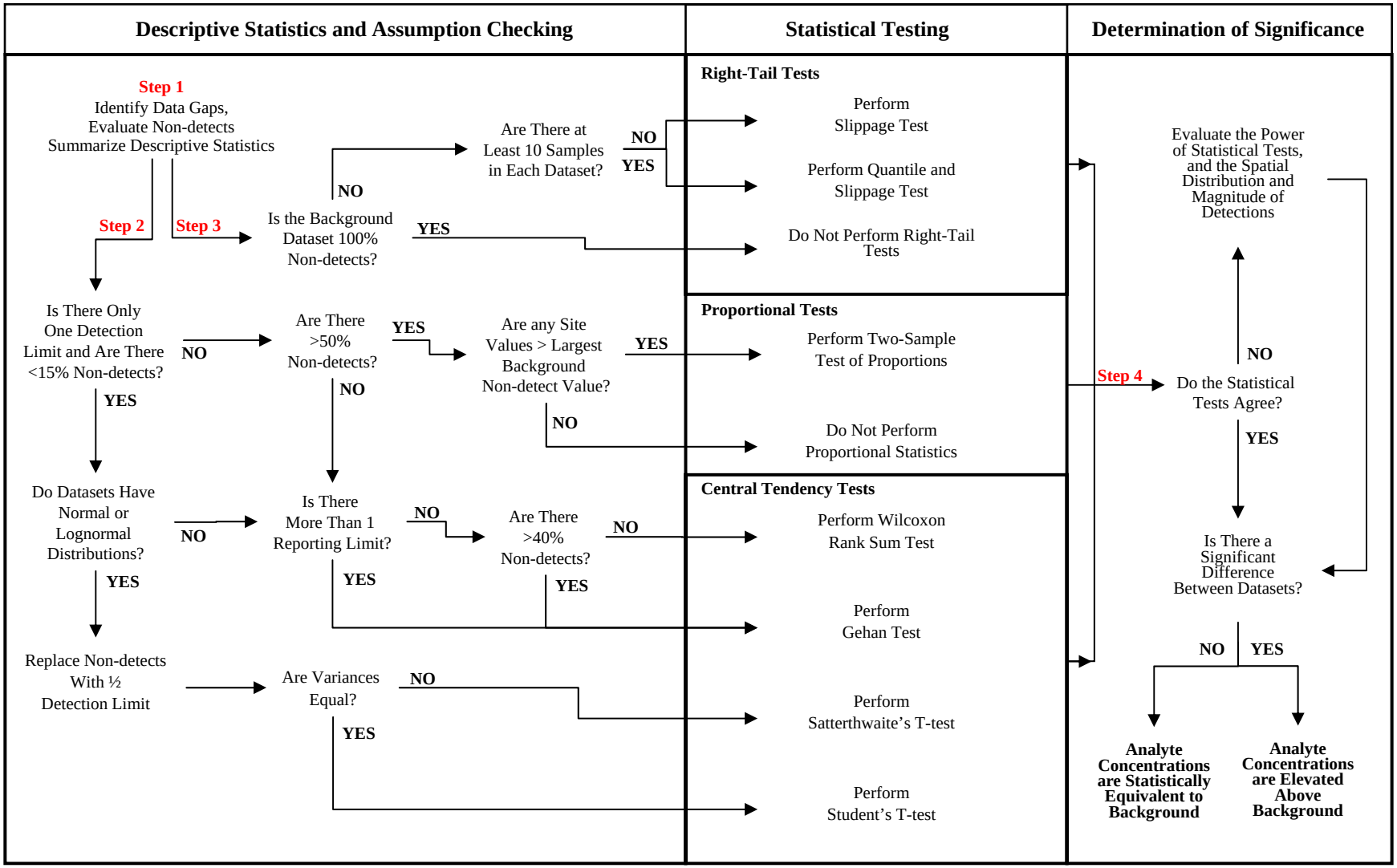
- ◇ – SWMU BOUNDARY
- — – CONCRETE TRENCH
- ▭ – BUILDING 803, FOUR WIPE SAMPLES WERE TAKEN (PHASE II ECP 2004)
- ◑ – PROPOSED SURFACE AND SUBSURFACE SAMPLING LOCATIONS
- 803 – BUILDING NUMBER

SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

FIGURE 3-1
PROPOSED SAMPLE LOCATION MAP
SWMU 75-BUILDING 803
PHASE I RFI WORK PLAN

NAVAL ACTIVITY PUERTO RICO

FIGURE 4-1
STATISTICAL ANALYSIS PROCESS
SWMU 75 – BUILDING 803
PHASE I RFI WORK PLAN
NAVAL ACTIVITY PUERTO RICO

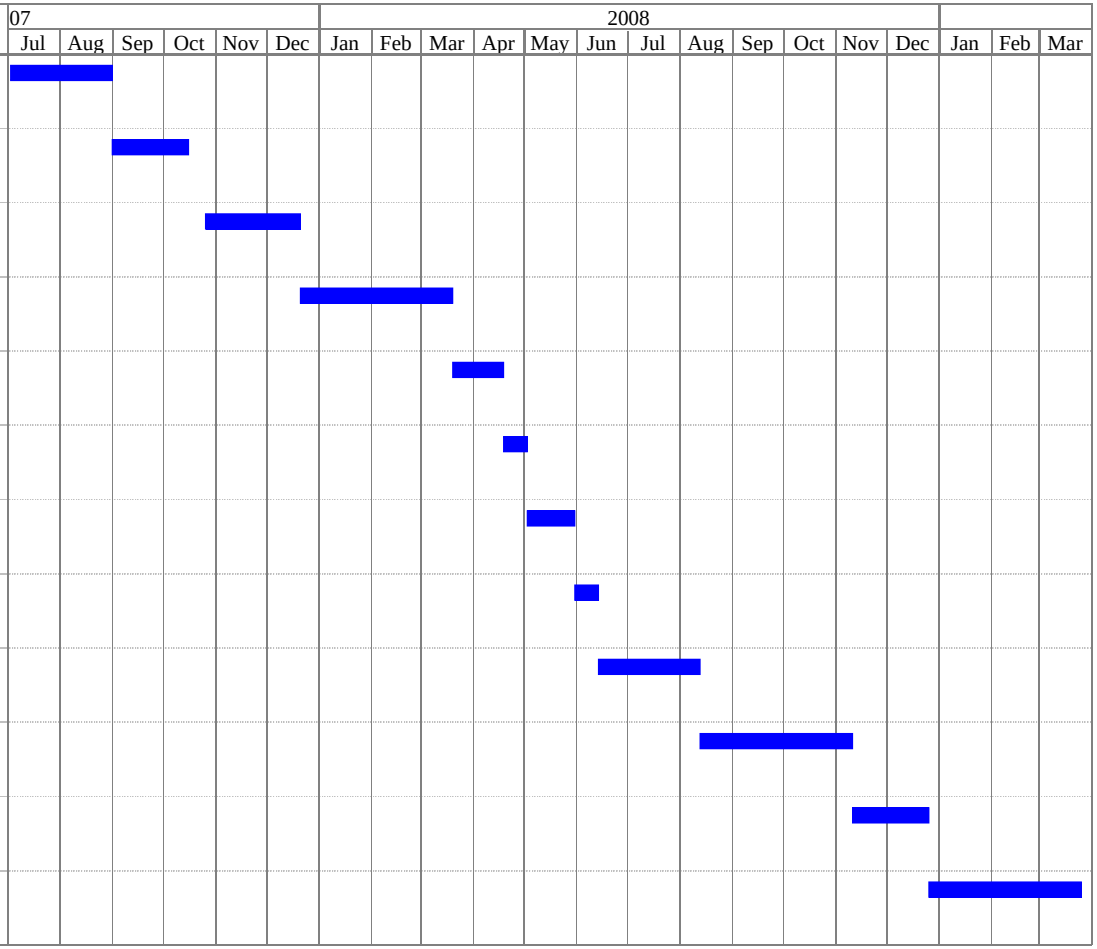


T-tests performed on log-transformed data if datasets have lognormal distributions.

FIGURE 5-1
PROPOSED PROJECT SCHEDULE
SWMU 75- BUILDING 803
PHASE I RFI WORK PLAN
NAVAL ACTIVITY PUERTO RICO

Revised: December 20, 2007

ID	Task Name	Duration	Start	Finish
1	Draft RFI Work Plan to the EPA	60 edays	7/2/07	8/31/07
2	EPA Review	48 edays	8/31/07	10/18/07
3	Final RFI Work Plan to the EPA	56 edays	10/25/07	12/20/07
4	EPA Review & Approval	90 edays	12/21/07	3/20/08
5	Initiate Field Work	30 edays	3/20/08	4/19/08
6	Field Investigation	14 edays	4/19/08	5/3/08
7	Laboratory Analysis	28 edays	5/3/08	5/31/08
8	Data Validation	14 edays	5/31/08	6/14/08
9	Draft Phase I RFI Report for SWMU 75 to EPA	60 edays	6/14/08	8/13/08
10	EPA Review	90 edays	8/13/08	11/11/08
11	Final Phase I RFI Report for SWMU 75 to EPA	45 edays	11/11/08	12/26/08
12	EPA Review & Approval	90 edays	12/26/08	3/26/09

