REVISED FINAL PHASE I RCRA FACILITY INVESTIGATION REPORT SWMU 62 – FORMER BUNDY DISPOSAL AREA

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:

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Moon Township, PA

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

January 13, 2010

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

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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.

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Title: **BRAC Env. Coordinator**

Date: **January 13, 2010**

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LIST OF ACRONYMS AND ABBREVIATIONS

AFWTF	Atlantic Fleet Weapons Training
Baker	Michael Baker Jr., Inc.
bgs	below ground surface
BRAC	Base Realignment and Closure
CADD	Computer Aided Design and Drafting
CCME	Canadian Council of Ministers of the Environment
CERCLA	Comprehensive Environmental Recovery, Compensation, and Liabilities Act
CERFA	Community Environmental Response Facilitation Act
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
CSF	Cancer Slope Factors
DGPS	Differential Global Positioning System
DI	Deionized Water
DO	Delivery Order
DPT	Direct Push Technology
DRO	Diesel Range Organics
ECP	Environmental Condition of Property
ECO-SSL	Ecological Soil Screening Level
EPA	Environmental Protection Agency
EPC	Exposure Point Concentration
F	Fahrenheit
GIS	Geographic Information System
GPS	Global Positioning System
GRO	Gasoline Range Organics
GUMS	Grid User Management System
HQ	Hazard Quotient
IAS	Initial Assessment Study
ICSAB	Interference Check Sample Solution AB
IDW	Investigation-Derived Waste
ILCR	Incremental Lifetime Cancer Risk
IUR	Inhalation Unit Risk
LANTDIV	Naval Facilities Engineering Command, Atlantic Division
LCS	Laboratory Control Sample
LLPAH	Low-Level Polynuclear Aromatic Hydrocarbon
LOAEC	Lowest Observed Adverse Effect Concentration

LIST OF ACRONYMS AND ABBREVIATIONS
(continued)

MATC	Maximum Acceptable Toxicant Concentration
MDL	Method Detection Limit
MGD	Million Gallons per Day
MHSPE	Ministry of Housing, Spatial Planning and Environment
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NAD	North American Datum
NAPR	Naval Activity Puerto Rico
NAVFAC	Naval Facilities Engineering Command
NEESA	Naval Energy and Environmental Support Activity
NOAEC	No Observed Adverse Effect Concentration
NSRR	Naval Station Roosevelt Roads
PAH	Polyaromatic Hydrocarbon
PCB	Polychlorinated biphenyls
PMO	Program Management Office
QA/QC	Quality Assurance/Quality Control
RAGS	Risk Assessment Guidance for Superfund
RBC	Risk-Based Concentration
RCRA	Resource Conservation and Recovery Act
RfC	Reference Concentration
RfD	Reference Dose
RFF	Relative Response Factor
RFI	RCRA Facility Investigation
SDG	Sample Delivery Group
SE	Southeast
SL	Screening Level
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TPH	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
%D	Percent Difference

1.0 INTRODUCTION

This document presents the results of the Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) for Solid Waste Management Unit (SWMU) 62 (Former Bundy Disposal Area) at Naval Activity Puerto Rico, Ceiba, Puerto Rico. This report 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).

In anticipation of operational closure of Naval Station Roosevelt Roads (NSRR), currently designated as Naval Activity Puerto Rico (NAPR), 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 (LANTDIV, 2004). Section 8132 of the 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 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 United States Environmental Protection Agency (USEPA) issued a Resource Conservation and Recovery Act (RCRA) 7003 Administrative Order on Consent (Environmental Protection Agency [EPA] Docket No. RCRA-02-2007-7301), identifying SWMU 62 (formerly referred to as ECP Site 8) as having documented releases of solid and/or hazardous waste and hazardous constituents. The Revised Final Phase I RCRA Facility Investigation (RFI) Work Plan (Baker, 2008a) was approved by USEPA on May 13, 2008. This Phase I RFI Report presents the results of the Phase I RFI field investigation conducted in May/June 2008.

1.1 Purpose of Report

A Phase I RFI is required as outlined in the NAPR RCRA 7003 Order issued by USEPA Region II. The RCRA Order provides for the development of a work plan, field investigation, and reporting on the findings of the investigation with recommendations of follow-up actions necessary to ensure protection of human health and the environment. This report has been prepared to document the findings of the May/June 2008 Phase I RFI field investigation for SWMU 62 and serves as the basis for determining the nature of impacts from the potential release of hazardous constituents at the site.

1.2 Objectives

The objectives of the RFI are to:

- Determine whether contaminants are present from past disposal activities at SWMU 62, from the completion of field activities (surface and subsurface soil sampling) as described in the approved 2008 RFI Work Plan (Baker, 2008a);
- Assess and document potential human health risks posed by the site; and
- Assess and document potential ecological risks posed by the site.

Specific elements of the 2008 field effort performed to support this RFI include:

- Surface and subsurface soil sampling at four locations in the southeastern portion of the SWMU in the vicinity of the 2004 Phase II ECP surface and subsurface sample location 8E-03.
- Surface and subsurface soil sampling at four locations in the approximate center of the SWMU in the vicinity of the 2004 Phase II ECP surface and subsurface sample location 8E-01.

1.3 Organization of the Phase I RFI Report

This report is organized into eight sections. Section 1.0 of this document discusses the purpose and objectives of this RFI. Section 2.0 presents a brief summary of the background of NAPR and the history and previous investigations at SWMU 62. Section 3.0 discusses the climatology, topography and regional geology, hydrology and hydrogeology for NAPR. The scope of the field investigation is provided in Section 4.0. Section 5.0 presents and discusses the physical characteristics of the study area observed during this Phase I RFI investigation including the site geology and hydrogeology. Section 6.0 presents the laboratory analytical results performed on the environmental samples and quality assurance/quality control (QA/QC) samples collected during the Phase I RFI with a comparison to appropriate human health and ecological screening values and background values. Section 7.0 presents the conclusions and recommendations from the RFI, while Section 8.0 lists report references.

2.0 SITE BACKGROUND

This section provides the history and description of current conditions at NAPR and SWMU 62. This section also includes a summary of the results of previous investigations conducted at SWMU 62.

2.1 NAPR Description and History

NAPR occupies over 8,800 acres on the northern side of the east coast of Puerto Rico; along Vieques Passage with Vieques Island lying to the east about 10 miles off the harbor entrance (see Figure 2-1). NAPR also occupies the immediately adjacent islands of Piñeros and Cabeza de Perro, as presented on Figure 2-2. 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 2-1).

The facility was commissioned in 1943 as a Naval Operations Base, and re-designated as a Naval Station in 1957. Naval Station Roosevelt Roads (NSRR) operated as a Naval Station from 1957 until March 31, 2004. NSRR was one of the largest naval facilities in the world with more than 100 miles of paved roads, approximately 1,300 buildings, a large scale airfield (Ofstie Field), a deep water port and over 30 tenant commands. NSRR played a major role in providing communication support to the Atlantic and Caribbean areas and also served as a major training site for fleet exercises.

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 required 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). NSRR has undergone operational closure as of March 31, 2004 and has been designated as Naval Activity Puerto Rico (NAPR). 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. NAPR will continue until the real estate disposal/transfer is completed.

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. 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 performed in 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 II Environmental Condition of Property Report 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 final ECP report recommended completion of RCRA facility investigation of SWMU 62, which was the basis for the Phase I RFI and this report.

2.2 SWMU 62 Description and History

SWMU 62, referred to as the "Former Bundy Disposal Area" is located in the southwestern portion of the base as shown on Figure 2-2. The records review and interviews conducted during the Phase I ECP did not confirm that the area was used as a disposal area. However, numerous piles of mounded gravel and charcoal, metal and building debris, and two empty 55-gallon drums were observed during the Phase I ECP physical site inspection. During the Phase II ECP investigation, the field crew observed the same type of site features as described above. There were no signs of stressed vegetation observed during the Phase II ECP investigation.

2.3 Previous Investigations

During the Phase II ECP investigation, three soil borings (8E-01, 8E-02, and 8E-03), as shown on Figure 2-3, were advanced in the Former Bundy Disposal Area. These borings were placed in areas of disturbance as determined through the aerial photo interpretation. Figure 2-3 identifies the polygons from the historical aerial photo review along with the 1958 photo. Three surface soil samples were collected at this site (sample locations 8E-01 through 8E-03) from a depth of 0 to 1 foot below ground surface (bgs). Subsurface soil samples were then collected from 8E-01 and 8E-03 using a hand auger. (A track-mounted Geoprobe® rig was unable to traverse the topography at this site.) A subsurface soil sample was not obtained from soil boring location 8E-02 due to auger refusal at 1 foot bgs. The depth of subsurface soil collection at other locations was limited by the shallow depth to suspected bedrock. Geology at the site was characterized as a thin residual sand and silt overlaying weathered bedrock (Gabbro). Groundwater was not encountered.

The surface and subsurface soil samples were analyzed for Appendix IX volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/PCBs, organophosphorus (OP)-pesticides, chlorinated herbicides, and metals. In the surface soil, a few VOCs and pesticides were detected. No organic compounds exceeded USEPA Region III Residential or Industrial Risk-Based Concentrations (RBCs) at this SWMU. Organic compounds were not detected in the subsurface soil matrix.

Inorganic detections were representative of background concentrations of beryllium and tin found at NAPR with the exception of barium in the subsurface soil matrix. Three metals exceeded the USEPA Region III Residential RBCs, including arsenic and vanadium in the surface soil and barium and vanadium in the subsurface soil. At 8E-03 the barium concentration in the subsurface soil also exceeded twice the average detected background concentration, indicating possible contamination. It should be noted that barium also exceeded the background screening value in two of the three surface soil samples, although it did not exceed its RBC. The concentrations of arsenic and vanadium in the soil did not exceed the background concentrations established at NAPR. The ECP data is included in the discussion of analytical results in Section 6 of this Phase I RFI report.

Based on the occurrence of barium exceeding background and the USEPA Region III Residential RBC at sample location 8E03-01, it was concluded that site contamination has occurred from previous activities. Barium is associated with ignition equipment and acid batteries, and is a component of gray and ductile irons. These items could have been disposed of at the site as indicated by the past use of the site and as shown by a feature in the 1958 aerial photograph

(LANTDIV, 2004), at the site of sample 8E-03. As noted in Section 2.1, based on the findings of the ECP, the final ECP report recommended the completion of a RCRA facility investigation at SWMU 62.

3.0 PHYSICAL CHARACTERISTICS OF STUDY AREA

The physical setting of NAPR was documented in the 1984 Initial Assessment Study (IAS) (Naval Energy and Environmental Support Activity [NEESA], 1984). This information is summarized in the paragraphs that follow.

3.1 Climatology

The climate associated with NAPR is characterized as warm and humid, with frequent showers occurring throughout the year. A major factor affecting the weather is the pattern of trade winds associated with the Bermuda High, the center of which is in the vicinity of 30° North, 30° West. The prevailing wind direction reflects the easterly trade winds. The area receives a surface flow varying between the northeast to the southeast about 75 percent of the year, and as much as 95 percent of the time in July when the easterly winds are strongest. The differential heating of the land and sea during the day tends to give a more northerly component to the flow on the northern side of the island and a more southerly component on the southern side. During the night, a land breeze causes a prevailing southeasterly flow in the north and a prevailing northeasterly flow over the southern coast. The mean annual wind velocity is 5.5 knots, with a minimum in November and a maximum in August. Gales associated with westward moving disturbances in the trade winds or hurricanes passing either north or south of the area have the highest probability of occurrence from June through October.

Uniform temperatures prevail, with small diurnal ranges as a result of insular exposure and the relatively small land areas. The warmest months are August and September, while the coolest are January and February. Mean annual maximum temperatures range from 82.0° Fahrenheit (F) in January to 88.2° F in August. The mean annual minimum temperatures vary from 64.0° F in January to 73.2° F in June. The highest maximum temperature recorded was 95.0° F, while the lowest minimum was 59.0° F. Rain usually occurs at least nine days in every month, with an average of 60 inches per year although a dry winter season occurs from December through April. About 22 thunderstorm-days occur per year, with maximum frequencies of 3 days per month from May through October.

In late summer, the mean sky cover begins a steady decrease from a monthly maximum average of 6.5-tenths coverage in September to a minimum monthly average of 4.4-tenths coverage in February. From March through August, the monthly average cloud cover increases steadily from 4.5- to 6.0 tenths coverage during the period. Over the open sea, a maximum of clouds (usually broken stratocumulus) occurs during early morning, with the skies clearing or becoming scattered with cumulus by afternoon. Completely clear or overcast skies are rare during daylight hours, while clear skies frequently occur at night.

The hurricane season is from mid-June through mid-September; maximum winds exceed 95 knots during severe hurricanes. An average of two tropical storms per year occurs in the study area, one of which usually reaches hurricane intensity.

3.2 Topography

The regional area of NAPR consists of an interrupted, narrow coastal plain with small valleys extending from the Sierra de Luquillo range, which has been severely eroded by streams into valleys several hundreds of feet deep. Slopes of up to 60° are common.

In the immediate area of NAPR, elevations range from sea level to approximately 295 feet. Immediately to the north of the NAPR boundary, the hills rise abruptly to heights of 800 to 1,050

feet above sea level, with the tallest peak located within 2 kilometers of the NAPR boundary. There is a series of three hilly areas on NAPR, two of which separate the southern airfield area from the Port/Industrial, Housing, and Personnel Support areas. The third set of hills is in the Bundy area. These ridgelines not only separate sections of NAPR, but also dictate the degree of allowable development. The ridgeline south of the airfield provides an excellent barrier, which effectively decreases the aircraft-generated noise reaching the Unaccompanied Enlisted Personnel Housing areas to an acceptable level. Relief is low along the shoreline and lagoons and mangrove swamps are common.

3.3 Geology, Hydrology, and Hydrogeology

Subsections 3.3.1 through 3.3.4 present the description of the geologic, hydrologic, and hydrogeologic conditions across NAPR. These are generally applicable, but may or may not be specifically-applicable, to the SWMU 62 area. Site specific geologic, hydrologic, and hydrogeologic information can be referenced in sections 5.2.1 and 5.2.2.

3.3.1 Soils

The soil associations found at NAPR are predominantly of two types typical of humid areas, namely the Swamps-Marshes Association and the Mabi-Rio-Arriba-Cayagua Association, as well as the Descalabrado-Guayama Association, which is typical of dry areas. In addition, isolated areas of the Caguabo-Mucara-Naranjito Association, the Coloso-Toa-Bajura Association, and the Jacana Amelia-Fraternidad Association are found at NAPR.

The Swamps-Marshes and Mabi-Rio-Arriba-Cayagua associations cover over one half of NAPR's surface area and are equally distributed. Primarily the Descalabrado-Guayama and Caguabo-Mucara-Naranjito associations cover the remaining area.

The Swamps-Marshes Association consists of deep, very poorly drained soils. This association is found in level or nearly level areas that are slightly above sea level but are wet, and when the tide is high, are covered or affected by saltwater or brackish water. The soils are sandy or clayey, and contain organic materials from decaying mangrove trees. Coral, shells, and marl at varying depths underlie them. The high concentration of salt inhibits the growth of all vegetation except mangrove trees, and in small-scattered patches, other salt-tolerant plants.

The Mabi-Rio-Arriba-Cayagua Association consists generally of deep, somewhat poorly drained and moderately well drained, nearly level to moderately steep soils found on foot and side slopes, terraces, and alluvial fans. Soils of this association at NAPR are basically clayey.

The Descalabrado-Guayama Association generally consists of shallow, well drained, strongly sloping to very steep soils on volcanic uplands. Soils of this association are found primarily in the hilly areas located directly inland and adjacent to the soils of the Swamps-Marshes Association.

The Caguabo-Mucara-Naranjito Association consists generally of shallow and moderately deep, well drained, sloping to very steep soils on volcanic uplands. This association consists of soils that formed in residual material weathered from volcanic rocks. This association is represented at NAPR by soils of the Sabana series, which are found on the side slopes and the hilly terrain west of Langley Drive in the Bundy area. These soils are suited for pasture and woodland. Steep slopes, susceptibility to erosion, and depth to bedrock are the main limitations for farming and for recreation and urban areas.

The Coloso-Toa-Bajura Association consists of deep, moderately well drained to poorly drained, nearly level soils found on floodplains. This soil association extends along the western boundary of NAPR and around the airfield. The soils of this association formed in fine-textured and moderately fine-textured sediment of mixed origin on floodplains. The Coloso soils are deep and somewhat poorly drained; the Toa soils are deep and moderately well drained; and the Bajura soils and Maunabo soils are deep and poorly drained. The Reilly soils, also part of this association, are shallow sand and gravel and are excessively drained; they lie adjacent to streams. The minor soils are Talante, Vivi, Fortuna, Vega Alta, and Vega Baja. The Talante, Vivi, Fortuna, and Vega Baja soils are found on floodplains, while the Vega Alta soils occupy slightly higher positions on terraces.

The Jacana-Amelia-Fraternidad Association consists generally of moderately deep and deep, well drained and moderately well drained, nearly level to strongly sloping soils on terraces, alluvial fans, and foot slopes. This association is represented at NAPR by soils of the Jacana series, which consist of moderately deep, well-drained soils found on the foot slopes and low rolling hills along Langley Drive and just east of the airfield. These soils formed in fine-textured sediment and residuum derived from basic volcanic rocks.

3.3.2 Regional Geology

The underlying geology of the NAPR area is predominantly volcanic (composed of lava and tuff), as well as sedimentary (rocks derived from discontinuous beds of limestone). These rocks all range in age from early Cretaceous to middle Eocene. The volcanic rocks and interbedded limestone have been complexly faulted, folded, metamorphosed, and variously intruded by dioritic rocks. This complex geological structuring occurred sometime after the deposition of the limestone during the middle Tertiary, when Puerto Rico was separated from the other major Antillean Islands by block faulting, and was arched, uplifted, and tilted to the northeast. Culebra, Vieques, and the Virgin Islands are part of the Puerto Rican block; they are separated from the main island simply because of the drowning that resulted from the tilting.

In addition to the predominant volcanic and sedimentary rock, unconsolidated alluvial and older deposits from the Quaternary period underlie the northwestern and western sectors of the base.

The primary geologic formations on and near NAPR are various beach deposits, alluvium, quartz diorite and granodiorite, quartz keratophyre, the Daguao Formation, and the Figuera Lava. The Peña Pobre fault zone traverses NAPR.

3.3.3 Regional Hydrology

The surface waters that flow across the northeastern plain of Puerto Rico, where NAPR is located, originate on the eastern slopes of the Sierra De Luquillo Mountains. Surface runoff is channeled into various rivers and streams that eventually flow into the Caribbean Sea. The Daguao River and Quebrada Seca Stream (a tributary to Rio Daguao) collect surface waters from the hills immediately north of NAPR and, in periods of heavy rain, flooding on NAPR occurs. The Daguao-Quebrada Seca watershed comprises an area of approximately 7.6 square miles (4,900 acres), and the river falls some 700 feet from its source to sea level. Increased development in the town of Ceiba, especially in areas adjacent to NAPR's northern boundary, has significantly increased the surface runoff reaching NAPR, causing ponding and erosion in the Boxer Drive area. Boxer Drive, for a major portion of its length, is subject to surface water flooding, as are Hangar 200 and AIMD Hangar 379 and adjacent apron areas. This condition has been alleviated by the construction of a new highway (Route 3) immediately outside the fence and the realignment of Boxer Drive both with attendant storm water management features.

In the low-lying shore areas, seawater flooding results from storms, wind, and abnormally high tides. The tidal ranges in the NAPR area are rather small, with a maximum spring range of less than three feet. The tides are semidiurnal and have a usual range of about one-foot in the main harbor of NAPR.

Little information exists concerning the hydrogeology of NAPR. The only known potential sources of groundwater lie in lenticular beds of clay, sand and gravel, and rock fragments, which occur at a depth of less than 30 meters. No wells have been developed on site from these layers. Some wells had been developed upgradient of NAPR in Ceiba, some three kilometers from base headquarters, but were abandoned due to high levels of salinity.

The quality of surface waters is variable, reflecting the drainage area through which the water flows. Generally, surface waters have high turbidities and bio-organics (naturally occurring organics, such as decay products of vegetable and animal matter) due to the periodic heavy rains that can easily erode soils from steep slopes, exposed areas and disturbed streambeds. Water from alluvial aquifers along the coast of NAPR is of a calcium bicarbonate type, and has high concentrations of iron and manganese. The source of these minerals is unknown, but they may be derived from buried swamp or lagoon deposits.

A seawater-freshwater interface is present in the aquifers throughout the coastal areas of Puerto Rico, usually within a short distance inland of the coastline.

The NAPR potable water treatment plant receives raw water from the Rio Blanco through a 27-inch reinforced concrete pipe that replaced the old, open channel. The intake is located at the foot of the El Yunque rain forest. This buried raw water line traverses a distance of 14 miles from the intake to the NAPR boundary. A raw water reservoir is located at the water treatment plant and has a 45 million gallon capacity. Additionally, there are two fire protection storage reservoirs with a total capacity of 520,000 gallons.

NAPR has been served for over 30 years by the present water treatment facility. The plant (Building 88) has a capacity of 4.0 million gallons per day (MGD). Water flows by gravity into a 45 million-gallon raw water storage basin from which the plant draws its supply at a rate of 1.3 MGD on average. Treatment consists of pre-chlorination, coagulation sedimentation, filtration, and post-chlorination.

3.3.4 Regional Hydrogeology

In 2004, Baker conducted a Phase II ECP investigation involving 20 sites throughout NAPR (NAVFAC, 2004). Some consistent stratigraphic trends were observed during the ECP, which is discussed in this subsection. For the sake of simplicity, the NAPR regional geology can be divided into three regions:

- Upland areas
- Near-shore flat lands
- Inland flat lands

The upland areas of NAPR includes the hills encompassing the Tow Way Fuel Farm and hospital areas, and the hills encompassing the area behind the Exchange, the former Atlantic Fleet Weapons Training Facility (AFWTF) Command, and the Bundy area. These upland areas are underlain by bedrock (predominately Gabbro) and exhibit varying degrees of weathering.

Typically, the bedrock is overlain be a relatively thin residual soil (i.e., residuum). Residuum is unconsolidated soil, originating from weathered-in-place bedrock. This residuum generally consists of sand, silt, and clay.

The near-shore areas include the mangrove swamp areas as well as the shores of Ensenada Honda and Puerca Bay. The near-shore areas are typically underlain by marine sand layers (with coral and shell fragments), silt and clay layers, and occasional peat layers. In some near-shore areas, particularly by the harbor and Camp Moscrip in the southeastern portion of the base, fill material overlays the marine layers. The fill consists of rock fragments, debris (e.g., brick), sand, silt, and clay.

The inland flat land area generally encompasses the airfield and golf course areas. The inland flat land area is typically underlain by relatively thick residuum. The residuum generally consists predominately of clay. Fill material overlays the residuum in some areas, particularly the airfield, and generally consists of sand and gravel with lesser amounts of silt and clay.

SWMU 62 is located in an upland area within the Bundy Area of the base. Weathered bedrock was encountered at a shallow depth with no signs of groundwater in the overlying soil/fill material.

4.0 PHASE I RCRA FACILITY INVESTIGATION ACTIVITIES

This section summarizes the Phase I RFI field work, analytical, and data validation activities that were conducted for the May/June 2008 field event. The work was conducted in accordance with the Revised Final Phase I RCRA Facility Investigation Work Plan for SWMU 62 (Baker, April 2008a).

Soil boring 62SB03 was advanced within the 1958 polygon surrounding sample 8E-03 from the Phase I/II ECP (NAVFAC Atlantic, 2005). Three additional borings (62SB01, 62SB02, and 62SB04) were advanced immediately adjacent to the 1958 polygon. Four soil borings were also advanced around sample 8E-01, which included 62SB05, 62SB06, 62SB07, and 62SB08, in the area where the 1958 aerial photograph indicates a soil disturbance. One additional soil boring (62SB09), also located within the 1958 polygon and approximately 25 feet northeast of 8E-01, was collected near the only drum identified during the investigation. Although the approved work plan proposed a total of ten soil borings, only one of the two previously identified drums were found on site. Therefore, a total of nine borings were advanced during this investigation. Surface soil and subsurface soil samples were collected at all locations. Section 4.1 discusses the surface and subsurface soil sampling activities. The environmental samples collected from the site were analyzed at a fixed-base laboratory and the data was validated by an independent third party.