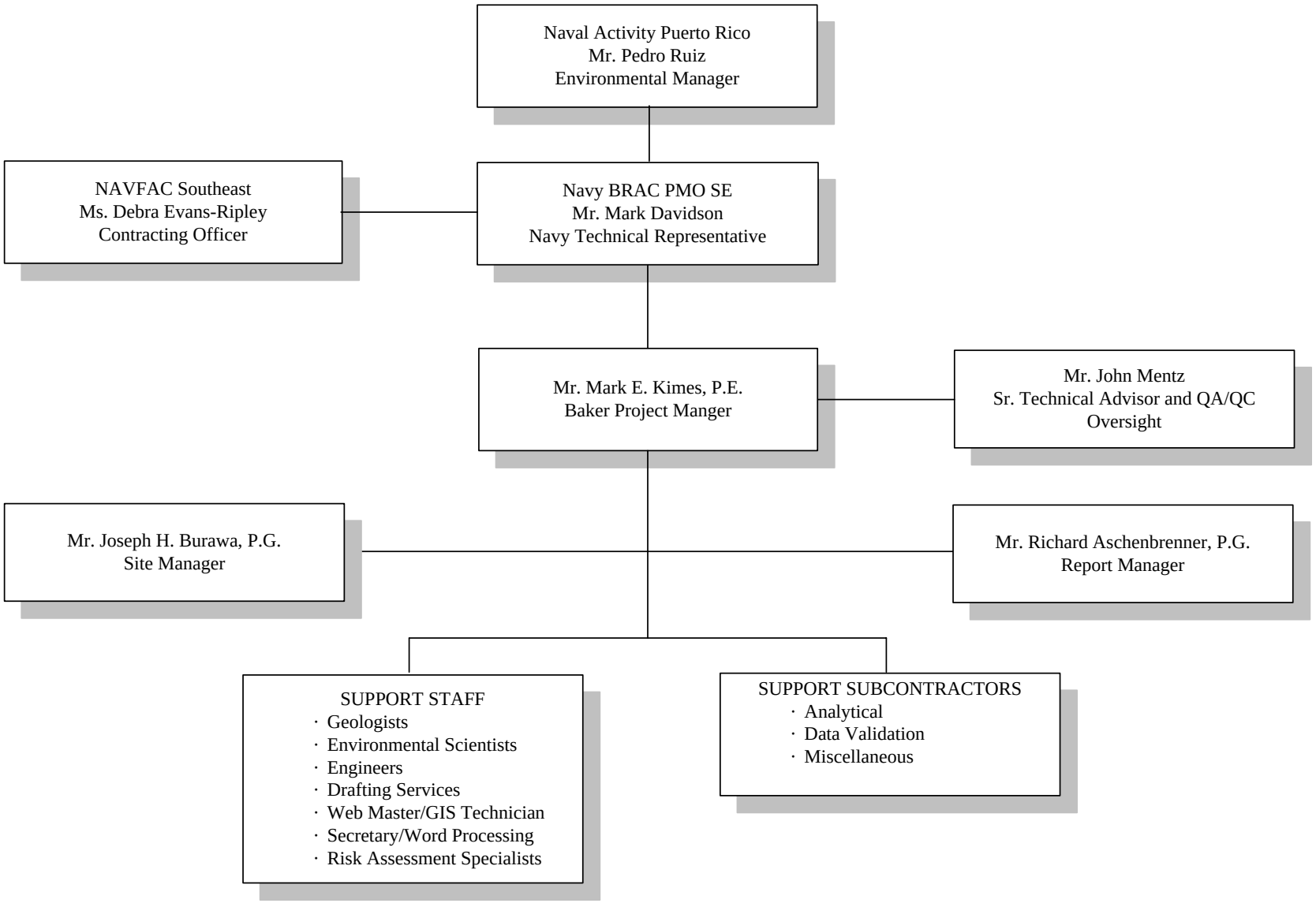


Project:Phase I RFI Work Plan
Date: 12/19/07

Task

Revised: December 20, 2007

FIGURE 6-1
PROJECT ORGANIZATION
PHASE I RFI WORK PLAN – SWMU 75
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO



APPENDIX A
PHOTOGRAPHS OF SWMU 75, BUILDING 803

SWMU 75 – Building 803

Photograph A-1: Building 803 Entrance, View from Pier. Note Roof access Doors in open position.

Photograph A-2: Diesel Motor in Building 803

Photograph A-3: Wipe Sample, Near Diesel Motor

Photograph A-4: Wipe Sample on Floor, Near Central/Back Portion of Building

Photograph A-5: Wipe Sample, Near Salt Water Intake Pumps.

Photograph A-6: Wipe Sample on Wall of Building, Near Entrance

SWMU 75 – Building 803
(Continued)

Photograph A-7: Manway/Access Door to Salt Water Intake and water intake pumps on the right.