A summary matrix showing the primary environmental samples collected and the analyses conducted on each sample is shown in Table 4-1. Field duplicates and matrix spike/matrix spike duplicate samples and the analyses conducted on these samples are also shown in Table 4-1. Other Quality Assurance (QA)/Quality Control (QC) samples (trip blanks, field blanks, and equipment rinsates) collected and the analyses conducted on these samples are shown in Table 4-2. The analytical parameter lists and the contract required quantitation limits are shown in Table 4-3.

Other field activities were also conducted in support of the investigation of this site. These activities consisted of utility clearance, site clearing, surveying, management of investigation derived wastes, and QA/QC sampling.

Field notes containing descriptions of the site activities, site photographs, soil boring logs, and chain-of-custody records are presented in Appendix A. Laboratory analytical results for surface and subsurface soil and QA/QC are presented in Appendix B. Data Validation report summaries are provided in Appendix C. Human Health Risk Calculations are provided in Appendix D. Appendix E includes a summary of analytical results from the Phase II ECP investigation.

4.1 Surface and Subsurface Soil Sampling

Surface and subsurface soil samples were collected from the soil boring locations shown on Figure 4-1. Borings 62SB01 through 62SB04 were advanced at locations in the vicinity of the 1958 polygon surrounding the ECP sample 8E-03 where barium concentrations were detected at elevated levels. Borings 62SB05 through 62SB08 were advanced surrounding ECP sample 8E-01 where an area of disturbed soil noted in the 1958 aerial photograph was targeted for investigation. During the investigation, the field team evaluated the layout of the proposed borings and determined that the sample locations were in the vicinity of piles of mounded gravel and charcoal, metal, and building debris. The samples proposed for implementation as outlined in the approved work plan were advanced in order to further characterize and delineate the site based on the results of the Phase I/II ECP investigations. An additional soil boring 62SB09 was advanced in the immediate vicinity of a partially buried drum (see Figure 4-1). Soil boring

62SB10 was not advanced because only one drum was found on the site during the site reconnaissance.

Soil borings were advanced using a track-mounted rig (Geoprobe 66DT rig operated by GeoEnviroTech, Inc., of San Juan, Puerto Rico) with Direct Push Technology (DPT) and samples were collected using 4-foot Macro-Cores®. Soil boring logs are presented in Appendix A.

Soil samples were field-screened for non-specific, total VOCs using a PID equipped with an 11.7 eV probe and calibrated to isobutylene. The PID readings were recorded on the drilling logs for each boring (Appendix A). The field screening procedure for soils collected using the Geoprobe Macro-Core® (MC) Sampler (disposable plastic liner) involved making a longitudinal cut along the entire length of the Geoprobe MC liner, separating the two edges of the liner, and screening the entire length of the soil core with a PID. Measurable organic vapors above background levels were not observed in any of the 9 boreholes or during the general PID air monitoring.

Surface soil samples were collected from a depth of 0 to 1 foot below ground surface (bgs) from soil borings 62SB01 through 62SB09 and included one field duplicate from 62SB08. As per the Work Plan, five surface soil samples (62SB01-00, 62SB02-00, 62SB04-00, 62SB05-00, and 62SB07-00) were analyzed for Appendix IX VOCs, pesticides, and metals. However, in an effort to provide a larger data set since there were only three surface soil samples analyzed in the Phase II ECP, samples 62SB03-00, 62SB06-00, 62SB08-00, and 62SB08-00D were analyzed for Appendix IX SVOCs, and PCB's in addition to the Appendix IX VOCs, pesticides, and metals analysis specified in the work plan. Sample 62SB09-00 was advanced near the partially buried drum identified on-site and was analyzed for Appendix IX VOCs, SVOCs, pesticides, PCBs, and metals. The samples were transferred directly into pre-labeled sample jars and placed on ice. As stated previously, after extensive site reconnaissance, only one drum was found on site. Therefore, proposed soil boring 62SB10 was not advanced. Table 4-1 provides a summary of the surface soil samples collected at SWMU 62.

Two subsurface soil samples were collected from each boring for a total of 18 environmental samples. In addition, two field duplicates (62SB04-03D and 62SB08-02D) and one MS/MSD (62SB08-02MS/MSD) were also collected. A total of 8 subsurface samples collected form 62SB03-01, 62SB03-05, 62SB06-01, 62SB06-03, 62SB08-01, 62SB08-02, and 62SB09-01 and 62SB09-02 were analyzed for Appendix IX VOCs, SVOCs, pesticides, PCBs, and metals. The remaining 10 samples (62SB01-03, 62SB01-05, 62SB02-01, 62SB02-03, 62SB04-03, 62SB04-05, 62SB05-01, 62SB05-02, 62SB07-01, and 62SB07-02) were analyzed for Appendix IX metals only. Samples were collected from a shallow interval and a deeper interval spanning 10 feet bgs or at a depth before refusal, whichever was encountered first. The samples were transferred directly into pre-labeled sample jars and placed on ice. Table 4-1 provides a summary of the subsurface soil samples collected at SWMU 62.

4.2 Utility Clearance

As per the approved work plan, all proposed boring locations were first checked for the presence of subsurface utilities. Base utility mapping did not indicate the presence of utilities within the SWMU boundary. The sampling locations were field-located using a Global Positioning System (GPS), and the absence of subsurface utilities was field verified. Interference from underground utilities was not encountered during drilling activities.

4.3 Site Clearing

Once utility clearance was achieved and the proposed sample locations were located using a GPS unit, site clearing activities were initiated to assist the drill rig and provide access routes to the proposed sample locations. The proposed sample locations were located and marked with flags. Flagging remained intact during site clearing activities.

4.4 Decontamination and Investigation Derived Waste

Disposable sampling tools were used for soil sampling to the extent practicable, in order to minimize the generation of liquid investigation-derived waste (IDW) from decontamination. Surface and subsurface soil samples were collected using the Geoprobe® direct push technology (DPT) and 4-foot Macro-Core® sleeves. Following sample collection, the soil cuttings from the soil borings were placed back into the boring from which they came.

Wastewater from decontamination of the drill rig before and after entering the site were containerized, stored in a 55-gallon drum, and disposed of properly.

Two IDW samples were collected. One composite aqueous sample was collected from drums containing decontamination fluid (from sampling equipment and drill rig), and one composite soil sample was collected from drums containing drill cuttings (not applicable to SWMU 62). The soil IDW samples were analyzed for toxicity characteristic leaching procedure (TCLP) VOCs and metals, ignitability, reactive sulfide, reactive cyanide, and pH. The water IDW samples were analyzed for Appendix IX VOCs, total Appendix IX metals, ignitability, reactive sulfide, reactive cyanide, and pH. The drums were moved and stored at a secure location on base following the field work completion. The soil and water IDW has been removed and disposed of from the site by an approved vendor. A copy of the IDW disposal manifest is presented in Appendix A, while the IDW analytical data is presented in Appendix B.

4.5 Surveying

Sampling locations were surveyed using a mapping grade differential (satellite DGPS corrections from Omnistar or “real-time”) GPS unit. Prior to entering the field, an electronic "shape file" (which included each proposed soil boring location) was uploaded to the GPS data collector. Once in the field, the GPS unit was used to navigate to each sample location. Each sample location was flagged and identified using the numbering system as described in the soil sampling and analysis section of the work plan. Additionally, after the buried drum (soil boring 62SB09) was found, its location was flagged and surveyed using GPS. The coordinate system used for the survey was U.S. State Plane 1983, Puerto Rico/Virgin Island 5200, and the North American Datum (NAD) 1983, with units in U.S. survey feet.

4.6 QA/QC Sampling

The following QA/QC samples were collected during the investigation of this site:

- Field Duplicates
- Trip Blanks
- Matrix Spike/Matrix Spike Duplicates (MS/MSDs)
- Field Blank
- Equipment Rinsate Blanks

4.6.1 Field Duplicates

Field duplicates were collected at the rate of 10 percent of primary environmental samples in accordance with the work plan. One field duplicate surface soil sample (62SB08-00D) was collected corresponding to nine surface soil samples. Two subsurface soil duplicate samples (62SB04-03D and 62SB08-02D) were collected corresponding to 18 subsurface soil samples. Field duplicates were analyzed for the same parameters as the primary samples and the results were used to evaluate the field sampling methodology.

4.6.2 Trip Blanks

One trip blank sample was included in each cooler containing the samples from the site intended for VOC and GRO analysis. A total of five trip blanks (QATB01, 62TB01, 62TB03, 61TB02, and 71TB02) accompanied samples from this site. Trip blanks QATB01, 62TB01, 62TB03, and 61TB02 were analyzed for Appendix IX VOCs, while 71TB02 was analyzed for TPH GRO to evaluate whether cross contamination occurred during shipping of samples.

4.6.3 Matrix Spike/Matrix Spike Duplicates

Matrix spike and matrix spike duplicates (MS/MSD) were collected at the rate of approximately 5 percent of primary environmental samples from the surface and subsurface soil. One set of MS/MSD (62SB08-00MS/MSD) was collected corresponding to the nine surface soil samples. One set of MS/MSD (62SB08-02MS/MSD) was collected corresponding to 18 subsurface soil samples. The MS/MSD samples were analyzed for the same parameters as the primary environmental samples and the results were used to evaluate the effect of each type of matrix on the analytical method.

4.6.4 Field Blanks

One field blank sample (FB01) was collected from laboratory-grade deionized (DI) water used as the source water for the equipment rinsate samples. Store bought distilled water was not used during this investigation, so an additional field blank for store bought distilled water was not necessary. The field blank sample was analyzed for Appendix IX VOCs, SVOCs (including low-level polyaromatic hydrocarbons [PAH]), and metals, to determine whether the water used for generating the equipment rinsates was free of chemicals at levels of concern for the site.

4.6.5 Equipment Rinsates

Equipment rinsate samples ER24 and ER25 were collected from disposable Macro Core Liners used on May 31 and June 1, 2008 and analyzed for Appendix IX VOCs, SVOCs, Pesticides, PCB's, TPH GRO and DRO, and metals. Other site investigations (in addition to the Phase I RFI investigation at SWMU 62) were conducted simultaneously during the April through June 2008 time period at NAPR. Those investigations include the Phase I RFI investigations for SWMUs 71 (Quarry Disposal Site) and 78 (Pole Yard) and the CMS Investigations for SWMUs 56 (Hangar 200 Apron), 61 (Former Bundy Area Maintenance Facilities), 69 (Aircraft Parking Area), and 74 (Fuel Pipelines and Hydrant Pits). One equipment rinsate was collected per day for one piece of disposable sampling equipment (i.e., stainless steel spoon, groundwater sampling tubing or macro core liners) and the selected analysis for the rinsate samples corresponds to the sampling and analytical programs developed for each SWMU.

4.7 Laboratory Analysis

Fixed-base laboratory analysis was conducted by Test America, Savannah, Georgia. The list of parameters under the analytical program and the Contract Required Quantitation Limits (CRQLs) are provided in Table 4-3. Data Validation Summaries and Puerto Rican Chemist Certifications are provided with this RFI as Appendix C.

4.8 Data Validation

All fixed-base laboratory data was validated by Data Qual Environmental Services, LLC. of St. Louis Missouri, an independent third party. The USEPA Region II Data Validation Standard Operating Procedures were followed. Validation reports are provided for each Sample Delivery Group (SDG) in Appendix C.

5.0 PHYSICAL RESULTS

The following sections provide a brief discussion of the current site conditions at SWMU 62 at the time of the Phase I RFI field investigation, conducted from May 31 to June 1, 2008. The site geology and hydrogeology, as ascertained from the soil boring program and other available information, is described herein.

5.1 Current Conditions

As shown on Figure 2-4, the entire SWMU 62 boundary consists of approximately 13 acres of dense, secondary growth vegetation. The site was located on USGS mapping (Naguabo, PR 7.5 minute quadrangle, photorevised 1982) and evaluated for topographic relief and drainage patterns. The Former Bundy Disposal Area slopes predominantly to the south and does not contain drainage systems such as streams or rivers. Site reconnaissance observations made during the Phase I RFI investigation were similar to those made during the Phase I and II ECP investigations: numerous piles of mounded gravel and charcoal, and metal and building debris were visible within the central portion of the SWMU near sample 8E-01. Only one partially buried drum was found (see photo A-7 and A-8 in Appendix A). The location of the drum was surveyed using GPS, and as stated in the approved work plan, a surface and subsurface soil sample (62SB09) was collected in the immediate vicinity of the drum and analyzed for Appendix IX VOCs, SVOCs, pesticides/PCBs, and metals.

5.2 Geology/Hydrology

The following sections discuss the geology and hydrogeology in the vicinity of SWMU 62.

5.2.1 Geology

In 2004, the Navy performed a Phase II ECP investigation at SWMU 62 (ECP Site 8). The Phase II ECP investigation indicated that there are a series of three hilly areas on NAPR, two of which separate the southern airfield area from the Port/Industrial, Housing, and Personnel Support areas. The third set of hills is in the Bundy Area. SWMU 62 is located in the upland area of the Former Bundy Disposal Area. Surface and subsurface soil samples were collected from three locations (8E-01, 8E-02, and 8E-03). A thin residual layer of sand and silt was observed overlaying weathered bedrock (Gabbro) and that groundwater was not encountered in any of the borings advanced at the site during the Phase II ECP.

A total of nine soil borings were installed at SWMU 62 during the Phase I RFI investigation. Boring logs are provided in Appendix A. A thin layer of dark brown sandy loam ranging from a few inches to more than a foot thick was observed at each boring location (except at 62SB06 where fill material was encountered at the surface). Underlying this surficial layer was either a sandy-clay or a silt and sand material. The sandy clay was typically described as medium to light brown to orange, moderately hard with fine to medium grained sand or gravel. The silt and sand is typically described as a medium brown to tan, loose silt and sand with rock fragments or pebbles. In some cases moderately hard, blue-grey sandy clay was encountered with rock fragments. Geoprobe refusal, indicating a transition to more competent bedrock was encountered at relatively shallow depths, especially in the central portion of the SWMU at borings 62SB05 (6.5 feet bgs), 62SB07 (5.4 feet bgs), 62SB08 (7.2 feet bgs) and 62SB09 (7.4 feet bgs). Soil boring locations are given on Figure 5-1 and boring logs are provided in Appendix A.

A geologic cross section was prepared to depict the shallow subsurface conditions at SWMU 62. The cross section locations are provided on Figure 5-1 and cross sections A-A' and B-B' are given as Figure 5-2.

5.2.2 Hydrogeology

The approved work plan did not specify installation of groundwater monitoring wells during the 2008 Phase I RFI Investigation. Additionally, groundwater was not encountered during the installation of the shallow borings for the Phase I investigation.

6.0 ANALYTICAL RESULTS

This section discusses the analytical results of environmental samples collected from SWMU 62 during the 2008 Phase I RFI investigation. The validated data tables for the Phase I RFI field effort are included in Appendix B. Relevant portions of the data validation reports for the Phase I RFI Sample Delivery Groups (SDGs) are provided in Appendix C.

6.1 Human Health and Ecological Screening Values

Detected compounds for each media are compared to applicable regulatory and background criteria. The rationale for using criteria for a specific medium are described in detail below.

6.1.1 Human Health

Applicable human health criteria for soils include USEPA Regional Industrial Screening Levels (SLs) and USEPA Regional Residential SLs (USEPA, 2008), and the upper limit of means background levels (inorganics only) (Baker, 2008b).

The EPA recently developed the Regional SLs to support the risk assessment screening process, while improving consistency across EPA Regions and incorporating updated guidance in a timely manner. The Regional SL Table was developed with the Department of Energy's Oak Ridge National Laboratory under an Interagency Agreement as an update of the individual screening tables that had previously been maintained by Regions III, IV, and IX. As recommended by the USEPA, these Regional SLs are to replace all other screening values.

The Regional SL Table contains risk-based screening levels derived from standardized equations (representing ingestion, dermal contact, and inhalation exposure pathways), calculated using the latest toxicity values, default exposure assumptions and physical and chemical properties. The SLs contained in the Regional SL Table are generic; they are calculated without site-specific information. Regional SLs should be viewed as Agency guidelines, not legally enforceable standards. The SLs for potentially carcinogenic chemicals are based on a target Incremental Lifetime Cancer Risk (ILCR) of $1x10^{-06}$. The SLs for noncarcinogens are based on a target hazard quotient (HQ) of 1.0. However, in order to account for cumulative risk from multiple chemicals in a medium, the noncarcinogenic SLs will be divided by a factor of ten, yielding a target HQ of 0.1. For potential carcinogens, the toxicity criteria applicable to the derivation of SL values are oral Cancer Slope Factors (CSFs) and inhalation unit risk (IUR) factors; for noncarcinogens, they are chronic oral reference doses (RfDs) and inhalation reference concentrations (RfCs). These toxicity criteria are subject to change as more updated information and results from the most recent toxicological/epidemiological studies become available. The SL table is updated periodically to reflect such changes. It should be noted that the most recent update was in September 2008 (USEPA, 2008).

Also, it should be noted that even though subsurface soil analytical results from below 10 feet would not be used in human health risk assessments due to the unlikely exposure route below that depth, all subsurface soil analytical results were screened against the Regional SLs for completeness.

6.1.2 Ecological

USEPA ecological soil screening levels (Eco-SSLs) (documentation is available at http://www.epa.gov/ecotox/ecossl/) for terrestrial plants and invertebrates were preferentially used as soil screening values. For a given chemical, if an Eco-SSL was available for both receptor groups, the lowest value was selected as the soil screening value. In the case of chromium and vanadium, insufficient data are available from the literature for derivation of Eco-SSLs for terrestrial plants and/or invertebrates (USEPA, 2008a and 2005). However, both Eco SSL documents list toxicological data from studies eligible for Eco-SSL derivation. The chromium Eco-SSL document cites two studies (Van Gestel et al., 1992 and 1993) that investigated the effect of chromium on earthworm (*Eisenia andrei*) reproduction, while the vanadium Eco-SSL document cites two studies (Kaplan et al., 1990) that investigated the effect of vanadium on broccoli (*Brassica oleracea*) growth. The chromium studies using earthworms reported Maximum Acceptable Toxicant Concentration (MATC) values of 57 mg/kg, while the vanadium studies using broccoli reported a Lowest Observed Adverse Effect Concentration (LOAEC) of 100 mg/kg and a No Observed Adverse Effect Concentration (NOAEC) of 100 mg/kg. The MATC value of 57 mg/kg based on earthworm reproduction was used as the soil screening value for chromium and the LOAEC value based on broccoli growth (with a safety factor of 10; Wentsel et al., 1996) was used as the soil screening value for vanadium.

For those chemicals lacking terrestrial plant and invertebrate Eco-SSLs or toxicological data eligible for Eco-SSL derivation, the literature-based toxicological benchmarks listed below were used as soil screening values.

- Toxicological thresholds for earthworms and microorganisms (Efroymson et al., 1997a)
- Toxicological thresholds for plants (Efroymson et al., 1997b)

Identical to the Eco-SSLs, when more than one screening value was available for a given chemical from Efroymson et al. (1997a and 1997b), the lowest value was selected as the soil screening value. For those chemicals lacking an Eco-SSL, toxicological data eligible for Eco-SSL derivation, and a toxicological threshold from Efroymson et al. (1997a and 1997b), the following literature-based values, listed in their order of decreasing preference, were used as soil screening values:

- Toxicity reference values for plants and invertebrates listed in USEPA (1999a).
- Soil standards developed by the Ministry of Housing, Spatial Planning and Environment (MHSPE, 2000), assuming a minimum default soil organic carbon content of 2.0 percent.
- Canadian soil quality guidelines (agricultural land use) developed by the Canadian Council of Ministers of the Environment (CCME, 2007).

CCME soil quality guidelines were given the lowest preference since many are background-based interim guidelines that do not represent effect-based concentrations.

In addition, the upper limit of means background levels (inorganics only) (Baker, 2006) were used to compare the soil concentrations to those present at NAPR in un-impacted soil. Both surface soil background levels and subsurface soil background levels for a fine sand/silt soil type (most prevalent soil type at SWMU 62) were used in screening.

As a general rule, screening of soil results for ecological purposes would include surface soil, as well as subsurface soil results from the 1 – 2 foot depth range. At SWMU 62, seven samples were collected between 1 – 3 feet (see Table 4-1). Therefore, for the sake of completeness, these samples were compared against ecological screening criteria.

6.2 Surface Soil

Nine surface soil samples and one duplicate sample (62SB08-00D) were collected and analyzed during the Phase I RFI. Five surface soil samples (62SB01-00, 62SB02-00, 62SB04-00, 62SB05-00, and 62SB07-00) were analyzed for Appendix IX VOCs, pesticides, and metals only, while the four remaining surface soil samples (62SB03-00, 62SB06-00, 62SB08-00, and 62SB09-00) were analyzed for Appendix IX VOCs, SVOCs, pesticides, PCBs, and metals. A detected results table for the combined surface soil data set is presented in Table 6-1. Results are compared to appropriate media specific criteria as described in Section 6.1.

Three VOCs were detected in the surface soil at low, estimated concentrations, and the majority (excluding iodomethane which has no established screening criteria) were well below the listed criteria. Three pesticides were found at 62SB01-00, 62SB05-00, 62SB08-00 and 62SB08-00D, also well below the listed criteria. No PCBs were detected in the surface soil. Ten SVOCs were found at 62SB08-00 and 62SB08-00D and eleven SVOCs were found at 62SB09-00; all were estimated concentrations. No organic parameters exceeded the screening criteria.

Fourteen inorganic compounds were detected in the surface soil at SWMU 62. Seven inorganic parameters exceeded one or more of the screening criteria:

- Arsenic
- Barium
- Beryllium
- Cobalt
- Copper
- Tin
- Vanadium

Arsenic exceeded the regional screening level for residential soil at all nine surface soil sample locations; arsenic also exceeded the regional screening level for industrial soil at five of the nine locations. However, arsenic only exceeded the background screening level at three locations, 62SB06, 62SB08 and 62SB09. Barium exceeded the NAPR basewide background concentration at three locations; barium also exceeded the selected ecological surface soil screening values at two of these locations, 62SB04 and 62SB07. Beryllium was detected at a concentration in excess of background at one location (62SB08); beryllium did not exceed any of the other screening criteria. Cobalt was detected in excess of the regional screening level for residential soil at eight of the nine surface soil sample locations and exceeded the selected ecological surface soil screening values at two locations. Cobalt was not detected in any of the surface soil samples at concentrations in excess of its background screening value. Copper was detected in one sample at a concentration in excess of the selected ecological surface soil screening value; however, this detection did not exceed the background screening value for copper. Tin was detected in one sample (62SB09-00) at a concentration in excess of its background screening value. Tin was not detected above the other human health or ecological screening criteria. Vanadium exceeded the selected ecological surface soil screening value at all nine sample locations. Vanadium also exceeded the regional screening level for residential soil at four of the nine sample locations. None of the vanadium detections exceeded the background screening value. Cadmium,

chromium, lead, mercury, nickel, selenium and silver did not exceed any of the screening criteria or background. Figure 6-1 presents the locations of inorganic parameters that exceeded ecological or human health screening criteria and NAPR basewide background value for the 2008 Phase I RFI data.

Based on the exceedances of background and regulatory screening criteria in the surface soil, it appears that metals contamination (primarily arsenic and barium) may have occurred in the surface soil due to past activities at SWMU 62. Information obtained to date indicates that the lateral extent of contamination has not been fully defined.

Potential human exposure to arsenic concentrations in surface soil at SWMU 62 was evaluated due to exceedances of both the Regional SL and background. Preliminary risk calculations were performed under a future residential exposure scenario in order to more fully evaluate potential human health risks from arsenic in soil. Furthermore, evaluation of a future residential exposure scenario provides an upper bound for potential human health risk to site-specific media. The calculations were performed using standard carcinogenic and noncarcinogenic risk equations found in USEPA's Risk Assessment Guidance for Superfund (RAGS) (USEPA, 1989) and USEPA-promulgated exposure parameters and toxicity criteria. The specific equations, exposure parameters, and toxicity criteria are presented in Appendix D. To present a complete exposure scenario, arsenic concentrations in surface soil were evaluated by combining surface soil analytical data from the Phase II ECP Report (NAVFAC Atlantic, 2005) and the Phase I RFI. USEPA ProUCL Version 4.00.02 software (USEPA, 2007a and 2007b) was used to determine the distribution of the data set and calculate the exposure point concentration (EPC).

The results of the preliminary risk calculations are presented in Appendix D. The distribution and EPC (95 percent Upper Confidence Limit of the mean) for arsenic are presented in Table D-1, while exposure parameters and toxicity criteria used in the preliminary risk calculations are presented in Tables D-2 and D-3, respectively. The results of the preliminary risk calculations are presented in Tables D-4 (future adult resident) and D-5 (future child resident). As shown on Table D-4, the carcinogenic risk for the future adult resident is 1.8×10^{-06}, and the hazard index is 0.01. As shown on Table D-5, the carcinogenic risk for the future child resident is 4.1×10^{-06}, and the hazard index is 0.11. As evidenced by Tables D-4 and D-5, there are no unacceptable carcinogenic or noncarcinogenic risks calculated from potential exposure to arsenic in soil at SWMU 62. Furthermore, the low carcinogenic and noncarcinogenic risk levels calculated demonstrate that arsenic in soil would not be a risk driver if a baseline human health risk assessment was conducted.

6.3 Subsurface Soil

Eighteen primary subsurface soil samples were collected and analyzed during the Phase I RFI. A total of 9 subsurface samples collected from 62SB03-01, 62SB03-05, 62SB06-01, 62SB06-03, 62SB08-01, 62SB08-02, 62SB08-02D, and 62SB09-01 and 62SB09-02 were analyzed for Appendix IX VOCs, SVOCs, Pesticides and PCBs in addition to metals. The remaining 11 samples (62SB01-03, 62SB01-05, 62SB02-01, 62SB02-03, 62SB04-03, 62SB04-03D, 62SB04-05, 62SB05-01, 62SB05-02, 62SB07-01, and 62SB07-02) were analyzed for metals only. Detected results for the subsurface soil data set are presented in Table 6-2.

Three VOCs were detected in the subsurface soil at low, estimated concentrations below the listed criteria. One SVOC (Naphthalene) was detected in one subsurface soil sample (62SB08-02D). No PCBs or pesticides were detected in the subsurface soil. No organic parameters exceeded any screening criteria.

Thirteen inorganic compounds were detected in the subsurface soil at SWMU 62. Only six inorganic parameters exceeded one or more of the criteria. They are:

- Arsenic
- Barium
- Beryllium
- Cobalt
- Copper
- Vanadium

Analytical results from the Phase II ECP (see Appendix E) indicate that the barium concentration at 8E-03 in the subsurface soil exceeded twice the average detected background concentration, indicating possible contamination. One of the objectives of the Phase I RFI was to further delineate the barium detected in the subsurface soil at 8E-03. As a result, barium concentrations detected in subsurface soils at 62SB01 and 62SB02 did not exceed human health or ecological screening criteria, or background concentrations. A summary of subsurface soil exceedances for other metals encountered during the Phase I RFI investigation are discussed below.

Arsenic exceeded the regional screening level for residential soil at all nine subsurface soil sample locations; arsenic also exceeded the regional screening level for industrial soil at four of the nine locations. However, arsenic did not exceed the background screening level at any of the locations. Barium exceeded the NAPR basewide background concentration at four locations; barium also exceeded the selected ecological surface soil screening value at one location, 62SB06, at a depth of 1 to 3 feet bgs (note that the ecological soil screening values are not applicable to samples collected from depths greater than 3 feet bgs). Beryllium was detected at a concentration in excess of background at two locations (62SB03 and 62SB09); beryllium did not exceed any of the other screening criteria. Cobalt was detected in excess of the regional screening level for residential soil at all nine subsurface soil sample locations and exceeded the selected ecological surface soil screening values at one location (62SB06). Cobalt was not detected in any of the subsurface soil samples at concentrations in excess of its background screening value. Copper was detected in one sample (140 mg/kg in 62SB06-01) at a concentration in excess of the selected ecological subsurface soil screening value. This detection also exceeds the background screening value established for copper. Vanadium exceeded the selected ecological surface soil screening value at each location that included a sample collected from the 1 to 3-foot depth interval (62SB02, 62SB03, 62SB05, 62SB06, 62SB07, 62, SB08, and 62SB09). Vanadium also exceeded the regional screening level for residential soil at three of the nine sample locations. None of the vanadium detections exceeded the background screening value. Cadmium, chromium, lead, mercury, nickel, selenium and silver did not exceed any of the screening criteria or background. Figure 6-2 presents the locations of inorganic parameters that exceeded ecological screening criteria and the NAPR basewide background value for the 2008 Phase I RFI data.

Based on the exceedances of background and regulatory screening concentrations in the subsurface soil, it appears that barium (sample 62SB06-01) contamination may have occurred in the subsurface soil due to past activities at SWMU 62.

6.4 Laboratory Data Validation Summary

A discussion of the compounds detected in the field QA/QC samples is presented in Section 6.4.1. A summary of the data validation findings is provided in Section 6.4.2. Data validation

reports are included in Appendix C. In addition, the Puerto Rican Chemist Certification for each STL SDG is presented in Appendix C.

6.4.1 Summary of Detected Compounds in Field QA/QC Samples

Field generated QA/QC samples for the Phase I RFI field effort consisted of trip blanks, field blanks, equipment rinsates, and environmental duplicates. Trip blanks were only analyzed for VOCs and/or GRO. Other blanks were analyzed for all fractions requested in this investigation including Appendix IX VOCs, SVOCs, PCBs, pesticides, and total metals. Table 6-3 presents the detected compounds found in the trip blanks, equipment rinsates, and field blanks.

There were three VOCs (2-Butanone, acetone and carbon disulfide) detected in one of the five trip blanks (61TB02), GRO was not detected in the trip blanks.

Detections in field blank FB01 included one VOC (2-butanone), four SVOCs (1,4-dichlorobenzene, acetophenone, diethyl phthalate, and di-n-butyl phthalate), two metals (copper and lead).

Analysis of the two equipment rinsate samples resulted in the detection of seven VOCs (2-butanone, acetone, benzene, styrene, tetrachloroethane, toluene, and xylenes), seven SVOCs (2-methylnaphthalene, acenaphthene, acetophenone, bis(2-ethylhexyl)phthalate, diethyl phthalate, di-n-butyl phthalate, and Naphthalene), diesel range organics, and eight metals (arsenic, chromium, cobalt, copper, lead, nickel, tin, and vanadium).

6.4.2 Validation Summary

Laboratory analyses were performed by Test America Laboratories (Savannah, Georgia). Validation services were provided by DataQual Environmental Services, LLC located in St. Louis, Missouri. Validation conclusions are provided in Appendix C. The validation indicted that all sample preparation and analysis was performed within Region II and/or method holding time requirements. Changes in the results due to the application of the data validation objectives are not expected to significantly compromise the data quality objectives for this SDG. Consequently, the data, as qualified by the validator is acceptable for its intended use.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

The objectives of the Phase I RFI are as follows:

- Determine if any contaminants are present from past disposal activities to the extent practical, from the completion of field activities (surface and subsurface soil sampling) as described in the 2008 Phase I RFI Work Plan (Baker, 2008);
- Screen for potential human health risks posed by the site; and
- Screen for potential ecological risks posed by the site.

The analysis of samples obtained during the Phase I RFI investigation indicates that surface and subsurface soil has been impacted from past activities at SWMU 62. Arsenic was detected in surface soil samples (62SB06-00, 62SB08-00 and 62SB09-00) at concentrations in excess of human health screening values (regional screening levels for residential or industrial soil) and background. A preliminary risk evaluation was conducted for arsenic. The low carcinogenic and noncarcinogenic risk levels calculated demonstrate that arsenic in soil would not indicate a health risk if a baseline human health risk assessment was conducted. Barium was also detected in surface and shallow subsurface soil samples (62SB04-00, 62SB06-01 and 62SB07-00) at concentrations exceeding the selected ecological soil screening values and background. Finally, copper was detected in a single shallow subsurface soil sample (140 mg/kg in 62SB06-01) at a concentration greater than the ecological soil screening value and background.

It should be noted that a number of organic compounds were detected for the specific media. However, all of the organic concentrations were below screening criteria for human health and ecological receptors.

7.2 Recommendations

Impact to the environment appears to have occurred at SWMU 62. While the contamination appears to be limited, a Full RFI Investigation is recommended to characterize the nature and extent of site contamination in the surface and subsurface soil. The Full RFI Investigation should focus around Phase I RFI sample locations 62SB04, 62SB06, 62SB07, 62SB08 and 62SB09.

Therefore, the Full RFI should include further investigation of metals in the surface and subsurface soils, define the likely source area(s), and determine the potential for unacceptable risks to human health and/or the environment. In addition, the Full RFI should include a general inventory of the types of debris (i.e., concrete, steel, etc.) within the vicinities of the proposed sample locations. The location(s) of the debris will be verified with a Global Positioning System. Figure 7-1 shows the recommended/follow-up sample locations necessary for further investigation, while Table 7-1 provides recommendations for the sampling and analytical program to be conducted during the Full RFI investigation. Once the Full RFI investigation is initiated, the proposed sample locations shown on Figure 7-1 may need adjusted due to field conditions.

8.0 REFERENCES

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TABLES

TABLE 4-1

SUMMARY OF 2008 RFI SURFACE AND SUBSURFACE SOIL SAMPLING AND ANALYSIS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

					Analysis Requested					
Media	**Site ID**	**Sample ID**	**Sample Depth (ft bgs)**	**Sample Date**	App. IX VOCs	App. IX SVOCs [1]	App. IX Pesticides	PCBs	App. IX Metals	**Comments**
Surface Soil	62SB01	62SB01-00	0.0 - 1.0	05/31/08	X		X		X	
	62SB02	62SB02-00	0.0 - 1.0	06/01/08	X		X		X	
	62SB03	62SB03-00	0.0 - 1.0	06/01/08	X	X	X	X	X	
	62SB04	62SB04-00	0.0 - 1.0	05/31/08	X		X		X	
	62SB05	62SB05-00	0.0 - 1.0	06/01/08	X		X		X	
	62SB06	62SB06-00	0.0 - 1.0	06/01/08	X	X	X	X	X	
	62SB07	62SB07-00	0.0 - 1.0	06/01/08	X		X		X	
	62SB08	62SB08-00	0.0 - 1.0	06/01/08	X	X	X	X	X	
		62SB08-00D	0.0 - 1.0	06/01/08	X	X	X	X	X	Duplicate
		62SB08-00MS/MSD	0.0 - 1.0	06/01/08	X	X	X	X	X	Matrix Spike/Matrix Spike Duplicate
	62SB09	62SB09-00	0.0 - 1.0	06/01/08	X	X	X	X	X	
Subsurface Soil	62SB01	62SB01-03	5.0-7.0	05/31/08					X	
		62SB01-05	9.0-11.0	05/31/08					X	
	62SB02	62SB02-01	1.0-3.0	06/01/08					X	
		62SB02-03	5.0-7.0	06/01/08					X	
	62SB03	62SB03-01	1.0-3.0	06/01/08	X	X	X	X	X	
		62SB03-05	9.0-11.0	06/01/08	X	X	X	X	X	
	62SB04	62SB04-03	5.0-7.0	05/31/08					X	
		62SB04-03D	5.0-7.0	05/31/08					X	Duplicate
		62SB04-05	9.0-11.0	05/31/08					X	
	62SB05	62SB05-01	1.0-3.0	06/01/08					X	
		62SB05-02	3.0-5.0	06/01/08					X	
	62SB06	62SB06-01	1.0-3.0	06/01/08	X	X	X	X	X	
		62SB06-03	5.0-7.0	06/01/08	X	X	X	X	X	
	62SB07	62SB07-01	1.0-3.0	06/01/08					X	
		62SB07-02	3.0-5.0	06/01/08					X	
	62SB08	62SB08-01	1.0-3.0	06/01/08	X	X	X	X	X	
		62SB08-02	3.0-5.0	06/01/08	X	X	X	X	X	
		62SB08-02D	3.0-5.0	06/01/08	X	X	X	X	X	Duplicate
		62SB08-02MS/MSD	3.0-5.0	06/01/08	X	X	X	X	X	Matrix Spike/Matrix Spike Duplicate
	62SB09	62SB09-01	1.0-3.0	06/01/08	X	X	X	X	X	
		62SB09-02	3.0-5.0	06/01/08	X	X	X	X	X	

Notes:
[1] Low Level PAH's included with SVOC analysis
ft bgs - feet below ground surface

TABLE 4-2

SUMMARY OF 2008 RFI QUALITY ASSURANCE/QUALITY CONTROL SAMPLING AND ANALYSIS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

			Analysis Requested							
QA/QC Sample	**Sample ID**	**Sample Date**	App. IX VOCs	App. IX SVOCs [1]	App. IX Pesticides	PCBs	App. IX Metals	TPH DRO [2]	TPH GRO [2]	**Comments**
Trip Blanks	QATB01	5/2/2008	X							
	62TB01	5/31/2008	X							
	62TB03	6/1/2008	X							
	61TB02	6/3/2008	X							
	71TB02	6/3/2008							X	
Equipment Rinsates	ER24	5/31/2008	X	X	X	X	X	X	X	Macro Core Liner
	ER25	6/1/2008	X	X	X	X	X	X	X	Macro Core Liner
Field Blank	FB01	5/2/2008	X	X			X	X	X	Lab Grade Deionized Water

Notes:

[1] Low Level PAH's included with SVOC analysis

[2] Not applicable to this investigation. The differences in parameters selected for analysis between QA/QC samples corresponds to the multiple site investigations (in addition to the Phase I RFI investigation at SWMU 62) conducted simultaneously at SWMUs 56, 61, 69, 71, 74, and 78 during the April through June 2008 time period at NAPR.

TABLE 4-3

PARAMETER LISTS AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

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

TABLE 4-3

PARAMETER LISTS AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Appendix IX - VOCs (cont.)	Quantitation Limits*		Method Number (Description)
	Water (µg/L)	Low Soil (µg/kg)	
1,1,1-Trichloroethane	1.0	5.0	8260B (5030) (low level)
1,1,2-Trichloroethane	1.0	5.0	8260B (5030) (low level)
Trichloroethene	1.0	5.0	8260B (5030) (low level)
Trichlorofluoromethane	1.0	5.0	8260B (5030) (low level)
1,2,3-Trichloropropane	1.0	5.0	8260B (5030) (low level)
Vinyl Acetate	2.0	10	8260B (5030) (low level)
Vinyl Chloride	1.0	10	8260B (5030) (low level)
Xylene	2.0	10	8260B (5030) (low level)
Appendix IX - SVOCs	**Quantitation Limits***		**Method Number (Description)**
	Water (µg/L)	**Low Soil (µg/kg)**	
Acenaphthene	***0.2***	***6.7***	***8270C***
Acenaphthylene	***0.2***	***6.7***	***8270C***
Acetophenone	10	330	8270C
2-Acetylaminofluorene	10	330	8270C
4-Aminobiphenyl	20	330	8270C
Aniline	20	660	8270C
Anthracene	***0.2***	***6.7***	***8270C***
Aramite	10	330	8270C
Benzo(a)anthracene	***0.2***	***6.7***	***8270C***
Benzo(b)fluoranthene	***0.2***	***6.7***	***8270C***
Benzo(k)fluoranthene	***0.2***	***6.7***	***8270C***
Benzo(g,h,i)perylene	***0.2***	***6.7***	***8270C***
Benzo(a)pyrene	***0.2***	***6.7***	***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	***0.2***	***6.7***	***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	***0.2***	***6.7***	***8270C***
o-Dichlorobenzene	10	330	8270C
m-Dichlorobenzene	10	330	8270C
p-Dichlorobenzene	10	330	8270C
3,3'-Dichlorobenzidine	20	660	8270C

TABLE 4-3

PARAMETER LISTS AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Appendix IX - SVOCs (Cont.)	Quantitation Limits*		Method Number (Description)
	Water (µg/L)	Low Soil (µg/kg)	
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
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	***0.2***	***6.7***	***8270C***
Fluorene	***0.2***	***6.7***	***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	***0.2***	***6.7***	***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
1-Methylnaphthalene	***0.2***	***6.7***	***8270C***
2-Methylnaphthalene	***0.2***	***6.7***	***8270C***
Naphthalene	***0.2***	***6.7***	***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

TABLE 4-3

PARAMETER LISTS AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Appendix IX - SVOCs (Cont.)	Quantitation Limits*		Method Number (Description)
	Water (µg/L)	Low Soil (µg/kg)	
n-Nitrosodiethylamine	10	330	8270C
n-Nitrosodimethylamine	10	330	8270C
n-Nitrosomethylethylamine	10	330	8270C
n-Nitrosomorpholine	10	330	8270C
n-Nitrosopiperidine	10	330	8270C
n-Nitrosopyrrolidine	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
Pentachlorophenol	50	1,700	8270C
Phenacetin	10	330	8270C
Phenanthrene	***0.2***	***6.7***	***8270C***
Phenol	10	330	8270C
1,4-Phenylenediamine	2,000	1,700	8270C
2-Picolin	10	330	8270C
Pronamide	10	330	8270C
Pyrene	***0.2***	***6.7***	***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
Pesticides	**Quantitation Limits***		**Method Number**
	Water (µg/L)	**Low Soil (µg/kg)**	
Aldrin	1/0/1900	1/1/1900	8081A
Alpha-BHC	1/0/1900	1/1/1900	8081A
beta-BHC	1/0/1900	1/1/1900	8081A
delta-BHC	1/0/1900	1/1/1900	8081A
gamma-BHC	1/0/1900	1/1/1900	8081A
Chlordane	1/0/1900	1/17/1900	8081A
Chlorobenzilate	1/0/1900	1/17/1900	8081A
4,4'-DDT	1/0/1900	1/3/1900	8081A
4,4'-DDE	1/0/1900	1/3/1900	8081A
4,4'-DDD	1/0/1900	1/3/1900	8081A
Dieldrin	1/0/1900	1/3/1900	8081A
Endosulfan I	1/0/1900	1/1/1900	8081A
Endosulfan II	1/0/1900	1/3/1900	8081A
Endosulfan sulfate	1/0/1900	1/3/1900	8081A
Endrin	1/0/1900	1/3/1900	8081A
Isodrin	1/0/1900	1/3/1900	8081A

TABLE 4-3

PARAMETER LISTS AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Pesticides (cont.)	Quantitation Limits* Water (µg/L)	Quantitation Limits* Low Soil (µg/kg)	Method Number
Kepone	1.0	170	8081A
Toxaphene	5.0	170	8081A
Endrin Aldehyde	0.1	3.3	8081A
Heptachlor	0.05	1.7	8081A
Heptachlor epoxide	0.05	1.7	8081A
Methyoxychlor	0.5	17	8081A
Appendix IX - PCBs	**Water (µg/L)**	**Low Soil (µg/kg)**	**Method Number (Description)**
Aroclor-1016	1.0	33	8082
Aroclor-1221	2.0	67	8082
Aroclor-1232	1.0	33	8082
Aroclor-1242	1.0	33	8082
Aroclor-1248	1.0	33	8082
Aroclor-1254	1.0	33	8082
Aroclor-1260	1.0	33	8082
Appendix IX - Metals (Total)	**Quantitation Limits* Water (µg/L)**	**Quantitation Limits* Low Soil (mg/kg)**	**Method Number (Description)**
Antimony	20	2.0	6010 (Inductively Coupled Plasma)
Arsenic	10	1.0	6010 (Inductively Coupled Plasma)
Barium	10	1.0	6010 (Inductively Coupled Plasma)
Beryllium	4.0	0.4	6010 (Inductively Coupled Plasma)
Cadmium	5.0	0.5	6010 (Inductively Coupled Plasma)
Chromium	10	1.0	6010 (Inductively Coupled Plasma)
Cobalt	10	1.0	6010 (Inductively Coupled Plasma)
Copper	20	2.0	6010 (Inductively Coupled Plasma)
Lead	5.0	0.5	6010 (Inductively Coupled Plasma)
Mercury	0.2	0.02	7470/7471 (Cold Vapor AA)
Nickel	40	4.0	6010 (Inductively Coupled Plasma)
Selenium	10	2.5	6010 (Inductively Coupled Plasma)
Silver	10	1.0	6010 (Inductively Coupled Plasma)
Thallium	25	2.5	6010 (Inductively Coupled Plasma)
Tin	50	10.0	6010 (Inductively Coupled Plasma)
Vanadium	10	1.0	6010 (Inductively Coupled Plasma)
Zinc	20	2.0	6010 (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
µg/kg - micrograms per kilogram
mg/kg - milligrams per kilogram
Denotes LLPAH's included with SVOC analysis

TABLE 6-1

Revised: January 13, 2010

SUMMARY OF DETECTED LABORATORY RESULTS - SURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID Sample ID Date Depth Range	**Regional Screening Levels Residential Soil**	*Regional Screening Levels Industrial Soil*	Selected Ecological Surface Soil Screening Values	NAPR Basewide Background [1]	62SB01 62SB01-00 5/31/2008 0.0-1.0	62SB02 62SB02-00 6/1/2008 0.0-1.0	62SB03 62SB03-00 6/1/2008 0.0-1.0	62SB04 62SB04-00 5/31/2008 0.0-1.0	62SB05 62SB05-00 6/1/2008 0.0-1.0
Volatile Organic Compounds (ug/kg)									
Acetone	6,100,000 [2]	61,000,000 [2]	NE	NE	140 J	120 J	67 J	42 UJ	19 J
Benzene	1,100	5,600	101	NE	0.94 U	0.84 U	0.85 U	0.97 U	0.8 U
Iodomethane	NE	NE	NE	NE	1.2 UJ	1.3 J	1.1 UJ	1.2 UJ	1 UJ
Semivolatile Organic Compounds (ug/kg)									
1,4-Dioxane	44,000	160,000	NE	NE	NA	NA	9.2 U	NA	NA
2-Methylnaphthalene	310,000 [2]	4,100,000 [2]	NE	NE	NA	NA	2 U	NA	NA
Benzo[a]anthracene	150	2,100	NE	NE	NA	NA	2 U	NA	NA
Benzo[a]pyrene	15	210	NE	NE	NA	NA	0.76 U	NA	NA
Benzo[b]fluoranthene	1,500	21,000	NE	NE	NA	NA	0.88 U	NA	NA
Benzo[g,h,i]perylene	1,700	17,000	NE	NE	NA	NA	2 U	NA	NA
Benzo[k]fluoranthene	1,500	21,000	NE	NE	NA	NA	1.2 U	NA	NA
Chrysene	15,000	210,000	NE	NE	NA	NA	0.7 U	NA	NA
Dibenzofuran	NE	NE	NE	NE	NA	NA	4.8 U	NA	NA
Fluoranthene	230,000 [2]	2,200,000 [2]	NE	NE	NA	NA	2 U	NA	NA
Indeno[1,2,3-cd]pyrene	150	2,100	NE	NE	NA	NA	1.4 U	NA	NA
Naphthalene	3,900	20,000	NE	NE	NA	NA	0.69 U	NA	NA
Phenanthrene	NE	NE	NE	NE	NA	NA	2 U	NA	NA
Pyrene	170,000 [2]	1,700,000 [2]	NE	NE	NA	NA	2 U	NA	NA
Pesticides (ug/kg)									
4,4'-DDD	2,000	7,200	401	NE	28	0.42 U	0.41 U	0.4 U	0.37 U
4,4'-DDE	1,400	5,100	401	NE	73	0.37 U	0.37 U	0.36 U	5.5
4,4'-DDT	1,700	7,000	401	NE	51	0.6 U	0.6 U	0.58 U	2.3 J