Photograph A-8: Batteries Stored Near Entrance of Building

APPENDIX B
SUMMARY OF ANALYTICAL RESULTS FROM PHASE II ECP STUDY

TABLE B-1

SUMMARY OF ORGANIC DETECTIONS IN WIPE SAMPLES
SWMU 75 - BUILDING 803
PHASE II ECP STUDY
NAVAL ACTIVITY PUERTO RICO

Site ID	21E-WS01		21E-WS02		21E-WS03		21E-WS03		21E-WS04		Number of	Range of	Location of
Sample ID	21E-WS01		21E-WS02		21E-WS03		21E-WS03D		21E-WS04		Positive	Positive	Maximum
Sample Date	05/09/04		05/09/04		05/09/04		05/09/04		05/09/04		Detections	Detections	Detection
Semivolatile Organic Compounds (ug/100 cm^2)													
bis(2-Ethylhexyl)phthalate	3.8	J	10	U	10	U	10	U	10	U	1/5	3.8J	21E-WS01
Di-n-butylphthalate	10	U	10	U	1.7	J	10	U	10	U	1/5	1.7J	21E-WS03
PCBs (ug/100 cm^2)													
Not Detected													

Notes:

J - The reported result is an estimated concentration that is less than the PQL, but greater than or equal to the MDL.
U - The compound was analyzed for, but was not detected at or above the MDL/PQL.
ug/100 cm^2 - micrograms per 100 centimeters squared.

TABLE B-2

SUMMARY OF INORGANIC DETECTIONS IN WIPE SAMPLES
SWMU 75 - BUILDING 803
PHASE II ECP STUDY
NAVAL ACTIVITY PUERTO RICO

Site ID Sample ID Sample Date	21E-WS01 21E-WS01 05/09/04	21E-WS02 21E-WS02 05/09/04	21E-WS03 21E-WS03 05/09/04	21E-WS03 21E-WS03D 05/09/04	21E-WS04 21E-WS04 05/09/04	Number of Positive Detections	Range of Positive Detections	Location of Maximum Detection
Appendix IX Metals (mg/100 cm^2)								
Antimony	0.00059	0.00032	0.000042 B	0.000075 B	0.000098 B	5/5	0.000042B - 0.00059	21E-WS01
Arsenic	0.0035	0.0012	0.0005 U	0.0001 B	0.00021 B	4/5	0.0001B - 0.0035	21E-WS01
Barium	0.061	0.015	0.0007	0.0012	0.0017	5/5	0.0007 - 0.061	21E-WS01
Beryllium	0.00019	0.000092	0.000006 B	0.000007 B	0.00001 B	5/5	0.000006B - 0.00019	21E-WS01
Cadmium	0.021	0.0025	0.00068	0.00081	0.0006	5/5	0.0006 - 0.021	21E-WS01
Chromium	0.087	0.039	0.00087	0.0018	0.0013	5/5	0.00087 - 0.087	21E-WS01
Cobalt	0.0095	0.0025	0.000096 B	0.0002 B	0.00015 B	5/5	0.000096B - 0.0095	21E-WS01
Copper	0.64	0.046	0.012	0.0073	0.0041	5/5	0.0041 - 0.64	21E-WS01
Lead	0.39	0.062	0.0045	0.0062	0.0083	5/5	0.0045 - 0.39	21E-WS01
Mercury	0.000033	0.00002	0.00002 U	0.00002 U	0.00002 U	2/5	0.00002 - 0.000033	21E-WS01
Nickel	0.023	0.02	0.00053	0.00075	0.00067	5/5	0.00053 - 0.023	21E-WS01
Selenium	0.00012 B	0.000073 B	0.00025 U	0.00025 U	0.000039 B	3/5	0.000039B - 0.00012B	21E-WS01
Silver	0.00012 B	0.00015 B	0.000006 B	0.0005 U	0.000016 B	4/5	0.000006B - 0.00015B	21E-WS02
Thallium	0.000045 B	0.000021 B	0.0001 U	0.00007 B	0.0001 U	3/5	0.000021B - 0.00007B	21E-WS03D
Tin	0.0099	0.0037	0.0015 B	0.0019 B	0.0014 B	5/5	0.0014B - 0.0099	21E-WS01
Vanadium	0.025	0.0094	0.0004 B	0.00065	0.0021	5/5	0.0004B - 0.025	21E-WS01
Zinc	1.3	0.22	0.043	0.057	0.035	5/5	0.035 - 1.3	21E-WS01

Notes:

B - The reported result is an estimated concentration that is less than the PQL, but greater than or equal to the MDL.
U - The compound was analyzed for, but was not detected at or above the MDL/PQL.
mg/100 cm^2 - milligrams per 100 centimeters squared.