TABLE 6-1

Revised: January 13, 2010

SUMMARY OF DETECTED LABORATORY RESULTS - SURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID Sample ID Date Depth Range	**Regional Screening Levels Residential Soil**	*Regional Screening Levels Industrial Soil*	Selected Ecological Surface Soil Screening Values	NAPR Basewide Background [1]	62SB01 62SB01-00 5/31/2008 0.0-1.0	62SB02 62SB02-00 6/1/2008 0.0-1.0	62SB03 62SB03-00 6/1/2008 0.0-1.0	62SB04 62SB04-00 5/31/2008 0.0-1.0	62SB05 62SB05-00 6/1/2008 0.0-1.0
Metals (mg/kg)									
Arsenic	0.39	1.6	18 [4]	2.65	***1.7***	**0.93**	**0.92**	**1.2**	**1.2**
Barium	1,500 [2]	19,000 [2]	330 [5]	199	130	80	150	520	80
Beryllium	16 [2]	200 [2]	40 [5]	0.59	0.32	0.32	0.34	0.49	0.37
Cadmium	7 [2]	81 [2]	32 [4]	1.02	0.092 J	0.033 U	0.032 U	0.032 U	0.03 U
Chromium	280	1,400	57 [7]	49.8	32	12	9.5	16	2.6
Cobalt	2.3 [2]	30 [2]	13 [4]	46.2	**19**	**3**	2.2	**5.6**	**6.8**
Copper	310 [2]	4,100 [2]	70 [4]	168	41	7.5	11	19	9.6
Lead	400 [3]	800 [3]	120 [4]	22	3.5	1.4	1.1	1.6	0.6
Mercury	2.3 [2]	31 [2]	0.1 [6]	0.109	0.032	0.034	0.035	0.027	0.0038 U
Nickel	160 [2]	2,000 [2]	38 [4]	20.7	8.6	3.1	2.7	4.9	1.2
Selenium	39 [2]	510 [2]	0.52 [4]	1.48	0.38 J	0.36 J	0.25 J	0.16 J	0.14 J
Silver	39 [2]	510 [2]	560 [8]	NE	0.025 J	0.017 UJ	0.017 UJ	0.016 UJ	0.016 UJ
Tin	4,700 [2]	61,000 [2]	50 [10]	3.76	4.4 U	4.2 U	4.1 U	4.1 U	3.9 U
Vanadium	55 [2]	720 [2]	10 [9]	259	**82** J	27 J	25 J	41 J	33 J

TABLE 6-1

Revised: January 13, 2010

SUMMARY OF DETECTED LABORATORY RESULTS - SURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID Sample ID Date Depth Range	**Regional Screening Levels Residential Soil**	*Regional Screening Levels Industrial Soil*	Selected Ecological Surface Soil Screening Values	NAPR Basewide Background [1]	62SB06 62SB06-00 6/1/2008 0.0-1.0	62SB07 62SB07-00 6/1/2008 0.0-1.0	62SB08 62SB08-00 6/1/2008 0.0-1.0	62SB08 62SB08-00D 6/1/2008 0.0-1.0	62SB09 62SB09-00 6/1/2008 0.0-1.0
Volatile Organic Compounds (ug/kg)									
Acetone	6,100,000 [2]	61,000,000 [2]	NE	NE	200 J	150 J	83 J	63 J	72 UJ
Benzene	1,100	5,600	101	NE	1.4 J	0.94 U	1.1 U	0.77 U	0.74 U
Iodomethane	NE	NE	NE	NE	1.1 UJ	1.2 UJ	1.4 UJ	0.98 UJ	0.94 U
Semivolatile Organic Compounds (ug/kg)									
1,4-Dioxane	44,000	160,000	NE	NE	8.4 U	NA	15 J	8.5 UJ	8.6 U
2-Methylnaphthalene	310,000 [2]	4,100,000 [2]	NE	NE	1.8 U	NA	23 J	56 J	1.8 U
Benzo[a]anthracene	150	2,100	NE	NE	1.8 U	NA	4.8 J	5.2 J	2.6 J
Benzo[a]pyrene	15	210	NE	NE	0.69 U	NA	0.71 UJ	0.7 UJ	2.6 J
Benzo[b]fluoranthene	1,500	21,000	NE	NE	0.8 U	NA	0.82 UJ	0.8 UJ	3.2 J
Benzo[g,h,i]perylene	1,700	17,000	NE	NE	1.8 U	NA	1.8 UJ	1.8 UJ	5.8 J
Benzo[k]fluoranthene	1,500	21,000	NE	NE	1 U	NA	1.1 UJ	4 J	2.2 J
Chrysene	15,000	210,000	NE	NE	0.64 U	NA	4.8 J	6.8 J	3.3 J
Dibenzofuran	NE	NE	NE	NE	4.4 U	NA	8.9 J	20 J	4.5 U
Fluoranthene	230,000 [2]	2,200,000 [2]	NE	NE	1.8 U	NA	6.7 J	8.5 J	5.4 J
Indeno[1,2,3-cd]pyrene	150	2,100	NE	NE	1.3 U	NA	1.3 UJ	1.3 UJ	1.5 J
Naphthalene	3,900	20,000	NE	NE	0.63 U	NA	13 J	33 J	1.2 J
Phenanthrene	NE	NE	NE	NE	1.8 U	NA	29 J	50 J	4.5 J
Pyrene	170,000 [2]	1,700,000 [2]	NE	NE	1.8 U	NA	9.1 J	11 J	4.8 J
Pesticides (ug/kg)									
4,4'-DDD	2,000	7,200	401	NE	0.38 U	0.4 U	0.89 J	0.39 U	0.39 U
4,4'-DDE	1,400	5,100	401	NE	0.34 U	0.35 U	7.6 J	1.5 J	0.35 U
4,4'-DDT	1,700	7,000	401	NE	0.55 U	0.57 U	7.7 J	1.9 J	0.56 U

TABLE 6-1

Revised: January 13, 2010

SUMMARY OF DETECTED LABORATORY RESULTS - SURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID Sample ID Date Depth Range	**Regional Screening Levels Residential Soil**	*Regional Screening Levels Industrial Soil*	Selected Ecological Surface Soil Screening Values	NAPR Basewide Background [1]	62SB06 62SB06-00 6/1/2008 0.0-1.0	62SB07 62SB07-00 6/1/2008 0.0-1.0	62SB08 62SB08-00 6/1/2008 0.0-1.0	62SB08 62SB08-00D 6/1/2008 0.0-1.0	62SB09 62SB09-00 6/1/2008 0.0-1.0
Metals (mg/kg)									
Arsenic	0.39	1.6	18 [4]	2.65	***3.3***	***2.3***	***2.4***	***3***	***3.7***
Barium	1,500 [2]	19,000 [2]	330 [5]	199	53	350	260 J	170 J	140
Beryllium	16 [2]	200 [2]	40 [5]	0.59	0.13	0.42	0.68 J	0.44 J	0.27
Cadmium	7 [2]	81 [2]	32 [4]	1.02	0.072 J	0.042 J	0.038 J	0.043 J	0.064 J
Chromium	280	1,400	57 [7]	49.8	12	19	7.9 J	15 J	9.6
Cobalt	2.3 [2]	30 [2]	13 [4]	46.2	**7.6**	**18**	**8.7**	**7.4**	**11**
Copper	310 [2]	4,100 [2]	70 [4]	168	45	140	30	37	60
Lead	400 [3]	800 [3]	120 [4]	22	2	1.8	1.6	2	12
Mercury	2.3 [2]	31 [2]	0.1 [6]	0.109	0.0038 U	0.0049 J	0.0093 J	0.007 J	0.004 U
Nickel	160 [2]	2,000 [2]	38 [4]	20.7	6	9.7	3.9	3.7	4.4
Selenium	39 [2]	510 [2]	0.52 [4]	1.48	0.14 J	0.24 J	0.28 J	0.24 J	0.18 J
Silver	39 [2]	510 [2]	560 [8]	NE	0.019 J	0.031 J	0.016 UJ	0.021 J	0.018 J
Tin	4,700 [2]	61,000 [2]	50 [10]	3.76	3.9 U	4.1 U	4.1 U	4.1 U	4.5 J
Vanadium	55 [2]	720 [2]	10 [9]	259	**61** J	**160** J	42	48	**61**

TABLE 6-1

SUMMARY OF DETECTED LABORATORY RESULTS - SURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Notes/Qualifiers:

J - Estimated: The analyte was positively identified; the quantitation is an estimation
U - Undetected at the Limit of Detection.
UJ - Reported quantitation limit is qualified as estimated
ft bgs - feet below ground surface
ug/kg - micrograms per kilogram
mg/kg - miligrams per kilogram
NA - Not Analyzed
NE - Not Established
NAPR - Naval Activity Puerto Rico
USEPA - United States Environmental Protection Agency

(1) NAPR basewide background surface soil screening value (upper limit of the means concentration [mean plus two standard deviations]) for Subsurface Soil Background Fine Sand/Silt Table 3-5 (Baker, 2008)

(2) Noncarcinogenic PRGs based on a target hazard quotient of 0.1 for conservative screening purposes

(3) USEPA Action Level for lead in soils

(4) Plant-based ecological soil screening level (USEPA,, 2005a [arsenic]; USEPA, 2005b [cadmium]; USEPA, 2005c [cobalt]; USEPA, 2005d [lead]; USEPA, 2007a [copper]; USEPA, 2007b [nickel]; USEPA, 2007c [selenium])

(5) Invertebrate-based ecological soil screening level (USEPA, 2005e [antimony]; USEPA, 2005f [barium]; USEPA, 2005g [beryllium]; USEPA, 2007d [zinc])

(6) Toxicological threshold for earthworms (Efroymson et al., 1997a)

(7) Reproduction-based MATC for the earthworm *Eisenia andrei* (USEPA, 2008)

(8) Ecological soil screening level (http://www.epa.gov/ecotox/ecossl/)

(9) Growth-based LOAEC for *Brassica oleracea* (broccoli) from USEPA (2005h) with a safety factor of 10

(10) Toxicological threshold for plants (Efroymson et al., 1997b)

SUMMARY OF DETECTED LABORATORY RESULTS - SURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
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Table References:

Baker Environmental, Inc, (2008). Revised Final II Summary Report for Environmental Background Concentrations of Inorganic Compounds, Naval Activity Puerto Rico, Ceiba, Puerto Rico. February 29, 2008.

Efroymson, R.A., M.E. Will, and G.W. Suter II. 1997a. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process: 1997 Revisions. Oak Ridge National Laboratory, Oak Ridge, TN. ES/ER/TM-126/R2.

Efroymson, R.A., M.E. Will, G.W. Suter II, and A.C. Wooten. 1997b. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revisions. Oak Ridge National Laboratory, Oak Ridge, TN. ES/ER/TM-85/R3

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USEPA. 2007a. Ecological Soil Screening Levels for Copper (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-68.

USEPA. 2007b. Ecological Soil Screening Levels for Nickel (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-76.

USEPA. 2007c. Ecological Soil Screening Levels for Selenium (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-72.

USEPA. 2005a. Ecological Soil Screening Levels for Arsenic (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C.

USEPA. 2005b. Ecological Soil Screening Levels for Cadmium (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-62.

USEPA. 2005c. Ecological Soil Screening Levels for Cobalt (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-67

USEPA. 2005d. Ecological Soil Screening Levels for Lead (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-70.

USEPA. 2005e. Ecological Soil Screening Levels for Antimony (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-61.

SUMMARY OF DETECTED LABORATORY RESULTS - SURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Table References (continued):

USEPA. 2005f. Ecological Soil Screening Levels for Barium (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-63.

USEPA. 2005g. Ecological Soil Screening Levels for Beryllium (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-63.

USEPA. 2005h. Ecological Soil Screening Levels for Vanadium (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-63.

TABLE 6-2

Revised: January 13, 2010

SUMMARY OF DETECTED LABORATORY RESULTS - SUBSURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID Sample ID Date Depth Range	**Regional Screening Levels Residential Soil**	*Regional Screening Levels Industrial Soil*	Selected Ecological Surface Soil Screening Values	NAPR Basewide Background [1]	62SB01 62SB01-03 5/31/2008 5.0-7.0	62SB01 62SB01-05 5/31/2008 9.0-11.0	62SB02 62SB02-01 6/1/2008 1.0-3.0	62SB02 62SB02-03 6/1/2008 5.0-7.0	62SB03 62SB03-01 6/1/2008 1.0-3.0
Volatile Organic Compounds (ug/kg)									
Acetone	6,100,000 [2]	61,000,000 [2]	NE	NE	NA	NA	NA	NA	24 J
Carbon disulfide	670,000 [2]	3,000,000 [2]	NE	NE	NA	NA	NA	NA	0.5 U
Iodomethane	NE	NE	NE	NE	NA	NA	NA	NA	0.99 UJ
Semivolatile Organic Compounds (ug/kg)									
Naphthalene	3,900	20,000	NE	NE	NA	NA	NA	NA	0.66 U
Metals (mg/kg)									
Arsenic	0.39	1.6	18 [4]	6.66	**1.1**	**1.1**	**1**	**1.1**	**1.2**
Barium	1,500 [2]	19,000 [2]	330 [5]	207	66	87	79	18	41
Beryllium	16 [2]	200 [2]	40 [5]	0.933	0.38	0.46	0.49	0.26	0.51
Cadmium	7 [2]	81 [2]	32 [4]	0.57	0.032 U	0.034 U	0.033 U	0.032 U	0.033 U
Chromium	280	1,400	57 [7]	47.9	38	31	17	18	7.6
Cobalt	2.3 [2]	30 [2]	13 [4]	63.1	**11**	**14**	**3.8**	1.9	**6.8**
Copper	310 [2]	4,100 [2]	70 [4]	120	19	17	13	4.2	16
Lead	400 [3]	800 [3]	120 [4]	6.2	2.4	1.7	1.2	0.83	1.3
Mercury	2.3 [2]	31 [2]	0.1 [6]	0.067	0.018 J	0.053	0.0048 J	0.0038 U	0.0044 U
Nickel	160 [2]	2,000 [2]	38 [4]	26.5	5.3	6.1	3.7	3.2	2.2
Selenium	39 [2]	510 [2]	0.52 [4]	1.19	0.13 U	0.16 J	0.14 J	0.17 J	0.16 J
Silver	39 [2]	510 [2]	560 [8]	NE	0.017 UJ	0.018 UJ	0.017 UJ	0.017 UJ	0.017 UJ
Vanadium	55 [2]	720 [2]	10 [9]	256	**86** J	**130** J	41 J	35 J	34 J

TABLE 6-2

Revised: January 13, 2010

SUMMARY OF DETECTED LABORATORY RESULTS - SUBSURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID Sample ID Date Depth Range	**Regional Screening Levels Residential Soil**	*Regional Screening Levels Industrial Soil*	Selected Ecological Surface Soil Screening Values	NAPR Basewide Background [1]	62SB03 62SB03-05 6/1/2008 9.0-11.0	62SB04 62SB04-03 5/31/2008 5.0-7.0	62SB04 62SB04-03D 5/31/2008 5.0-7.0	62SB04 62SB04-05 5/31/2008 9.0-11.0	62SB05 62SB05-01 6/1/2008 1.0-3.0
Volatile Organic Compounds (ug/kg)									
Acetone	6,100,000 [2]	61,000,000 [2]	NE	NE	10 J	NA	NA	NA	NA
Carbon disulfide	670,000 [2]	3,000,000 [2]	NE	NE	0.61 U	NA	NA	NA	NA
Iodomethane	NE	NE	NE	NE	1.2 UJ	NA	NA	NA	NA
Semivolatile Organic Compounds (ug/kg)									
Naphthalene	3,900	20,000	NE	NE	0.62 R	NA	NA	NA	NA
Metals (mg/kg)									
Arsenic	0.39	1.6	18 [4]	6.66	***1.9***	**1.3**	**1.4**	**1.3**	**1.2**
Barium	1,500 [2]	19,000 [2]	330 [5]	207	410	67	83	240	83
Beryllium	16 [2]	200 [2]	40 [5]	0.933	1	0.35	0.37	0.53	0.42
Cadmium	7 [2]	81 [2]	32 [4]	0.57	0.03 U	0.033 J	0.031 U	0.033 U	0.029 U
Chromium	280	1,400	57 [7]	47.9	2.6	5.3 J	21 J	39	1.4
Cobalt	2.3 [2]	30 [2]	13 [4]	63.1	**13**	**6.1**	**6.1**	**29**	**7.6**
Copper	310 [2]	4,100 [2]	70 [4]	120	37	11	11	15	5.4
Lead	400 [3]	800 [3]	120 [4]	6.2	0.6	1.5	1.2	2.8	0.43
Mercury	2.3 [2]	31 [2]	0.1 [6]	0.067	0.0039 U	0.0042 U	0.0041 U	0.0044 U	0.0038 U
Nickel	160 [2]	2,000 [2]	38 [4]	26.5	3	3 J	4.8 J	5.3	1.4
Selenium	39 [2]	510 [2]	0.52 [4]	1.19	0.2 J	0.15 J	0.17 J	0.13 J	0.12 J
Silver	39 [2]	510 [2]	560 [8]	NE	0.015 UJ	0.016 UJ	0.016 UJ	0.017 UJ	0.015 UJ
Vanadium	55 [2]	720 [2]	10 [9]	256	32 J	37 J	44 J	**120** J	30 J

TABLE 6-2

Revised: January 13, 2010

SUMMARY OF DETECTED LABORATORY RESULTS - SUBSURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID Sample ID Date Depth Range	**Regional Screening Levels Residential Soil**	*Regional Screening Levels Industrial Soil*	Selected Ecological Surface Soil Screening Values	NAPR Basewide Background [1]	62SB05 62SB05-02 6/1/2008 3.0-5.0	62SB06 62SB06-01 6/1/2008 1.0-3.0	62SB06 62SB06-03 6/1/2008 5.0-7.0	62SB07 62SB07-01 6/1/2008 1.0-3.0	62SB07 62SB07-02 6/1/2008 3.0-5.0
Volatile Organic Compounds (ug/kg)									
Acetone	6,100,000 [2]	61,000,000 [2]	NE	NE	NA	40 J	14 J	NA	NA
Carbon disulfide	670,000 [2]	3,000,000 [2]	NE	NE	NA	0.68 J	0.6 U	NA	NA
Iodomethane	NE	NE	NE	NE	NA	1.2 UJ	1.2 UJ	NA	NA
Semivolatile Organic Compounds (ug/kg)									
Naphthalene	3,900	20,000	NE	NE	NA	0.65 U	0.69 U	NA	NA
Metals (mg/kg)									
Arsenic	0.39	1.6	18 [4]	6.66	**0.99**	**1**	***5.2***	**1.1**	**0.84**
Barium	1,500 [2]	19,000 [2]	330 [5]	207	58	350	430	110	240
Beryllium	16 [2]	200 [2]	40 [5]	0.933	0.26	0.21	0.85	0.3	0.23
Cadmium	7 [2]	81 [2]	32 [4]	0.57	0.028 U	0.032 U	0.032 U	0.035 U	0.029 U
Chromium	280	1,400	57 [7]	47.9	20	29	1.8	1.9	2.2
Cobalt	2.3 [2]	30 [2]	13 [4]	63.1	**4.1**	**17**	2.3	**4.7**	**5.6**
Copper	310 [2]	4,100 [2]	70 [4]	120	6.1	140	2.6	50	55
Lead	400 [3]	800 [3]	120 [4]	6.2	0.36	0.65	2	0.32 U	0.28 U
Mercury	2.3 [2]	31 [2]	0.1 [6]	0.067	0.011 J	0.027	0.0043 J	0.0042 U	0.0035 U
Nickel	160 [2]	2,000 [2]	38 [4]	26.5	1.5	19	0.74	1.5	1.6
Selenium	39 [2]	510 [2]	0.52 [4]	1.19	0.11 J	0.14 J	0.46 J	0.13 U	0.11 U
Silver	39 [2]	510 [2]	560 [8]	NE	0.015 UJ	0.036 J	0.017 UJ	0.018 UJ	0.015 UJ
Vanadium	55 [2]	720 [2]	10 [9]	256	25 J	**110** J	31 J	35	34

TABLE 6-2

Revised: January 13, 2010

SUMMARY OF DETECTED LABORATORY RESULTS - SUBSURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID Sample ID Date Depth Range	**Regional Screening Levels Residential Soil**	*Regional Screening Levels Industrial Soil*	Selected Ecological Surface Soil Screening Values	NAPR Basewide Background [1]	62SB08 62SB08-01 6/1/2008 1.0-3.0	62SB08 62SB08-02 6/1/2008 3.0-5.0	62SB08 62SB08-02D 6/1/2008 3.0-5.0	62SB09 62SB09-01 6/1/2008 1.0-3.0	62SB09 62SB09-02 6/1/2008 3.0-5.0
Volatile Organic Compounds (ug/kg)									
Acetone	6,100,000 [2]	61,000,000 [2]	NE	NE	39 J	40 UJ	30 UJ	28 UJ	5.3 UJ
Carbon disulfide	670,000 [2]	3,000,000 [2]	NE	NE	0.62 J	0.57 U	0.49 U	0.6 U	0.62 U
Iodomethane	NE	NE	NE	NE	1.2 UJ	1.1 U	0.95 U	1.2 U	2.4 J
Semivolatile Organic Compounds (ug/kg)									
Naphthalene	3,900	20,000	NE	NE	0.64 UJ	0.67 UJ	0.82 J	0.65 UJ	0.62 UJ
Metals (mg/kg)									
Arsenic	0.39	1.6	18 [4]	6.66	***1.8***	**1.4**	***1.9***	***2***	**1.4**
Barium	1,500 [2]	19,000 [2]	330 [5]	207	130	160	140	160	180
Beryllium	16 [2]	200 [2]	40 [5]	0.933	0.84	0.45	0.36	1	1.2
Cadmium	7 [2]	81 [2]	32 [4]	0.57	0.031 U	0.033 U	0.037 J	0.032 U	0.029 U
Chromium	280	1,400	57 [7]	47.9	1.9	4.8	8.2	2.4	1.7
Cobalt	2.3 [2]	30 [2]	13 [4]	63.1	**7.4**	**4.5**	**6.9**	**4.7**	**7.5**
Copper	310 [2]	4,100 [2]	70 [4]	120	22	22	19	9.1	4.2
Lead	400 [3]	800 [3]	120 [4]	6.2	0.54	1.1	2	0.5	0.34
Mercury	2.3 [2]	31 [2]	0.1 [6]	0.067	0.0043 U	0.026	0.033	0.0042 U	0.0039 U
Nickel	160 [2]	2,000 [2]	38 [4]	26.5	1.4	2.3	3.2	1.1	1
Selenium	39 [2]	510 [2]	0.52 [4]	1.19	0.2 J	0.35 J	0.36 J	0.2 J	0.15 J
Silver	39 [2]	510 [2]	560 [8]	NE	0.016 UJ	0.03 J	0.022 J	0.016 UJ	0.015 UJ
Vanadium	55 [2]	720 [2]	10 [9]	256	33	38	42	32	25

TABLE 6-2

SUMMARY OF DETECTED LABORATORY RESULTS - SURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Notes/Qualifiers:

J - Estimated: The analyte was positively identified; the quantitation is an estimation
U - Undetected at the Limit of Detection.
UJ - Reported quantitation limit is qualified as estimated
ft bgs - feet below ground surface
ug/kg - micrograms per kilogram
mg/kg - miligrams per kilogram
NA - Not Analyzed
NE - Not Established
NAPR - Naval Activity Puerto Rico
USEPA - United States Environmental Protection Agency

(1) NAPR basewide background surface soil screening value (upper limit of the means concentration [mean plus two standard deviations]) for Subsurface Soil Background Fine Sand/Silt Table 3-5 (Baker, 2008)

(2) Noncarcinogenic PRGs based on a target hazard quotient of 0.1 for conservative screening purposes

(3) USEPA Action Level for lead in soils

(4) Plant-based ecological soil screening level (USEPA,, 2005a [arsenic]; USEPA, 2005b [cadmium]; USEPA, 2005c [cobalt]; USEPA, 2005d [lead]; USEPA, 2007a [copper]; USEPA, 2007b [nickel]; USEPA, 2007c [selenium])

(5) Invertebrate-based ecological soil screening level (USEPA, 2005h [antimony]; USEPA, 2005f [barium]; USEPA, 2005g [beryllium]; USEPA, 2007d [zinc])

(6) Toxicological threshold for earthworms (Efroymson et al., 1997a)

(7) Reproduction-based MATC for *Eisenia andrei* (earthworm)

(8) Ecological soil screening level (http://www.epa.gov/ecotox/ecossl/)

(9) Growth-based LOAEC for *Brassica oleracea* (broccoli) with a safety factor of 10

SUMMARY OF DETECTED LABORATORY RESULTS - SUBSURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Table References:

Baker Environmental, Inc, (2008). Revised Final II Summary Report for Environmental Background Concentrations of Inorganic Compounds, Naval Activity Puerto Rico, Ceiba, Puerto Rico. February 29, 2008.

Efroymson, R.A., M.E. Will, and G.W. Suter II. 1997a. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process: 1997 Revisions. Oak Ridge National Laboratory, Oak Ridge, TN. ES/ER/TM-126/R2.

Efroymson, R.A., M.E. Will, G.W. Suter II, and A.C. Wooten. 1997b. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revisions. Oak Ridge National Laboratory, Oak Ridge, TN. ES/ER/TM-85/R3

USEPA. 2007a. Ecological Soil Screening Levels for Copper (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-68.

USEPA. 2007b. Ecological Soil Screening Levels for Nickel (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-76.

USEPA. 2007c. Ecological Soil Screening Levels for Selenium (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-72.

USEPA. 2005a. Ecological Soil Screening Levels for Arsenic (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C.

USEPA. 2005b. Ecological Soil Screening Levels for Cadmium (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-62.

USEPA. 2005c. Ecological Soil Screening Levels for Cobalt (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-67

USEPA. 2005d. Ecological Soil Screening Levels for Lead (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-70.

USEPA. 2005f. Ecological Soil Screening Levels for Barium (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-63.

USEPA. 2005g. Ecological Soil Screening Levels for Beryllium (Interim Final). Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-63.

TABLE 6-3

SUMMARY OF DETECTED LABORATORY RESULTS - QUALITY ASSURANCE/QUALITY CONTROL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

	Trip Blanks					Equipment Rinsate Blanks		Field Blank
Sample ID	QATB01	62TB01	62TB03	71TB02	61TB02	ER24	ER25	FB01
Date	5/2/2008	5/31/2008	6/1/2008	5/31/2008	5/31/2008	5/31/2008	6/1/2008	5/2/2008
Volatile Organic Compounds (ug/L)								
2-Butanone (MEK)	0.6 U	0.6 U	0.6 U	NA	0.79 J	1.1 J	0.74 J	0.69 J
Acetone	5 U	5 U	5 U	NA	6.1 J	6.6 J	5 U	5 U
Benzene	0.32 U	0.32 U	0.32 U	NA	0.32 U	1.2	1.3	0.32 U
Carbon disulfide	0.17 U	0.17 U	0.17 U	NA	0.19 J	0.17 U	0.17 U	0.17 U
Styrene	0.36 U	0.36 U	0.36 U	NA	0.36 U	0.38 J	0.36 U	0.36 U
Tetrachloroethene	0.28 U	0.28 U	0.28 U	NA	0.28 U	0.28 U	1.5	0.28 U
Toluene	0.31 U	0.31 U	0.31 U	NA	0.31 U	0.5 J	0.52 J	0.31 U
Xylenes, Total	0.87 U	0.87 U	0.87 U	NA	0.87 U	0.87 U	1.3 J	0.87 U
Semivolatile Organic Compounds (ug/L)								
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	0.12 UJ	0.12 UJ	0.16 J
2-Methylnaphthalene	NA	NA	NA	NA	NA	0.032 J	0.038 J	0.022 UJ
Acenaphthene	NA	NA	NA	NA	NA	0.019 UJ	0.024 J	0.019 UJ
Acetophenone	NA	NA	NA	NA	NA	0.49 J	0.75 J	0.38 J
Bis(2-ethylhexyl) phthalate	NA	NA	NA	NA	NA	0.43 J	0.34 UJ	0.34 UJ
Diethyl phthalate	NA	NA	NA	NA	NA	0.2 J	0.18 UJ	0.33 J
Di-n-butyl phthalate	NA	NA	NA	NA	NA	0.62 J	0.48 J	1.2 J
Naphthalene	NA	NA	NA	NA	NA	0.65 J	0.64 J	0.049 UJ
Metals (mg/L)								
Arsenic	NA	NA	NA	NA	NA	0.52 J	0.45 J	0.28 UJ
Chromium	NA	NA	NA	NA	NA	0.6 U	0.86 J	0.6 UJ
Cobalt	NA	NA	NA	NA	NA	0.029 U	0.085 J	0.029 UJ
Copper	NA	NA	NA	NA	NA	1.2 U	4 J	2.1 J
Lead	NA	NA	NA	NA	NA	0.15 U	0.17 J	0.38 J
Nickel	NA	NA	NA	NA	NA	0.32 U	1.1	0.32 UJ
Tin	NA	NA	NA	NA	NA	1.6 J	1.3 J	0.9 UJ
Vanadium	NA	NA	NA	NA	NA	0.8 U	1.7 J	0.8 UJ
TPH DRO (mg/L)								
Diesel Range Organics [C10-C28]	NA	NA	NA	0.012 U	NA	0.028 J	0.028 J	0.028 UJ

Notes/Qualifiers:

J - Estimated: The analyte was positively identified; the quantitation is an estimation
U - Undetected at the Limit of Detection.
UJ - Reported quantitation limit is qualified as estimated

mg/L - micrograms per liter
ug/L - micrograms per liter
NA - Not Analyzed

TABLE 7-1

SUMMARY OF PROPOSED FULL RFI SAMPLING AND ANALYTICAL PROGRAM
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

	Fixed Based Analytical Lab Analysis		
Media	**Sample Depth (ft bgs)**	**App IX Metals**	**Comment**
Surface Soil Samples			
62SS01	0.0 - 1.0	X	
62SS02	0.0 - 1.0	X	
62SS03	0.0 - 1.0	X	
62SS04	0.0 - 1.0	X	
62SS05	0.0 - 1.0	X	
62SS06	0.0 - 1.0	X	
62SS07	0.0 - 1.0	X	
62SS08	0.0 - 1.0	X	
62SS09	0.0 - 1.0	X	
62SS10	0.0 - 1.0	X	
62SS10-D	0.0 - 1.0	X	Duplicate
62SS10-MS/MSD	0.0 - 1.0	X	Matrix Spike/Matrix Spike Duplicate
Subsurface Soil Samples[2]			
62SB10-XX[1]	TBD	X	
62SB10-XX[1]	TBD	X	
62SB11-XX[1]	TBD	X	
62SB11-XX[1]	TBD	X	
62SB12-XX[1]	TBD	X	
62SB12-XX[1]	TBD	X	
62SB13-XX[1]	TBD	X	
62SB13-XX[1]	TBD	X	
62SB13-XXD[1]	TBD	X	Duplicate
62SB13-XXMS/MSD[1]	TBD	X	Matrix Spike/Matrix Spike Duplicate

Notes:

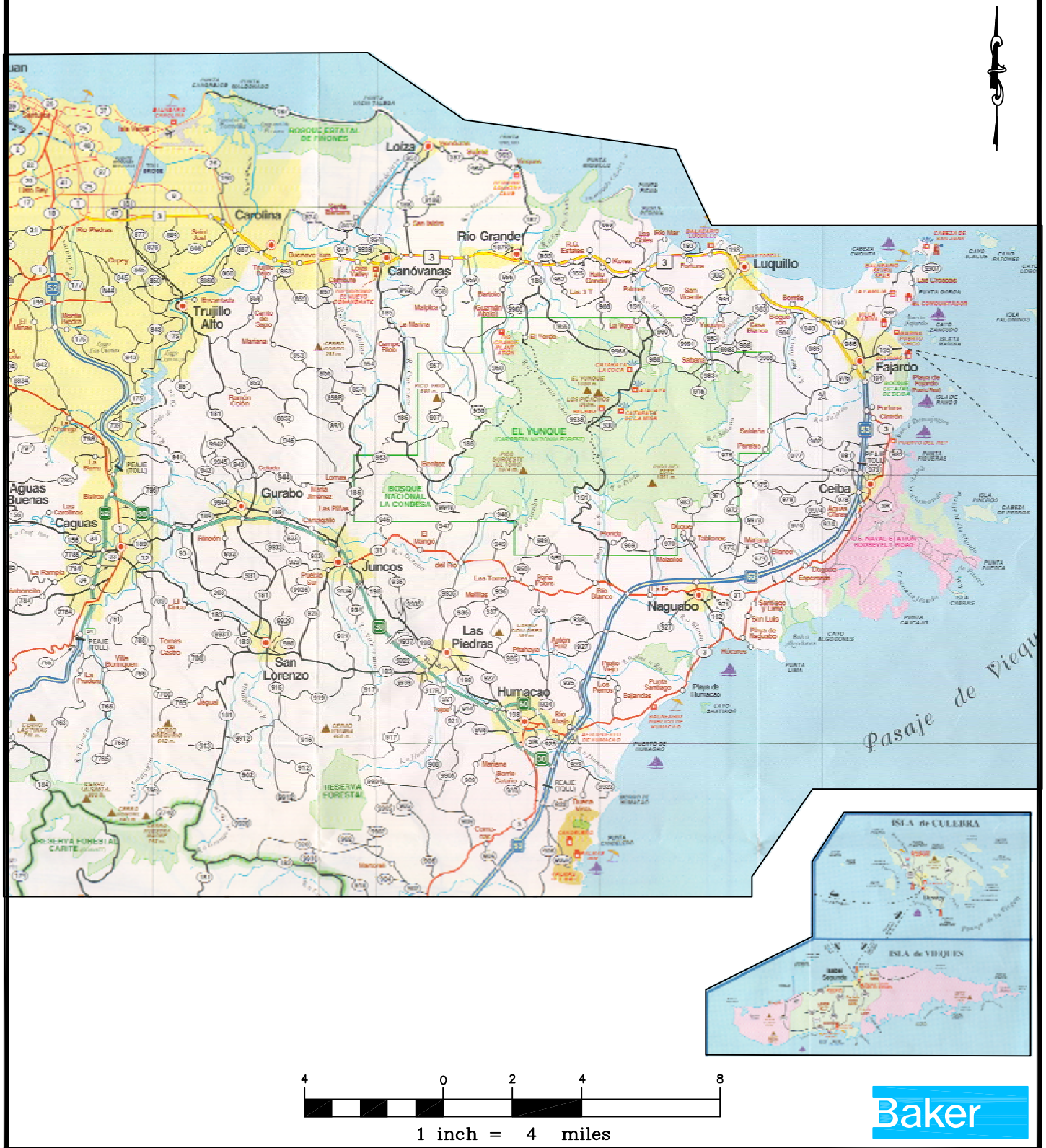
[1] XX - The designator for the depth interval from which the sample will be collected (i.e., 01 = 1-3ft bgs, 02 = 3-5 ft bgs, etc.). This will be established in the field.

[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.

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

FIGURES

K:_SOUTHNAVFAC\111626 D02\Task 17 – Phase I RFIs 62 71 78\62 Phase I RFI Report\Draft\cad\ 111626_62RFI_01.dwg



4 0 2 4 8

1 inch = 4 miles

Baker

FIGURE 2-1
REGIONAL LOCATION MAP
SWMU 62-FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT

SOURCE: METRODATA, INC., 1999.

NAVAL ACTIVITY PUERTO RICO

K:_SOUTHNAVFAC\111626 DO2\Task 17 – Phase I RFIs 62 71 78\62 Phase I RFI Report\Draft\cad\ 111626_62RFI_02.dwg

Baker

LEGEND

1 – SWMUs

62 – AREA TO WHICH THIS INVESTIGATION PERTAINS

AOC D – AOCs

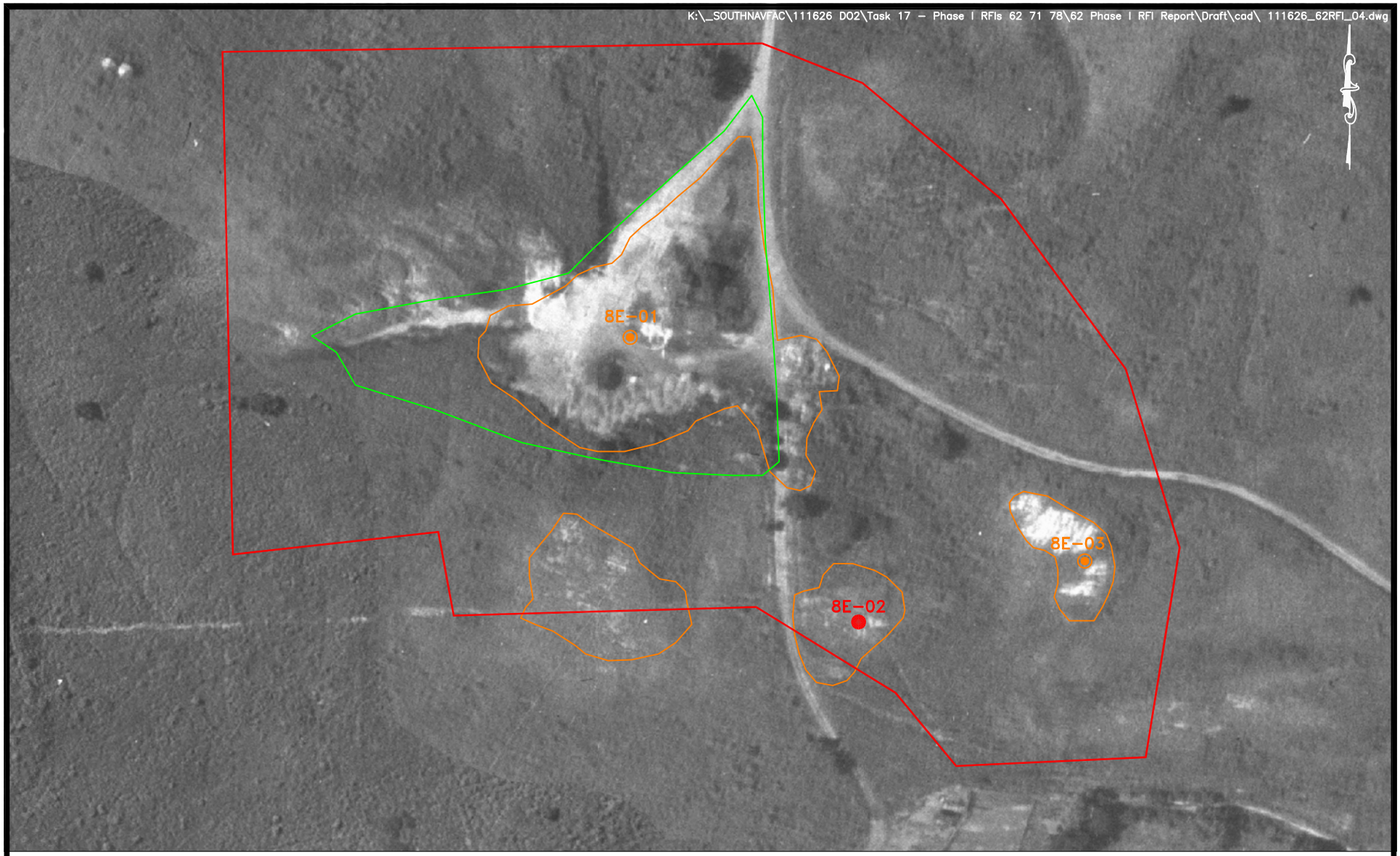
SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

3000 0 1500 3000

1 inch = 3000 ft.

FIGURE 2-2
SWMU/AOC LOCATION MAP
SWMU 62-FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT

NAVAL ACTIVITY PUERTO RICO



Baker

150 0 75 150

1 inch = 150 ft.

LEGEND

- –1958 POLYGON FEATURE
- –1961 POLYGON FEATURE
- –EXISTING SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
- –EXISTING SURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
- –SWMU BOUNDARY

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

FIGURE 2–3
SITE LAYOUT AND ECP SAMPLE
LOCATION MAP–1958 AERIAL PHOTOGRAPH
SWMU 62–FORMER
BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO

Baker

150 0 75 150

1 inch = 150 ft.

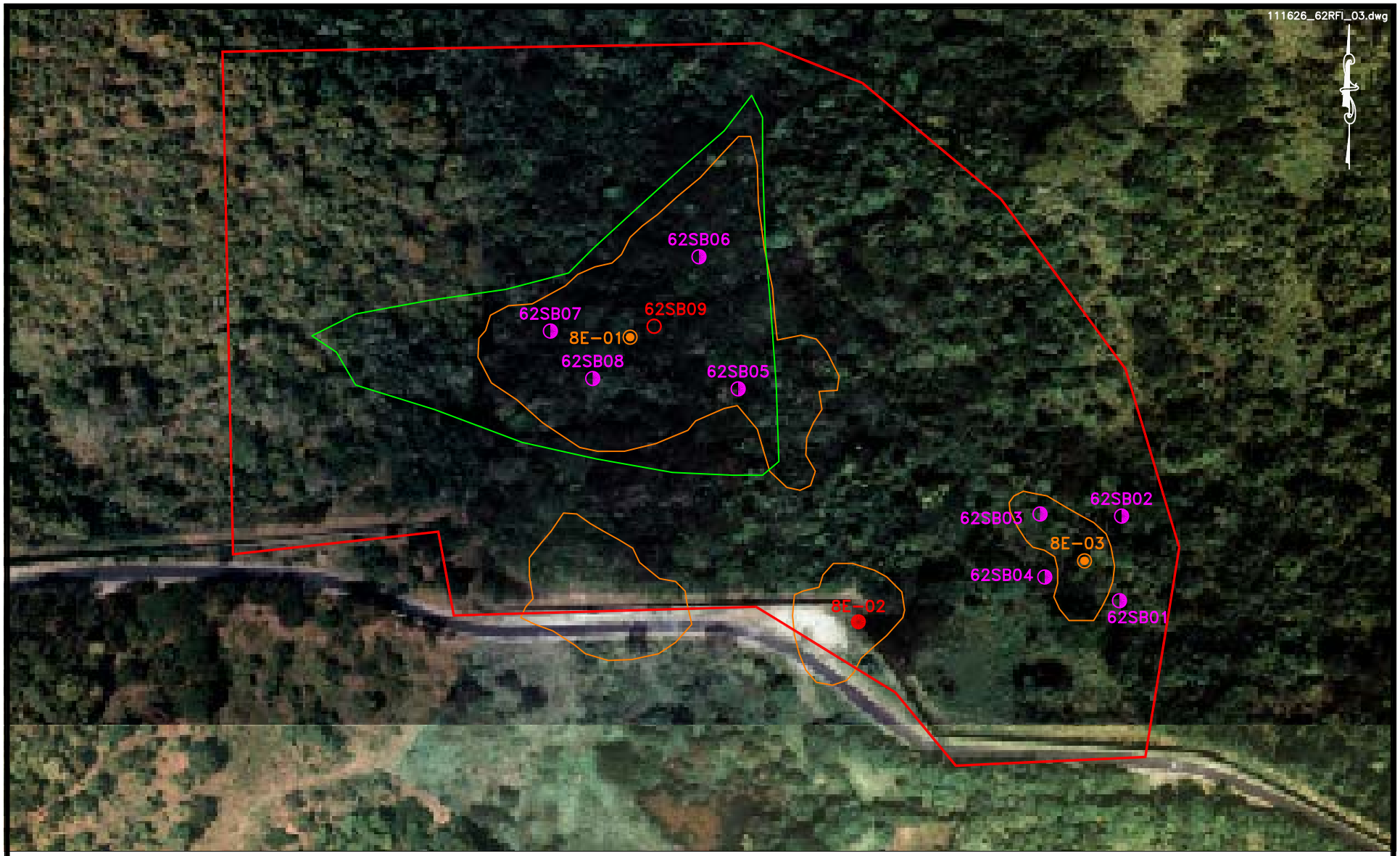
SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

LEGEND

- -1958 POLYGON FEATURE
- -1961 POLYGON FEATURE
- -EXISTING SUBSURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
- -EXISTING SURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
- -SWMU BOUNDARY

FIGURE 2-4
SITE LAYOUT AND ECP SAMPLE LOCATION MAP-2000 AERIAL PHOTOGRAPH
SWMU 62-FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT

NAVAL ACTIVITY PUERTO RICO



Baker

150 0 75 150

1 inch = 150 ft.

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

LEGEND

- -1958 POLYGON FEATURE
- -1961 POLYGON FEATURE
- -EXISTING SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
- -EXISTING SURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
- -SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION (PHASE I RFI 2008)
- -SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION FOR PARTIALLY BURIED DRUM(PHASE I RFI 2008)
- -SWMU BOUNDARY

FIGURE 4-1
SAMPLE LOCATION MAP
SWMU 62-FORMER
BUNDY DISPOSAL AREA
PHASE I RFI REPORT

NAVAL ACTIVITY PUERTO RICO

Baker

150 0 75 150

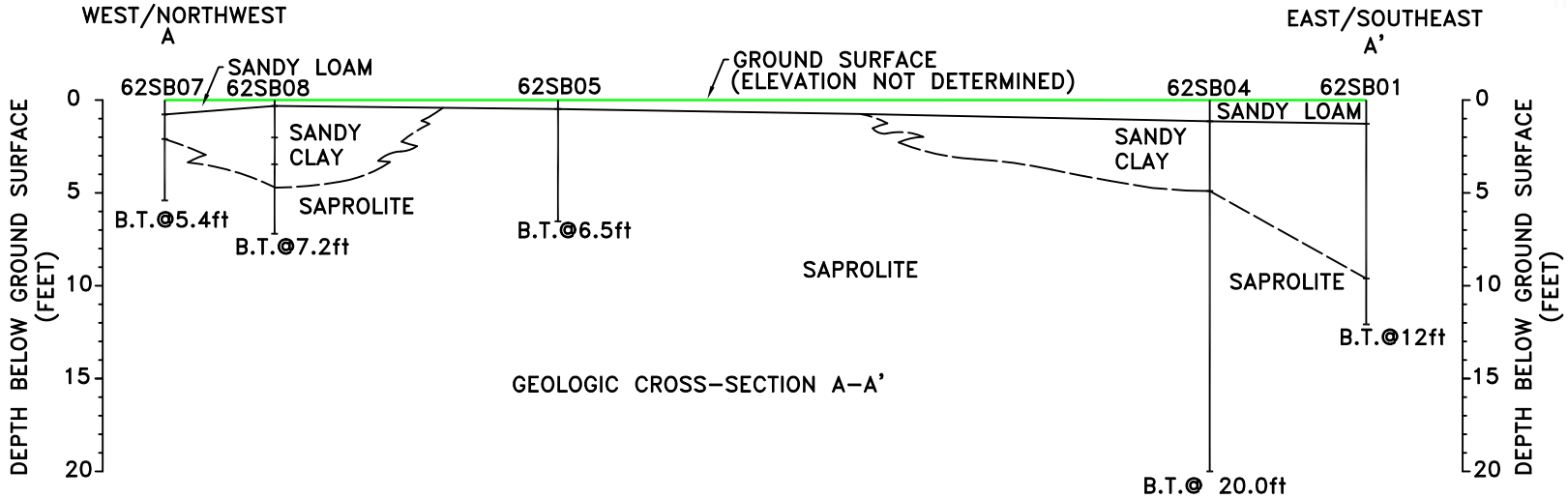
1 inch = 150 ft.

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

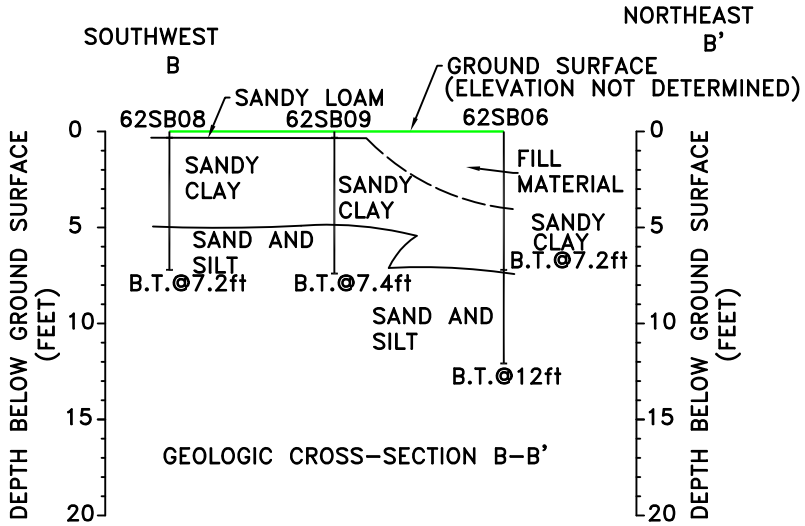
-1958 POLYGON FEATURE LEGEND
-1961 POLYGON FEATURE
-EXISTING SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
-EXISTING SURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
-SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION (PHASE I RFI 2008)
-SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION FOR PARTIALLY BURIED DRUM(PHASE I RFI 2008)
-SWMU BOUNDARY
A A' -CROSS SECTION LOCATION

FIGURE 5-1
GEOLOGIC CROSS SECTION LOCATION
SWMU 62-FORMER
BUNDY DISPOSAL AREA
PHASE I RFI REPORT

NAVAL ACTIVITY PUERTO RICO



GEOLOGIC CROSS-SECTION A-A'



GEOLOGIC CROSS-SECTION B-B'

THE SOIL BORING INFORMATION IS CONSIDERED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THE RESPECTIVE BORING LOCATIONS. SUBSURFACE CONDITIONS INTERPOLATED BETWEEN BORINGS ARE ESTIMATED BASED ON ACCEPTED SOIL ENGINEERING PRINCIPLES AND GEOLOGIC JUDGEMENT.

Baker

100 0 50 100

1 inch = 100 ft.
HORIZONTAL SCALE

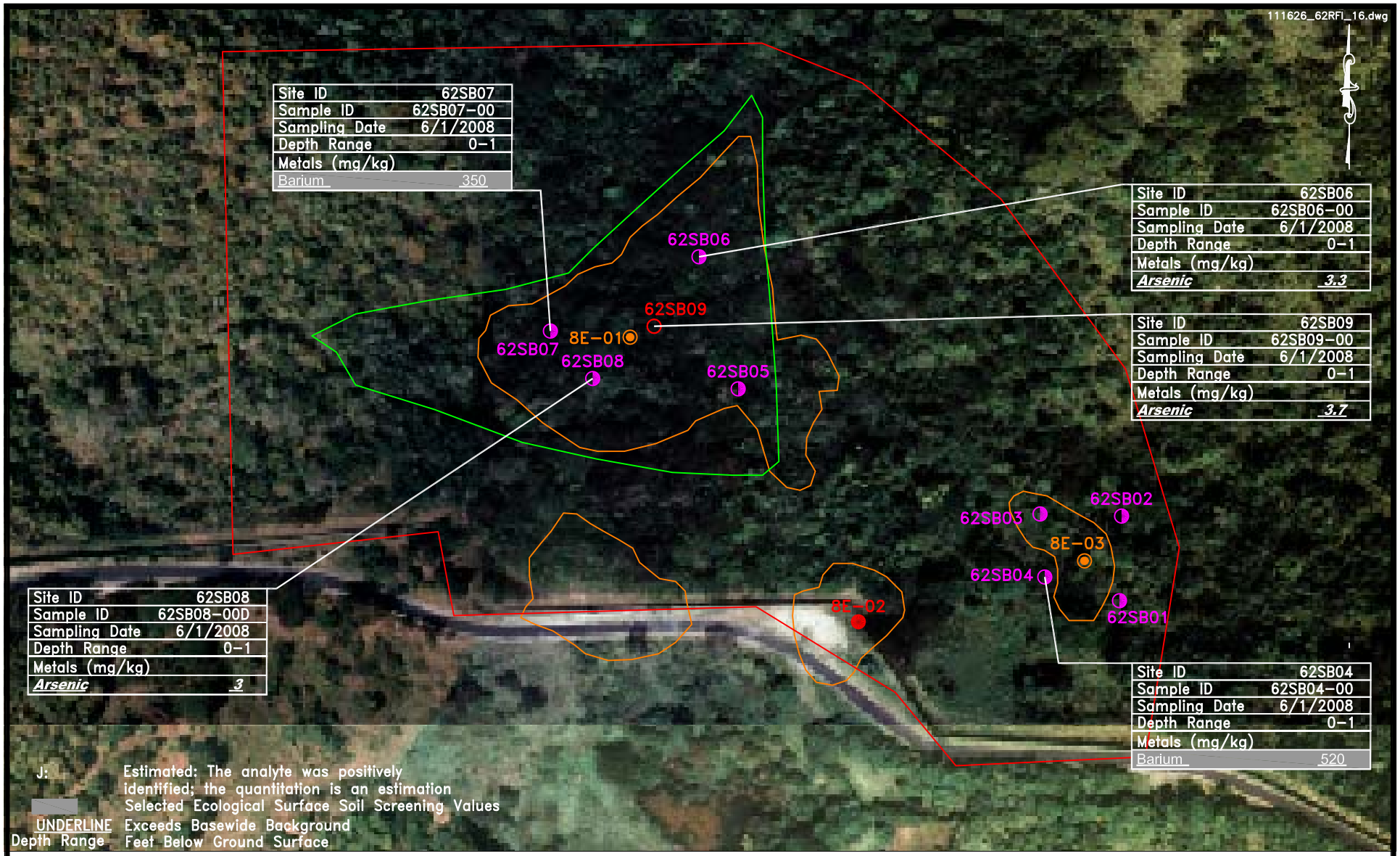
10 0 5 10

1 inch = 10 ft.
VERTICAL SCALE
EXACGERATION 8x

LEGEND

ft -FEET
B.T. -BORING TERMINATED
(FEET BELOW GROUND SURFACE)
—— -ESTIMATED CONTACT
– – -PROJECTED CONTACT
⊥ -SOIL BORING

FIGURE 5-2
GEOLOGIC CROSS SECTION A-A' AND
GEOLOGIC CROSS SECTION B-B'
SWMU 62-FORMER
BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO



Baker

150 0 75 150

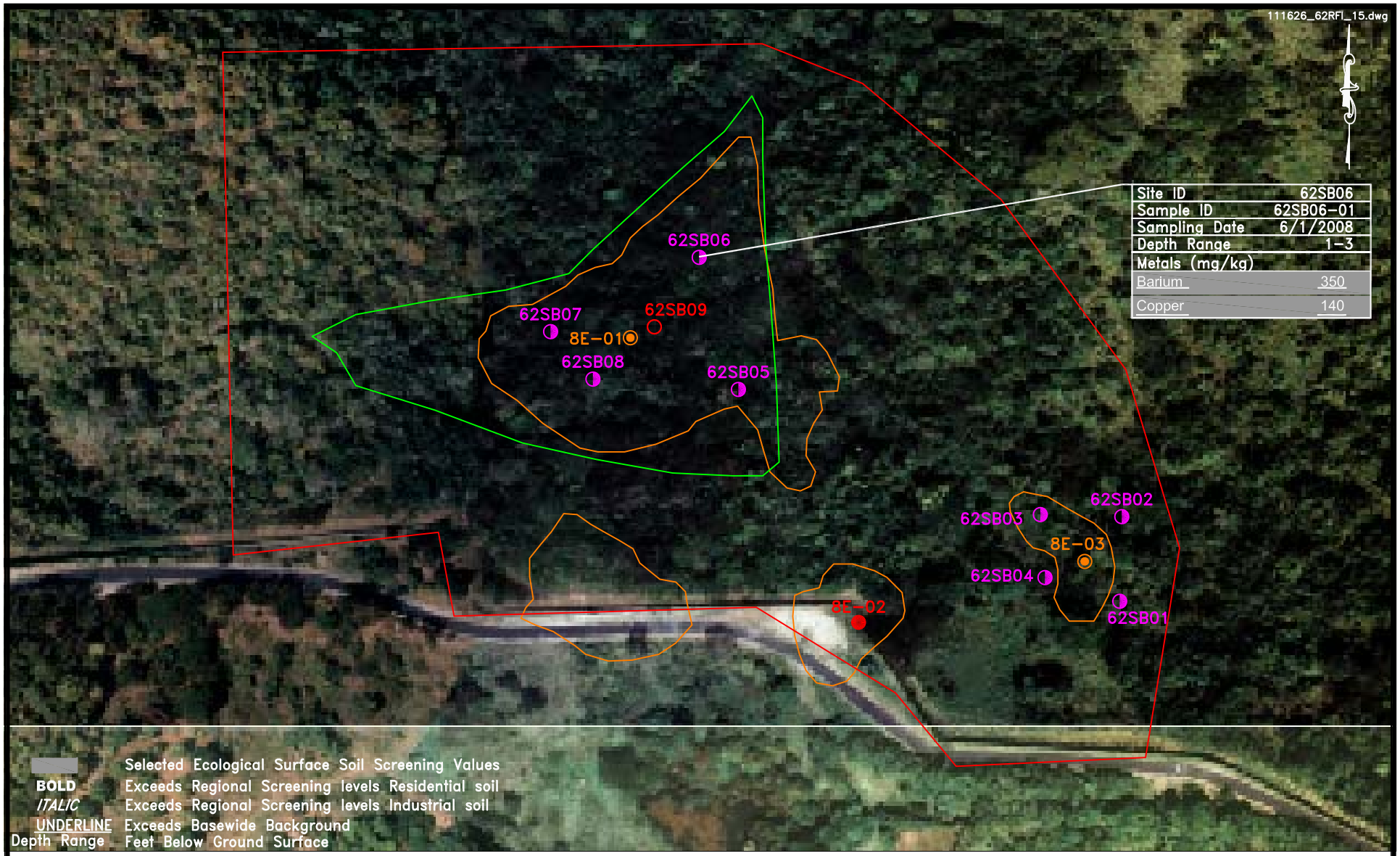
1 inch = 150 ft.

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

LEGEND

- -1958 POLYGON FEATURE
- -1961 POLYGON FEATURE
- -EXISTING SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
- -EXISTING SURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
- -SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION (PHASE I RFI 2008)
- -SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION FOR PARTIALLY BURIED DRUM(PHASE I RFI 2008)
- -SWMU BOUNDARY

FIGURE 6-1
SURFACE SOIL EXCEEDANCES OF ECOLOGICAL OR HUMAN HEALTH AND BACKGROUND SCREENING CRITERIA
SWMU 62-FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO



Baker

150 0 75 150

1 inch = 150 ft.

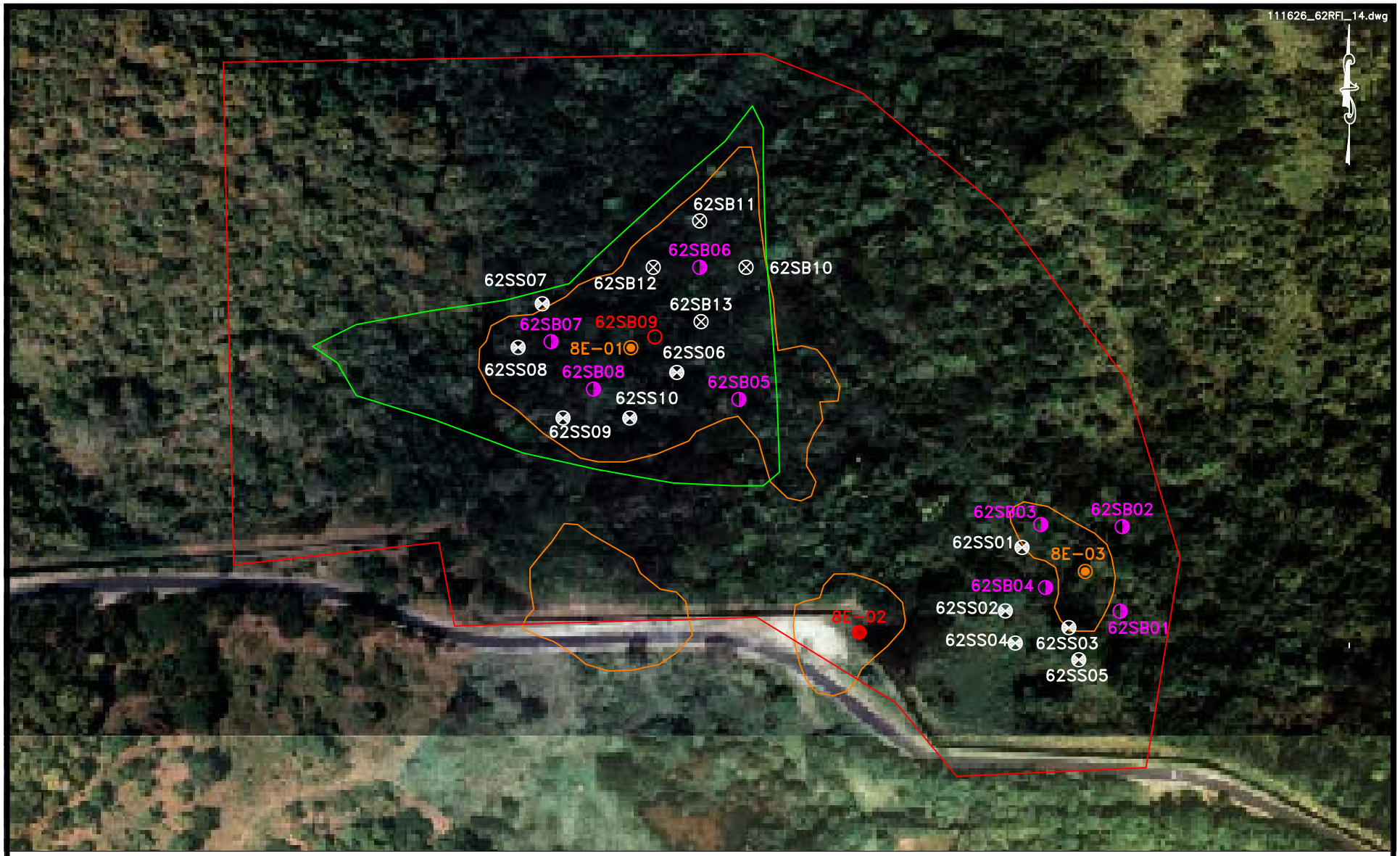
SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

LEGEND

- -1958 POLYGON FEATURE
- -1961 POLYGON FEATURE
- -EXISTING SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
- -EXISTING SURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
- -SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION (PHASE I RFI 2008)
- -SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION FOR PARTIALLY BURIED DRUM(PHASE I RFI 2008)
- -SWMU BOUNDARY

FIGURE 6-2
SUBSURFACE SOIL EXCEEDANCES OF ECOLOGICAL SCREENING CRITERIA AND BACKGROUND
SWMU 62-FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT

NAVAL ACTIVITY PUERTO RICO



Baker

150 0 75 150

1 inch = 150 ft.

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

LEGEND

- -1958 POLYGON FEATURE
- -1961 POLYGON FEATURE
- -EXISTING SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
- -EXISTING SURFACE SOIL SAMPLING LOCATION (PHASE II ECP 2004)
- -SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION (PHASE I RFI 2008)
- -SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION FOR PARTIALLY BURIED DRUM(PHASE I RFI 2008)
- -PROPOSED FULL RFI SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION
- -PROPOSED FULL RFI SURFACE SOIL SAMPLING LOCATION
- -SWMU BOUNDARY

FIGURE 7-1
PROPOSED FULL RFI
SAMPLE LOCATION MAP
SWMU 62-FORMER
BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO

APPENDIX A
2008 FIELD ACTIVITIES

SITE PHOTOGRAPHS

PHOTOS ASSOCIATED WITH THE SOUTHWESTERN PORTION OF SWMU 62 (SOIL BORINGS 62SB01 – 62SB04)

Photo A-1. Post site clearing during 2008 Phase I investigation. View looking south.

Photo A-2. Preparation for soil boring advancement at 62SB01.

Photo A-3. Preparation for soil boring advancement at 62SB04.

PHOTOS ASSOCIATED WITH THE CENTRAL PORTION OF SWMU 62
(SOIL BORINGS 62SB05 – 62SB09)

Photo A-4. Post site clearing during 2008 Phase I investigation.
View looking south.

Photo A-5. Remnants of discarded building materials adjacent to 62SB06.

Photo A-6. Water line discovered during site clearing activities.
View looking northeast.

Photo A-7. 62SB09 advanced near partially buried drum identified on site.

Photo A-8. Close-up view of partially buried drum.

Photo A-9. Miscellaneous building debris found near 62SB09.

FIELD LOG BOOK NOTES

Environmental Geologist – Joe Burawa

5/31/08
Cloudy 85°F

625B04

0-4' Sandy loam, soft, damp
4' Rec. to 0.8', dark brown
<1 ppm then sandy clay, orange brown, mod hard, fractured
4-8' saprolitic structure @ 4.5'
4' Rec. medium grained sand
<1 ppm

8-12' chert cobble @ 8.5'
4' Rec clayey sand @ 8.6 loose,
<1 ppm damp to dry, med-grained tan and orange brown
12-16' at 11.7 blue gray
4' Rec. sandy clay, mod hard
<1 ppm damp
@ 12' medium grained sand
16-20 and pebbles, dry, loose
4' Rec light gray and brown
<1 ppm blue gray sandy clay
16.4 to 15.2 then orange brown clayey sand moist to wet?. soft then tan sand loose, damp to dry like a beach sand.

Samples collected

625B04-00	1500
625B04-03	1510
625B04-03D	1510
625B04-05	1520

5/31/08
Cloudy

625B01

0-4'
2.7' Rec
<1ppm

Dark Brown Sandy loam
damp, soft to 1.9'
then clayey sand, dark
brown, damp soft
rocks throughout

4-8'
4.0' Rec
<1ppm

@ 6.4 Sandy Clay light brown
and orange, mod hard, damp
med grained sand, black
staining (organic)
clayey sand again @ 8.7'

8-12'
4' Rec
<1ppm

orange brown, soft, some
rocks damp
blue gray clay mixed in
starting @ 11.5, rocks
damp

Samples Collected

625B01-00	1550
625B01-03	1555
625B01-05	1600

6/1/08
Cloudy 85°F

625B02

0-4' Dark brown sandy clay loam
2.7' Rec damp to moist, soft to 1.2'
<1ppm then Sandy clay, medium brown, mod hard, damp, fine to med. grained sand.

4-8' Sandy clay continued
4' Rec med brown, mod hard, stiff
<1ppm medium grained sand, iron staining

becomes light brown) fan @ 8.5'

8-12' very stiff, mod hard, damp
4' Rec occasional pebble
<1ppm

Samples Collected

625B02-00	0810
625B02-01	0820
625B02-03	0825

6/1/08

62SB03

0-4
2.8' Rec
<1 ppm

Sandy Loam, dark brown, soft, moist to 0.9' becomes sandy clay med brown / tan, med hard damp, med-grained sand

4-8'
4' Rec.
<1 ppm

@ 4.8' becomes silty sand, loose, dry, tan some rock throughout

8-12'
4' Rec
<1 ppm

Samples Collected

62SB03-00

62SB03-01

62SB03-05

6/1/08
Rainy

625B06

0-4'
2.7' Rec
<1 ppm

Gray silty sand with rocks shells, fill material, possibly burnt, loose, soft dry

becomes sandy clay 5.7'

4-8'
3.8' Rec
<1 ppm

med brown and tan, mod soft to mod hard, damp
med grained sand zones

8-12'
4' Rec
<1 ppm

@ 7.8' Loose silty sand tan, mod soft, rocks throughout iron staining, trace of clay

silty clay @ 11.7' med brown orange, soft ↓

Samples Collected

625B06-00 0925

625B06-01 0940

625B06-03 0950

Drilled through mound. near water pipe

6/1/08

625B05

0-4' Sandy loam to 0.4', damp
3.1' Rec Dark brown, soft, gravel
<1 ppm from 0.4 to 0.6'
then silty sand, brownish gray
and tan with pebbles, loose
4-8' dry, med-grained sand, some
2.5' Rec. clay
<1 ppm Geoprobe Refusal @ 6.5'

~~8-12'~~

Samples Collected.

625B05 -00	1000	
625B05 -01	1005	metals
625B05 -02	1010	metals

625B07

0-4'	Sandy Loam, dark brown,
3.3' Rec	soft, gravelly from 0.5
<1 ppm	to 0.7'
	then sandy clay mixed with
4-8'	gravel, gray/brown mod hard
1.4' Rec.	damp
<1 ppm	@ 2.2' tan and orange brown
	sand, loose, dry, pebbles
~~8-12'~~	throughout.

Geoprobe Refusal 5.4

6/1/08

Samples Collected

625B07-00	1020
625B07-01	1030
625B07-02	1040

62SB08

0-4' Sandy Loam top 2" dark brown, soft, damp then sandy clay med to dark brown mod hard, damp to dry, gravel throughout, iron staining
3.3' Rec
<1 ppm

4-8' @ 2.1' Sand, some clay stones throughout, dry 3.5'
3.2' Rec.
<1 ppm
Sandy clay med. brown, mod hard, damp, stones

8-~~12~~' stones @ 8.8' to 5.2' then tan/orange brown sand and silt, some pebbles, loose dry
Geoprobe refusal @ 7.2'

6/1/08

Samples Collected

62SB08-00	1050
62SB08-00D	↓
62SB08-00MS	↓
62SB08-00MSD	↓
62SB08-01	1110
62SB08-02	1120
62SB08-02D	↓
62SB08-02MS	↓
62SB08-02MSD	↓

6/1/08

62SB09

0-4'
2.9' Rec
<1ppm

Sandy loam, soft, damp to moist dark brown top 2" then olive green to 0.6' gravel to 0.6-0.9' then tan/orange brown sand to 1.8'

4-8'
3.4' Rec
<1ppm

then orange brown sandy clay soft, damp to moist, iron stains @ 4.5' tan sand and pebbles medium grained, loose, dry

Geoprobe Refusal @ 7.4'

Samples Collected

62SB09-00	1150
62SB09-01	1200
62SB09-02	1210

Sample collected near rusted 55-gal Drum

SOIL BORING LOGS

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO.: 62SB01

COORDINATES: EAST: 918564.028 NORTH: 793134.289

ELEVATION: SURFACE:

Rig: Geoprobe 6620 DT Track Rig	MC Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2"				5/31/08	0.0 - 12.0	85° Cloudy	
Length	4'							
Type	Acetate							
Hammer Wt.								
Fall								

Remarks:

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
1, 2		D-1	2.7 68%		62SB01-00 (0-1')	<1	Dark brown, sandy loam, damp, soft (1.9)	
3, 4	4.0						Clayey sand, dark brown, damp soft rocks throughout (6.4)	
5, 6		D-2	4.0 100%		62SB01-03 (5-7')	<1		
7, 8	8.0						Sandy clay, light brown and orange medium hard, damp, medium grained sand black staining (organic) (8.7)	
9, 10		D-3	4.0 100%		62SB01-05 (9-11')	<1	Clayey sand, orange brown soft, some rocks, damp	

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP.: Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO.: 62SB01 SHEET 1 OF 2

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO.: 62SB01

SAMPLE TYPE	DEFINITIONS
S = Split Spoon A = Auger	SPT = Standard Penetration Test (ASTM D1586)
T = Shelby Tube W = Wash	PID = Photo Ionization Detector Measurement
R = Air Rotary C = Core	MSL = Mean Sea Level
D = Direct Push P = Piston N = No Sample	ps/bg = point source/background

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
11		D-3	4.0 100%			<1	continued from above	
							11.5	
12	12.0						Blue gray clay, rocks, damp	
							END OF BORING AT 12.0'	
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP.: Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO.: 62SB01 SHEET 2 OF 2

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO. 62SB02

COORDINATES: EAST: 918566.251 NORTH: 793225.415

ELEVATION: SURFACE:

Rig: Geoprobe 6620 DT Track Rig	MC Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2"				6/1/08	0.0 - 12.0	85° Cloudy	
Length	4'							
Type	Acetate							
Hammer Wt.								
Fall								

Remarks:

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
1, 2, 3, 4	4.0	D-1	2.7 68%		62SB02-00 (0-1') 62SB02-01 (1-3')	<1	Dark brown sandy clay, loam, damp to moist 1.9'	
							Soft, sandy clay, medium brown moderate hard, damp, fine to medium grained sand 6.4'	
5, 6, 7, 8	8.0	D-2	4.0 100%		62SB02-03 (5-7')	<1	Sand, clay, medium brown, moderate hard, stiff, medium grained sand iron staining 8.7'	
9, 10		D-3	4.0 100%			<1	Light brown/tan, very stiff moderate hard, damp, occasional pebble	

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP.: Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO. 62SB02 SHEET 1 OF 2

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO. 62SB02

SAMPLE TYPE	DEFINITIONS
S = Split Spoon A = Auger	SPT = Standard Penetration Test (ASTM D1586)
T = Shelby Tube W = Wash	PID = Photo Ionization Detector Measurement
R = Air Rotary C = Core	MSL = Mean Sea Level
D = Direct Push P = Piston N = No Sample	ps/bg = point source/background

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
11		D-3	4.0 100%			<1		
12	12.0						END OF BORING AT 12.0'	
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP.: Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO. 62SB02 SHEET 2 OF 2

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO. 62SB03

COORDINATES EAST: 918478.407 NORTH: 793227.637

ELEVATION: SURFACE:

Rig: Geoprobe 6620 DT Track Rig	MC Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2"				6/1/08	0.0 - 12.0	85° Cloudy	
Length	4'							
Type	Acetate							
Hammer Wt.								
Fall								

Remarks:

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
1, 2, 3, 4 (4.0)	D-1	2.8 70%		62SB03-00 (0-1) 62SB03-01 (1-3')	<1	Sandy loam, dark brown, soft (0.9') Sandy clay, medium brown/tan, moderate hard, dry, medium grained sand (4.8')	
5, 6, 7, 8 (8.0)	D-2	4.0 100%			<1	Silty sand, loose, dry, tan some rock throughout	
9, 10	D-3	4.0 100%		62SB03-05 (9-11')	<1	Silty sand, loose, dry, tan some rock throughout	

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP.: Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO. 62SB03 SHEET 1 OF 2

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO.: 62SB03

SAMPLE TYPE	DEFINITIONS
S = Split Spoon A = Auger	SPT = Standard Penetration Test (ASTM D1586)
T = Shelby Tube W = Wash	PID = Photo Ionization Detector Measurement
R = Air Rotary C = Core	MSL = Mean Sea Level
D = Direct Push P = Piston N = No Sample	ps/bg = point source/background

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
11		D-3	4.0 100%			<1		
12	12.0						END OF BORING AT 12.0'	
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP.: Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO.: 62SB03 SHEET 2 OF 2

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO. 62SB04

COORDINAT EAST: 918483.465 NORTH: 793159.849

ELEVATION: SURFACE:

Rig: Geoprobe 6620 DT Track Rig	MC Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2"				5/31/08	0.0 - 20.0	85° Cloudy	
Length	4'							
Type	Acetate							
Hammer Wt.								
Fall								

Remarks:

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
1					62SB04-00 (0-1')		Sandy loam, soft, damp, dark brown 0.8'	
2		D-1	4.0 100%			<1	Sandy clay, orange brown, moderate hard, fractured	
3								
4	4.0						4.0'	
5					62SB04-03 62SB04-03D (5-7')		Saprolite structure, medium grained sand	
6		D-2	4.0 100%			<1		
7								
8	8.0							
9					62SB04-05 (9-11')		Chert cobble, clayey sand 8.6'	
10		D-3	4.0 100%			<1	loose, damp to dry, medium grained, tan and orange brown	

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP. Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO. 62SB04 SHEET 1 OF 2

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO. 62SB04

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
ps/bg = point source/background

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
11		D-3	4.0 100%			<1	Sandy clay, blue/gray, moderate hard, damp	
12	12.0						11.7'	
13		D-4	4.0 100%			<1	Medium grained sand and pebbles, dry, loose, light gray and brown	
14							Sandy clay, blue/gray, 14.4'	
15							orange brown clayey sand, moist to wet, soft tan sand, loose, damp to dry, like beach sand	
16	16.0							
17		D-5	4.0 100%			<1		
18								
19								
20	20.0							
21							END OF BORING AT 20.0'	
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP.: Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO. 62SB04 SHEET 2 OF 2

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO. 62SB05

COORDINAT EAST: 918153.1 NORTH: 793362.4

ELEVATION: SURFACE:

Rig: Geoprobe 6620 DT Track Rig	MC Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2"				6/1/08	0.0 - 6.5	85° Cloudy	
Length	4'							
Type	Acetate							
Hammer Wt.								
Fall								

Remarks:

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
1		D-1	3.1 78%		62SB05-00 (0-1')	<1	Sandy loam to 0.4', damp, dark brown, soft 1.0'	
2					62SB05-01 (1-3')		Silty sand, brownish gray and tan pebbles, loose	
3								
4	4.0						4.0'	
5		D-2	2.5 63%		62SB05-02 (3-5')	<1	Dry medium grained sand, some clay	
6								
7							GEOPROBE REFUSAL AT 6.5'	
8	8.0							
9								
10								

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP.: Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO. 62SB05 SHEET 1 OF 1

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO. 62SB06

COORDINAT EAST: 918110.889 NORTH: 793504.694

ELEVATION: SURFACE:

Rig: Geoprobe 6620 DT Track Rig	MC Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2"				6/1/08	0.0 - 12.0	85° Rainy	
Length	4'							
Type	Acetate							
Hammer Wt.								
Fall								

Remarks: Drilled through mound near water pipe.

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
1, 2, 3, 4	4.0	D-1	2.7 68%		62SB06-00 (0-1') 62SB06-01 (1-3')	<1	Gray silty sand with rocks and shells, fill material, possibly burnt, loose, soft, dry 5.7'	
5, 6, 7, 8	8.0	D-2	3.8 95%		62SB06-03 (5-7')	<1	Sandy clay, medium brown and tan, medium soft to moderate hard, dry medium grained sand zones 7.8'	
9, 10		D-3	4.0 100%			<1	Loose silty sand, tan, moderate soft, rocks throughout iron staining, trace of clay	

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP.: Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO. 62SB06 SHEET 1 OF 2

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO.: 62SB06

SAMPLE TYPE	DEFINITIONS
S = Split Spoon A = Auger	SPT = Standard Penetration Test (ASTM D1586)
T = Shelby Tube W = Wash	PID = Photo Ionization Detector Measurement
R = Air Rotary C = Core	MSL = Mean Sea Level
D = Direct Push P = Piston N = No Sample	ps/bg = point source/background

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
11		D-3	4.0 100%			<1	11.7'	
12	12.0						Silty clay, medium brown/orange, soft	
							END OF BORING AT 12.0'	
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP.: Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO.: 62SB06 SHEET 2 OF 2

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO. 62SB07

COORDINATES EAST: 917950.767 NORTH: 793424.681

ELEVATION: SURFACE:

Rig: Geoprobe 6620 DT Track Rig	MC Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2"				6/1/08	0.0 - 5.4	85° Cloudy	
Length	4'							
Type	Acetate							
Hammer Wt.								
Fall								

Remarks:

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
1					62SB07-00 (0-1')		Sandy loam, dark brown, soft, gravel 0.7'	
2		D-1	3.3 83%		62SB07-01 (1-3')	<1	Sand clay mixed with gravel gray/brown, moderate hard, damp 2.2'	
3							Sand, tan/orange/brown, loose dry, pebbles throughout	
4	4.0							
5	5.5	D-2	1.4 35%		62SB07-02 (3-5')	<1		
6							GEOPROBE REFUSAL AT 5.4'	
7								
8								
9								
10								

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP.: Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO. 62SB07 SHEET 1 OF 1

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO. 62SB08

COORDINATES EAST: 917996.4 NORTH: 793373.6

ELEVATION: SURFACE:

Rig: Geoprobe 6620 DT Track Rig	MC Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2"				6/1/08	0.0 - 7.2	85° Cloudy	
Length	4'							
Type	Acetate							
Hammer Wt.								
Fall								

Remarks:

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
1, 2, 3, 4	4.0	D-1	3.3 83%		62SB08-00 62SB08-00D 62SB08-00MS 62SB08-00MSD (0-1') 62SB08-01 (1-3')	<1	Sandy loam top 2", dark brown, soft, damp (0.17'); Sandy clay, medium to dark brown, moderate hard, damp to dry, gravel throughout, iron staining (2.1'); Sand, some clay, stones throughout dry (3.5'); Sandy clay, medium brown, moderately hard, damp, stones (4.8')	
5, 6, 7, 8	8.0	D-2	3.2 80%		62SB08-02 62SB08-02D 62SB08-02MS 62SB08-02MSD (3-5')	<1	Stones (5.2'); Tan/orange brown sand and silt, some pebbles, loose, dry (7.2'); GEOPROBE REFUSAL AT 7.2'	
9, 10								

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP. Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO. 62SB08 SHEET 1 OF 1

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Naval Activity Puerto Rico - SWMU 62

SO NO.: 111626 BORING NO. 62SB09

COORDINATES: EAST: 918062.516 NORTH: 793429.839

ELEVATION: SURFACE:

Rig: Geoprobe 6620 DT Track Rig	MC Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2"				6/1/08	0.0 - 7.4	85° Cloudy	
Length	4'							
Type	Acetate							
Hammer Wt.								
Fall								

Remarks: Sampled collected near rusted 55-Gallon Drum

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm)	Visual Description	Elevation (Ft. MSL)
1, 2, 3, 4	4.0	D-1	2.9 73%		62SB09-00 (0-1') 62SB09-01 (1-3')	<1	Sandy loam, soft, damp to moist, dark brown top 2"; olive green to 0.6', gravel from 0.6' to 0.9' (0.9'); Tan/orange brown sand (1.8'); Orange brown sandy clay, soft, damp to moist, iron stains (4.5')	
5, 6, 7, 8	8.0	D-2	3.4 85%		62SB09-02 (3-5')	<1	Tan sand and pebbles, medium grained, loose, dry (7.4'); GEOPROBE REFUSAL AT 7.4'	
9, 10								

DRILLING CO.: JFA Geological & Environmental Scientists BAKER REP. Joe Burawa

DRILLER: Domingo Gonzalez - Rodriguez BORING NO. 62SB09 SHEET 1 OF 1

CHAIN-OF-CUSTODY FORMS

Serial Number 005111

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

FedEx Airbill No.: 8617 8652 8005

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

QA/QC-001

Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE	PROJECT NO.	PROJECT LOCATION (STATE)
NAPR 7 Site Investigation	111626	PR

TAL (LAB) PROJECT MANAGER	P.O. NUMBER	CONTRACT NO.
Kathy E. Smith		

CLIENT (SITE) PM	CLIENT PHONE	CLIENT FAX
Mark Kimes	412.337.7465	

CLIENT NAME	CLIENT E-MAIL
Michael Baker Jr., Inc.	mkimes@mbakercorp.com

CLIENT ADDRESS: 100 Airside Dr., Moon Township, PA 15108

COMPANY CONTRACTING THIS WORK (if applicable): Michael Baker Jr., Inc.

PAGE 1 OF 1

STANDARD REPORT DELIVERY ☒
DATE DUE 28 Day TAT

EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE _____

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	App IX VOCs	App IX SVOCs	LL PAHs	App IX Metals (Total)	App IX Metals (Dissolved)	TPH GRO	TPH DRO	App IX Pesticides	App IX PCBs	TOC	REMARKS
								PRESERVATIVE										
								NUMBER OF CONTAINERS SUBMITTED										
4/28/08	1700	ER01	G	✓				3	2		1		3	2				
4/29/08	1700	ER02	G	✓				3	2		1		3	2				
4/30/08	1700	ER03	G	✓				3	2		1		3	2				
5/1/08	1700	ER04	G	✓				3	2		1							
5/2/08	0820	ER05	G	✓				3	2		1							
5/2/08	0815	FB01	G	✓				3	2		1		3	2				
5/2/08	0850	FB02	G	✓				3	2		1		3	2				
5/2/08		GATB01	G	✓				3					3					

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
			Michael E. Kimes	5/2/08	1500			

RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
	4/28/08	0700						

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SAVANNAH LOG NO.	LABORATORY REMARKS
	5/5/08	0909	YES ○ NO ○		680-36419	

TAL8240-680 (1207)

Serial Number 006504

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

FedEx Airbill No.: 8617 8652 7546

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

62-001

Alternate Laboratory Name/Location

Phone:
Fax:

PAGE 1 OF 4

PROJECT REFERENCE: NAPR 7 Site Investigation	PROJECT NO.: 111626	PROJECT LOCATION (STATE): PR
TAL (LAB) PROJECT MANAGER: Kathy E. Smith	P.O. NUMBER:	CONTRACT NO.:
CLIENT (SITE) PM: Mark Kimes	CLIENT PHONE: 412.337.7465	CLIENT FAX:
CLIENT NAME: Michael Baker Jr., Inc.	CLIENT E-MAIL: mkimes@mbakercorp.com	
CLIENT ADDRESS: 100 Airside Drive., Moon Township, PA 15108		
COMPANY CONTRACTING THIS WORK (if applicable): Michael Baker Jr., Inc.		

STANDARD REPORT DELIVERY

DATE DUE 28 Day TAT

EXPEDITED REPORT DELIVERY (SURCHARGE)

DATE DUE _____

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE; AQUEOUS (WATER); SOLID OR SEMISOLID; AIR; NONAQUEOUS LIQUID (OIL, SOLVENT, ...)

REQUIRED ANALYSIS / NUMBER OF CONTAINERS SUBMITTED

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G)	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	App IX VOCs	App IX SVOCs	LL PAHs	App IX Metals (Total)	App IX Metals (Dissolved)	TPH GRO	TPH DRO	App IX Pesticides	App IX PCBs	TOC	REMARKS
								PRESERVATIVE										
5-31-08	1550	62SB01-00	G		X			3			1				1			
	1555	62SB01-03	G		X						1							
	1600	62SB01-05	G		X						1							
	1500	62SB04-00	G		X			3			1				1			
	1510	62SB04-03	G		X						1							
	1510	62SB04-03D	G		X						1							
5-31-08	1520	62SB04-05	G		X						1							
6-1-08	0810	62SB02-00	G		X			3			1				1			
6-1-08	0820	62SB02-01	G		X						1							
6-1-08	0825	62SB02-03	G		X						1							
6-1-08	0840	62SB03-00	G		X			3	✓	✓	1				1	✓		
6-1-08	0850	62SB03-01	G		X			3	✓	✓	1				1	✓		

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
			[signature]	6/2/08	1500			

RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SAVANNAH LOG NO.	LABORATORY REMARKS
[signature]	060308	0921	YES ◯ NO ◯		680-37251	

TAL8240-680 (1207)

Serial Number 006503

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

FedEx Airbill No.: 8617 8652 7546

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

62-001

Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE: NAPR 7 Site Investigation	PROJECT NO.: 111626	PROJECT LOCATION (STATE): PR
TAL (LAB) PROJECT MANAGER: Kathy E. Smith	P.O. NUMBER:	CONTRACT NO.:
CLIENT (SITE) PM: Mark Kimes	CLIENT PHONE: 412.337.7465	CLIENT FAX:
CLIENT NAME: Michael Baker Jr., Inc.	CLIENT E-MAIL: mkimes@mbakercorp.com	
CLIENT ADDRESS: 100 Airside Drive., Moon Township, PA 15108		
COMPANY CONTRACTING THIS WORK (if applicable): Michael Baker Jr., Inc.		

PAGE 2 OF 4

STANDARD REPORT DELIVERY ●

DATE DUE 28 Day TAT

EXPEDITED REPORT DELIVERY (SURCHARGE) ○

DATE DUE _____

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	App IX VOCs	App IX SVOCs	LL PAHs	App IX Metals (Total)	App IX Metals (Dissolved)	TPH GRO	TPH DRO	App IX Pesticides	App IX PCBs	TOC	REMARKS
								NUMBER OF CONTAINERS SUBMITTED										
6-1-08	0900	62 SB 03-05	G					3	✓	✓	1				1	✓		
	1000	62 SB 05-00	G					3			1				1			
	1005	62 SB 05-01	G								1							
	1010	62 SB 05-02	G						✓		1							
	0925	62 SB 06-00	G					3	✓	✓	1				1	✓		
	0940	62 SB 06-01	G					3	✓	✓	1				1	✓		
6-1-08	0950	62 SB 06-03	G					3	✓	✓	1				1	✓		
5-31-08		62 TB01	G	X				3					●					VOC ONLY
5-30-08	1610	ER23	G	X				3		2	1		3	2				Ground Water Tubing
6-1-08	1020	62 SB07-00	G		X			3			1				1			
6-1-08	1030	62 SB07-01	G		X						1							
6-1-08	1040	62 SB07-02	G		X						1							

PRESERVATIVE

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
			[signature]	6/2/08	1500			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SAVANNAH LOG NO.	LABORATORY REMARKS
[signature]	060308	0921	YES ○ NO ○		680-37251	

TAL8240-680 (1207)

Serial Number 006506

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

FedEx Airbill No.: 8617 8652 7546

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

62-001

Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE: NAPR 7 Site Investigation	PROJECT NO.: 111626	PROJECT LOCATION (STATE): PR
TAL (LAB) PROJECT MANAGER: Kathy E. Smith	P.O. NUMBER:	CONTRACT NO.:
CLIENT (SITE) PM: Mark Kimes	CLIENT PHONE: 412.337.7465	CLIENT FAX:
CLIENT NAME: Michael Baker Jr., Inc.	CLIENT E-MAIL: mkimes@mbakercorp.com	
CLIENT ADDRESS: 100 Airside Drive., Moon Township, PA 15108		
COMPANY CONTRACTING THIS WORK (if applicable): Michael Baker Jr., Inc.		

PAGE 3 OF 4

STANDARD REPORT DELIVERY ●

DATE DUE 28 Day TAT

EXPEDITED REPORT DELIVERY (SURCHARGE) ○

DATE DUE _____

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE; AQUEOUS (WATER); SOLID OR SEMISOLID; AIR; NONAQUEOUS LIQUID (OIL, SOLVENT, ...)

REQUIRED ANALYSIS / NUMBER OF CONTAINERS SUBMITTED

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G)	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	App IX VOCs	App IX SVOCs	LL PAHs	App IX Metals (Total)	App IX Metals (Dissolved)	TPH GRO	TPH DRO	App IX Pesticides	App IX PCBs	TOC	REMARKS
6-1-08	1050	62 SB 08-00	G		X			3			1				1			
	1050	62 SB 08-00D	G		X			3	✓	✓	1				1	✓		
	1050	62 SB08-00 MS	G		X			3										
	1050	62 SB 08-00 MSD	G		X			3										
	1050	62 SB 08-00 MS/MSD	G		X				✓	✓	1				1	✓		
	1110	62SB 08-01	G		X			3	✓	✓	1				1	✓		
	1120	62 SB 08-02	G		X			3	✓	✓	1				1	✓		
	1120	62SB08-02D	G		X			3	✓	✓	1				1	✓		
	1120	62SB08-02 MS	G		X			3										
	1120	62SB08-02 MSD	G		X			3										
	1120	62SB08-02 MS/MSD	G		X				✓	✓	1				1	✓		
6-1-08	1150	62SB09-00	G		X			3	✓	✓	1				1	✓		

PRESERVATIVE

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
				6/2/08	1500			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SAVANNAH LOG NO.	LABORATORY REMARKS
	060308	0921	YES ○ NO ○		680-37251	

TAL8240-680 (1207)

Serial Number UU65U8

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

FedEx Airbill No.: 8617 8652 7546

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

62-001

Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE	PROJECT NO.	PROJECT LOCATION (STATE)
NAPR 7 Site Investigation	111626	PR
TAL (LAB) PROJECT MANAGER: Kathy E. Smith	P.O. NUMBER	CONTRACT NO.
CLIENT (SITE) PM: Mark Kimes	CLIENT PHONE: 412.337.7465	CLIENT FAX
CLIENT NAME: Michael Baker Jr., Inc.	CLIENT E-MAIL: mkimes@mbakercorp.com	
CLIENT ADDRESS: 100 Airside Drive., Moon Township, PA 15108		
COMPANY CONTRACTING THIS WORK (if applicable): Michael Baker Jr., Inc.		

PAGE 4 OF 4

STANDARD REPORT DELIVERY ●

DATE DUE 28 Day TAT

EXPEDITED REPORT DELIVERY (SURCHARGE) ○

DATE DUE _____

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	App IX VOCs	App IX SVOCs	LL PAHs	App IX Metals (Total)	App IX Metals (Dissolved)	TPH GRO	TPH DRO	App IX Pesticides	App IX PCBs	TOC	REMARKS
								PRESERVATIVE										
								NUMBER OF CONTAINERS SUBMITTED										
6-1-08	1200	62SB09-01	G		X			3	✓	✓	1				1	✓		
6-1-08	1210	62SB09-02	G		X			3	✓	✓	1				1	✓		
6-1-08		62TB03 APV 6/1/08	G	X				3										

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
				6/2/08	1500			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SAVANNAH LOG NO.	LABORATORY REMARKS
	060308	0921	YES ○ NO ○		680-37251	

TAL 8240-680 (1207)

Serial Number 006521

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

FedEx Airbill No.: 8617 8652 7708

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

61-002

Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE: NAPR 7 Site Investigation	PROJECT NO.: 111626	PROJECT LOCATION (STATE): PR
TAL (LAB) PROJECT MANAGER: Kathy E. Smith	P.O. NUMBER:	CONTRACT NO.:
CLIENT (SITE) PM: Mark Kimes	CLIENT PHONE: 412.337.7465	CLIENT FAX:
CLIENT NAME: Michael Baker Jr., Inc.	CLIENT E-MAIL: mkimes@mbakercorp.com	
CLIENT ADDRESS: 100 Airside Drive., Moon Township, PA 15108		
COMPANY CONTRACTING THIS WORK (if applicable): Michael Baker Jr., Inc.		

PAGE 3 OF 3

STANDARD REPORT DELIVERY ●

DATE DUE 28 Day TAT

EXPEDITED REPORT DELIVERY (SURCHARGE) ○

DATE DUE _____

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

PRESERVATIVE

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	App IX VOCs	App IX SVOCs	LL PAHs	App IX Metals (Total)	App IX Metals (Dissolved)	TPH GRO	TPH DRO	App IX Pesticides	App IX PCBs	TOC	REMARKS
6/3/08	1530	61SB 19-01	G		X			3	1		1							
6/3/08	1540	61SB 19-02	G		X			3	1		1							
6/3/08	1520	61SB 19-00	G		X			3	1		1							
5/31/08		61TB 02	G	X				3										VOC's only
5/31/08	0850	ER24	G	X				3	2		1		3	2	2	✓		
6/1/08	1640	ER25	G	X				3	2		1		3	2	2	✓		
6/2/08	0740	ER26	G	X				3	2		1		3		2			
6/3/08	0830	ER27	G	X				3	2		1		3	2	2			
6/4/08	1000	ER28	G	X				3	2		1							
6/3/08	1000	61SB 17-01	G		X			3	1		1							

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
			[signature]	6/4/08	1500			

RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SAVANNAH LOG NO.	LABORATORY REMARKS
KH	6/5/08	0931	YES ○ NO ○		680-37369	

TAL8240-680 (1207)

Serial Number 000010

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

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TestAmerica Savannah
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Savannah, GA 31404

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71-003

Alternate Laboratory Name/Location

Phone:
Fax:

PAGE 1 OF

PROJECT REFERENCE: NAPR 7 Site Investigation	PROJECT NO.: 111626	PROJECT LOCATION (STATE): PR
TAL (LAB) PROJECT MANAGER: Kathy E. Smith	P.O. NUMBER:	CONTRACT NO.:
CLIENT (SITE) PM: Mark Kimes	CLIENT PHONE: 412.337.7465	CLIENT FAX:
CLIENT NAME: Michael Baker Jr., Inc.	CLIENT E-MAIL: mkimes@mbakercorp.com	
CLIENT ADDRESS: 100 Airside Drive., Moon Township, PA 15108		
COMPANY CONTRACTING THIS WORK (if applicable): Michael Baker Jr., Inc.		

STANDARD REPORT DELIVERY ● DATE DUE 28 Day TAT

EXPEDITED REPORT DELIVERY (SURCHARGE) ○ DATE DUE _____

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

PRESERVATIVE

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	App IX VOCs	App IX SVOCs	LL PAHs	App IX Metals (Total)	App IX Metals (Dissolved)	TPH GRO	TPH DRO	App IX Pesticides	App IX PCBs	TOC	REMARKS
								NUMBER OF CONTAINERS SUBMITTED										
6/3/08	1420	71GW06	G	X				3	2		1	1	3	2	✓			GRO's only
5/31/08		71TB02	G	X									3					

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
				6/4/08	1500			
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SAVANNAH LOG NO.	LABORATORY REMARKS
Kh	6/5/08	0931	YES ○ NO ○		600-37369	

TAL8240-680 (1207)

Serial Number 006518

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

FedEx Airbill No.: 8617 8652 7693

TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404

Website: www.testamericainc.com
Phone: (912) 354-7858
Fax: (912) 352-0165

IDW-001

Alternate Laboratory Name/Location

Phone:
Fax:

PROJECT REFERENCE	PROJECT NO.	PROJECT LOCATION (STATE)
NAPR 7 Site Investigation	111626	PR

TAL (LAB) PROJECT MANAGER	P.O. NUMBER	CONTRACT NO.
Kathy E. Smith		

CLIENT (SITE) PM	CLIENT PHONE	CLIENT FAX
Mark Kimes	412.337.7465	

CLIENT NAME	CLIENT E-MAIL
Michael Baker Jr., Inc.	mkimes@mbakercorp.com

CLIENT ADDRESS: 100 Airside Drive., Moon Township, PA 15108

COMPANY CONTRACTING THIS WORK (If applicable): Michael Baker Jr., Inc.

PAGE 1 OF 1

STANDARD REPORT DELIVERY ●

DATE DUE 28 Day TAT

EXPEDITED REPORT DELIVERY (SURCHARGE) ○

DATE DUE _____

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ...)	App IX VOCs	~~App IX SVOCs~~	TCLP VOCs	TCLP METALS	App IX Metals (Total)	App IX Metals (Dissolved)	TPH GRO	TPH DRO	App IX Pesticides	App IX PCBs	Hazardous Characteristics Inorganic - Cyanide, sulfide, pH	REMARKS
								NUMBER OF CONTAINERS SUBMITTED											
6/5/08		74IDW01	C		X				1	1		1						✓	
6/5/08		74IDW02	C	X				3				1						1	
6/5/08		MNAIDW01	C		X				1	1		1						✓	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
				6/5/08	1500			

RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SAVANNAH LOG NO.	LABORATORY REMARKS
[illegible]	6/6/08	0920	YES ○ NO ○		680-37406	

TAL8240-680 (1207)

IDW WASTE DISPOSAL MANIFEST

ALLIED WASTE INDUSTRIES INC

NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. N/A	Manifest Document No. 10800	2. Page 1 of 1	Pass Code:

GENERATOR

3. Generator's Name and Mailing Address
Navallactivity P.R. P.O. Box 1478 Ceiba, PR 00735

Generating Location:
Sec. Dept. 1st Floor, Ceiba, PR 00735

4. Generator's Phone ( ) (787) 534-0934

5. Transporter 1 Company Name	6. EQB Permit #	A. Transporter's Phone
Aqua Clean Ships Caribe, Inc.	PR-05-0361	(787) 729-0881
7. Transporter 2 Company Name	8. EQB Permit #	B. Transporter's Phone
9. Designated Facility Name and Site Address	10. EQB Permit #	C. Facility's Phone
PONCE SANITARY LANDFILL PO BOX 7104 / RD 500 BARAMAYA FINAL AVENUE, PONCE, PR 00731	IDF-58-008	787-841-7775

11. Waste Shipping Name and Description	Handling Code	12. Containers No	Type	13. Total Quantity	14. Unit Wt/Vol
a. IDW Soil DOT Non Regulated, NONE	091231 (787)XX7 8417	1	DM	385	G
b. Decon Water DOT Non Regulated, NONE	091031 1.29XXXXX07924	5	DM	275	G
c.					
d.					

D. Additional Descriptions for Materials Listed Above
Ref. BOS
PO#74-550M
PO#54-550M

15. Special Handling Instructions and Additional Information
Emergency in transit contact (787) 729-0881

TRANSPORTER

16. GENERATOR'S CERTIFICATION: I certify the materials above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed / Typed Name	Signature	Month	Day	Year
Pedro Ruiz		07	16	09

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed / Typed Name	Signature	Month	Day	Year
Ivan Felix		07	16	09

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed / Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 19.

Printed / Typed Name	Signature	Month	Day	Year

GENERATOR 2ND COPY

APPENDIX B
LABORATORY ANALYTICAL RESULTS

SURFACE SOIL

APPENDIX B

SURFACE SOIL ANALYTICAL RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB01	62SB02	62SB03	62SB04	62SB05
Sample ID	62SB01-00	62SB02-00	62SB03-00	62SB04-00	62SB05-00
Sample Date	5/31/2008	6/1/2008	6/1/2008	5/31/2008	6/1/2008
Depth Range	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Volatile Organic Compounds (ug/kg)					
1,1,1,2-Tetrachloroethane	0.76 U	0.68 U	0.69 U	0.79 U	0.65 U
1,1,1-Trichloroethane	0.69 UJ	0.62 UJ	0.62 UJ	0.71 UJ	0.59 UJ
1,1,2,2-Tetrachloroethane	1.7 U	1.5 U	1.5 U	1.7 U	1.4 U
1,1,2-Trichloroethane	1.4 U	1.3 U	1.3 U	1.5 U	1.2 U
1,1-Dichloroethane	0.59 U	0.53 U	0.54 U	0.61 U	0.51 U
1,1-Dichloroethene	0.64 U	0.57 U	0.58 U	0.66 U	0.55 U
1,2,3-Trichloropropane	1.7 U	1.5 U	1.5 U	1.7 U	1.4 U
1,2-Dibromo-3-Chloropropane	3.3 UJ	3 U	3 U	3.4 UJ	2.8 U
1,2-Dichloroethane	1.2 U	1.1 U	1.1 U	1.2 U	1 U
1,2-Dichloropropane	1.3 U	1.2 U	1.2 U	1.4 U	1.1 U
2-Butanone (MEK)	10 UJ	9.9 UJ	3.4 UJ	3.9 UJ	2.7 UJ
2-Chloro-1,3-butadiene	0.68 UJ	0.61 U	0.61 U	0.7 UJ	0.58 U
2-Hexanone	2.5 U	2.2 U	2.3 U	2.6 U	2.1 U
3-Chloro-1-propene	1.8 UJ	1.6 UJ	1.6 UJ	1.8 UJ	1.5 UJ
4-Methyl-2-pentanone (MIBK)	3.5 UJ	3.1 UJ	3.1 UJ	3.6 UJ	3 UJ
Acetone	140 J	120 J	67 J	42 UJ	19 J
Acetonitrile	54 UJ	48 UJ	48 UJ	55 UJ	46 UJ
Acrolein	23 U	20 U	20 U	23 U	19 U
Acrylonitrile	27 U	24 UJ	25 UJ	28 U	23 UJ
Benzene	0.94 U	0.84 U	0.85 U	0.97 U	0.8 U
Bromoform	1.3 U	1.2 U	1.2 U	1.4 U	1.1 U
Bromomethane	1.9 U	1.7 U	1.7 U	2 U	1.6 U
Carbon disulfide	0.61 U	0.54 U	0.55 U	0.63 U	0.52 U
Carbon tetrachloride	1.2 UJ	1.1 UJ	1.1 UJ	1.2 UJ	1 UJ
Chlorobenzene	0.87 U	0.78 U	0.78 U	0.9 U	0.74 U
Chlorodibromomethane	0.59 U	0.53 U	0.54 U	0.61 U	0.51 U
Chloroethane	1.4 UJ	1.3 UJ	1.3 UJ	1.5 UJ	1.2 UJ
Chloroform	0.59 U	0.53 U	0.54 U	0.61 U	0.51 U
Chloromethane	0.84 U	0.75 U	0.76 U	0.87 U	0.72 U
cis-1,3-Dichloropropene	1 UJ	0.92 UJ	0.93 UJ	1.1 UJ	0.89 UJ
Dibromomethane	1.4 U	1.3 U	1.3 U	1.5 U	1.2 U
Dichlorobromomethane	0.99 U	0.88 U	0.89 U	1 U	0.84 U
Dichlorodifluoromethane	1.1 U	0.95 U	0.95 U	1.1 U	0.91 U
Ethyl methacrylate	2.6 U	2.3 U	2.4 U	2.7 U	2.2 U
Ethylbenzene	0.89 U	0.8 U	0.8 U	0.92 U	0.76 U
Ethylene Dibromide	1.8 U	1.6 U	1.6 U	1.8 U	1.5 U
Iodomethane	1.2 UJ	1.3 J	1.1 UJ	1.2 UJ	1 UJ
Isobutyl alcohol	82 U	73 R	74 R	85 U	70 R
Methacrylonitrile	29 UJ	25 UJ	26 UJ	29 UJ	24 UJ
Methyl methacrylate	4.4 UJ	3.9 UJ	4 UJ	4.5 UJ	3.8 UJ

APPENDIX B

SURFACE SOIL ANALYTICAL RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB01	62SB02	62SB03	62SB04	62SB05
Sample ID	62SB01-00	62SB02-00	62SB03-00	62SB04-00	62SB05-00
Sample Date	5/31/2008	6/1/2008	6/1/2008	5/31/2008	6/1/2008
Depth Range	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Volatile Organic Compounds (ug/kg)					
Methylene Chloride	1.2 U	1.1 U	1.1 U	1.2 U	1 U
Pentachloroethane	2.6 R	2.3 R	2.4 R	2.7 R	2.2 R
Propionitrile	25 UJ	22 UJ	23 UJ	26 UJ	21 UJ
Styrene	0.79 U	0.7 U	0.71 U	0.81 U	0.67 U
Tetrachloroethene	0.87 U	0.78 U	0.78 U	0.9 U	0.74 U
Toluene	0.94 U	0.84 U	0.85 U	0.97 U	0.8 U
trans-1,2-Dichloroethene	1.2 U	1 U	1 U	1.2 U	0.99 U
trans-1,3-Dichloropropene	1 U	0.92 U	0.93 U	1.1 U	0.89 U
trans-1,4-Dichloro-2-butene	3.7 U	3.3 U	3.3 U	3.8 U	3.2 U
Trichloroethene	1.2 U	1.1 U	1.1 U	1.2 U	1 U
Trichlorofluoromethane	1.8 U	1.6 U	1.6 U	1.8 U	1.5 U
Vinyl acetate	1.8 U	1.6 UJ	1.6 UJ	1.8 U	1.5 UJ
Vinyl chloride	0.69 U	0.62 U	0.62 U	0.71 U	0.59 U
Xylenes, Total	2.7 U	2.4 U	2.5 U	2.8 U	2.3 U
Semivolatile Organic Compounds (ug/kg)					
1,1'-Biphenyl	NA	NA	8.5 U	NA	NA
1,2,4,5-Tetrachlorobenzene	NA	NA	7.3 U	NA	NA
1,2,4-Trichlorobenzene	NA	NA	8.5 U	NA	NA
1,2-Dichlorobenzene	NA	NA	8.1 U	NA	NA
1,3,5-Trinitrobenzene	NA	NA	20 U	NA	NA
1,3-Dichlorobenzene	NA	NA	6.9 U	NA	NA
1,3-Dinitrobenzene	NA	NA	4.5 U	NA	NA
1,4-Dichlorobenzene	NA	NA	7.2 U	NA	NA
1,4-Dioxane	NA	NA	9.2 U	NA	NA
1,4-Naphthoquinone	NA	NA	4.5 U	NA	NA
2,2'-oxybis[1-chloropropane]	NA	NA	7.3 U	NA	NA
2,3,4,6-Tetrachlorophenol	NA	NA	4.8 U	NA	NA
2,4,5-Trichlorophenol	NA	NA	7.8 U	NA	NA
2,4,6-Trichlorophenol	NA	NA	9.1 U	NA	NA
2,4-Dichlorophenol	NA	NA	9.3 U	NA	NA
2,4-Dimethylphenol	NA	NA	20 U	NA	NA
2,4-Dinitrophenol	NA	NA	96 UJ	NA	NA
2,4-Dinitrotoluene	NA	NA	6.8 U	NA	NA
2,6-Dichlorophenol	NA	NA	7.4 U	NA	NA
2,6-Dinitrotoluene	NA	NA	7.2 U	NA	NA
2-Acetylaminofluorene	NA	NA	5.9 U	NA	NA
2-Chloronaphthalene	NA	NA	7.2 U	NA	NA
2-Chlorophenol	NA	NA	7.6 U	NA	NA
2-Methylnaphthalene	NA	NA	2 U	NA	NA
2-Methylphenol	NA	NA	9.3 U	NA	NA

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PHASE I RFI REPORT
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Site ID	62SB01	62SB02	62SB03	62SB04	62SB05
Sample ID	62SB01-00	62SB02-00	62SB03-00	62SB04-00	62SB05-00
Sample Date	5/31/2008	6/1/2008	6/1/2008	5/31/2008	6/1/2008
Depth Range	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Semivolatile Organic Compounds (ug/kg)					
2-Naphthylamine	NA	NA	23 UJ	NA	NA
2-Nitroaniline	NA	NA	7.5 U	NA	NA
2-Nitrophenol	NA	NA	8.4 U	NA	NA
2-Picoline	NA	NA	14 U	NA	NA
2-Toluidine	NA	NA	11 U	NA	NA
3 & 4 Methylphenol	NA	NA	8.4 U	NA	NA
3,3'-Dichlorobenzidine	NA	NA	11 UJ	NA	NA
3,3'-Dimethylbenzidine	NA	NA	210 U	NA	NA
3-Methylcholanthrene	NA	NA	7 U	NA	NA
3-Nitroaniline	NA	NA	5.2 U	NA	NA
4,6-Dinitro-2-methylphenol	NA	NA	6.7 U	NA	NA
4-Aminobiphenyl	NA	NA	15 U	NA	NA
4-Bromophenyl phenyl ether	NA	NA	8.2 U	NA	NA
4-Chloro-3-methylphenol	NA	NA	8.7 U	NA	NA
4-Chloroaniline	NA	NA	6.9 U	NA	NA
4-Chlorophenyl phenyl ether	NA	NA	7.2 U	NA	NA
4-Nitroaniline	NA	NA	8.9 U	NA	NA
4-Nitrophenol	NA	NA	38 U	NA	NA
4-Nitroquinoline-1-oxide	NA	NA	13 R	NA	NA
7,12-Dimethylbenz(a)anthracene	NA	NA	11 U	NA	NA
Acenaphthene	NA	NA	0.66 U	NA	NA
Acenaphthylene	NA	NA	2 U	NA	NA
Acetophenone	NA	NA	9.9 U	NA	NA
alpha,alpha-Dimethyl phenethylamine	NA	NA	68 UJ	NA	NA
Aniline	NA	NA	7.3 U	NA	NA
Anthracene	NA	NA	2 U	NA	NA
Aramite, Total	NA	NA	13 U	NA	NA
Benzo[a]anthracene	NA	NA	2 U	NA	NA
Benzo[a]pyrene	NA	NA	0.76 U	NA	NA
Benzo[b]fluoranthene	NA	NA	0.88 U	NA	NA
Benzo[g,h,i]perylene	NA	NA	2 U	NA	NA
Benzo[k]fluoranthene	NA	NA	1.2 U	NA	NA
Benzyl alcohol	NA	NA	9.2 U	NA	NA
Bis(2-chloroethoxy)methane	NA	NA	7.8 U	NA	NA
Bis(2-chloroethyl)ether	NA	NA	6.6 U	NA	NA
Bis(2-ethylhexyl) phthalate	NA	NA	13 U	NA	NA
Butyl benzyl phthalate	NA	NA	8.3 U	NA	NA
Chrysene	NA	NA	0.7 U	NA	NA
Diallate	NA	NA	11 U	NA	NA
Dibenz(a,h)anthracene	NA	NA	0.68 U	NA	NA

APPENDIX B

SURFACE SOIL ANALYTICAL RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB01	62SB02	62SB03	62SB04	62SB05
Sample ID	62SB01-00	62SB02-00	62SB03-00	62SB04-00	62SB05-00
Sample Date	5/31/2008	6/1/2008	6/1/2008	5/31/2008	6/1/2008
Depth Range	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Semivolatile Organic Compounds (ug/kg)					
Dibenzofuran	NA	NA	4.8 U	NA	NA
Diethyl phthalate	NA	NA	13 U	NA	NA
Dimethyl phthalate	NA	NA	7.4 U	NA	NA
Di-n-butyl phthalate	NA	NA	29 U	NA	NA
Di-n-octyl phthalate	NA	NA	3.8 U	NA	NA
Dinoseb	NA	NA	20 UJ	NA	NA
Ethyl methanesulfonate	NA	NA	13 U	NA	NA
Fluoranthene	NA	NA	2 U	NA	NA
Fluorene	NA	NA	0.89 U	NA	NA
Hexachlorobenzene	NA	NA	7.8 U	NA	NA
Hexachlorobutadiene	NA	NA	10 U	NA	NA
Hexachlorocyclopentadiene	NA	NA	16 U	NA	NA
Hexachloroethane	NA	NA	8.5 U	NA	NA
Hexachlorophene	NA	NA	960 R	NA	NA
Hexachloropropene	NA	NA	8.3 U	NA	NA
Indeno[1,2,3-cd]pyrene	NA	NA	1.4 U	NA	NA
Isophorone	NA	NA	7.2 U	NA	NA
Isosafrole	NA	NA	8.2 U	NA	NA
Methapyrilene	NA	NA	11 U	NA	NA
Methyl methanesulfonate	NA	NA	11 U	NA	NA
Naphthalene	NA	NA	0.69 U	NA	NA
Nitrobenzene	NA	NA	8 U	NA	NA
N-Nitro-o-toluidine	NA	NA	6.9 U	NA	NA
N-Nitrosodiethylamine	NA	NA	14 U	NA	NA
N-Nitrosodimethylamine	NA	NA	11 U	NA	NA
N-Nitrosodi-n-butylamine	NA	NA	10 U	NA	NA
N-Nitrosodi-n-propylamine	NA	NA	7.5 U	NA	NA
N-Nitrosodiphenylamine	NA	NA	8.2 U	NA	NA
N-Nitrosomethylethylamine	NA	NA	6.6 U	NA	NA
N-Nitrosomorpholine	NA	NA	7.6 U	NA	NA
N-Nitrosopiperidine	NA	NA	9.8 U	NA	NA
N-Nitrosopyrrolidine	NA	NA	10 U	NA	NA
p-Dimethylamino azobenzene	NA	NA	8.2 U	NA	NA
Pentachlorobenzene	NA	NA	7.2 U	NA	NA
Pentachloronitrobenzene	NA	NA	6.8 U	NA	NA
Pentachlorophenol	NA	NA	9.6 U	NA	NA
Phenacetin	NA	NA	5.4 U	NA	NA
Phenanthrene	NA	NA	2 U	NA	NA
Phenol	NA	NA	5.5 U	NA	NA
p-Phenylene diamine	NA	NA	180 U	NA	NA

APPENDIX B

SURFACE SOIL ANALYTICAL RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB01	62SB02	62SB03	62SB04	62SB05
Sample ID	62SB01-00	62SB02-00	62SB03-00	62SB04-00	62SB05-00
Sample Date	5/31/2008	6/1/2008	6/1/2008	5/31/2008	6/1/2008
Depth Range	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Semivolatile Organic Compounds (ug/kg)					
Pronamide	NA	NA	10 U	NA	NA
Pyrene	NA	NA	2 U	NA	NA
Pyridine	NA	NA	13 U	NA	NA
Safrole, Total	NA	NA	9.6 U	NA	NA
Pesticides (ug/kg)					
4,4'-DDD	28	0.42 U	0.41 U	0.4 U	0.37 U
4,4'-DDE	73	0.37 U	0.37 U	0.36 U	5.5
4,4'-DDT	51	0.6 U	0.6 U	0.58 U	2.3 J
Aldrin	0.26 U	0.13 U	0.13 U	0.12 U	0.11 U
alpha-BHC	0.2 U	0.096 U	0.096 U	0.093 U	0.086 U
beta-BHC	0.52 U	0.25 U	0.25 U	0.25 U	0.23 U
Chlordane (technical)	3.3 U	1.6 U	1.6 U	1.6 U	1.4 U
Chlorobenzilate	11 U	5.4 U	5.4 U	5.3 U	4.8 U
delta-BHC	0.28 U	0.14 U	0.14 U	0.13 U	0.12 U
Dieldrin	0.73 U	0.36 U	0.36 U	0.35 U	0.32 U
Endosulfan I	0.66 U	0.32 U	0.32 U	0.31 U	0.29 U
Endosulfan II	1.6 U	0.79 U	0.78 U	0.76 U	0.7 U
Endosulfan sulfate	0.64 U	0.31 U	0.31 U	0.3 U	0.28 U
Endrin	0.81 U	0.39 U	0.39 U	0.38 U	0.35 U
Endrin aldehyde	1.5 U	0.74 U	0.74 U	0.72 U	0.66 U
Endrin ketone	0.81 U	0.39 U	0.39 U	0.38 U	0.35 U
gamma-BHC (Lindane)	0.24 U	0.12 U	0.12 U	0.11 U	0.1 U
Heptachlor	0.55 U	0.27 U	0.27 U	0.26 U	0.24 U
Heptachlor epoxide	0.24 U	0.12 U	0.12 U	0.11 U	0.1 U
Isodrin	0.52 U	0.25 U	0.25 U	0.25 U	0.23 U
Kepone	3.3 U	1.6 U	1.6 U	1.6 U	1.4 U
Methoxychlor	1.9 U	0.93 U	0.92 U	0.9 U	0.82 U
Toxaphene	100 U	49 U	48 U	47 U	43 U
PCB's (ug/kg)					
PCB-1016	NA	NA	4.4 U	NA	NA
PCB-1221	NA	NA	15 U	NA	NA
PCB-1232	NA	NA	8.6 U	NA	NA
PCB-1242	NA	NA	5.5 U	NA	NA
PCB-1248	NA	NA	5.9 U	NA	NA
PCB-1254	NA	NA	2.7 U	NA	NA
PCB-1260	NA	NA	5.5 U	NA	NA

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SURFACE SOIL ANALYTICAL RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB01	62SB02	62SB03	62SB04	62SB05
Sample ID	62SB01-00	62SB02-00	62SB03-00	62SB04-00	62SB05-00
Sample Date	5/31/2008	6/1/2008	6/1/2008	5/31/2008	6/1/2008
Depth Range	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Metals (mg/kg)					
Antimony	0.1 UJ	0.079 UJ	0.078 UJ	0.076 UJ	0.073 UJ
Arsenic	1.7	0.93	0.92	1.2	1.2
Barium	130	80	150	520	80
Beryllium	0.32	0.32	0.34	0.49	0.37
Cadmium	0.092 J	0.033 U	0.032 U	0.032 U	0.03 U
Chromium	32	12	9.5	16	2.6
Cobalt	19	3	2.2	5.6	6.8
Copper	41	7.5	11	19	9.6
Lead	3.5	1.4	1.1	1.6	0.6
Mercury	0.032	0.034	0.035	0.027	0.0038 U
Nickel	8.6	3.1	2.7	4.9	1.2
Selenium	0.38 J	0.36 J	0.25 J	0.16 J	0.14 J
Silver	0.025 J	0.017 UJ	0.017 UJ	0.016 UJ	0.016 UJ
Thallium	0.13 U	0.13 U	0.12 U	0.12 U	0.12 U
Tin	4.4 U	4.2 U	4.1 U	4.1 U	3.9 U
Vanadium	82 J	27 J	25 J	41 J	33 J
Zinc	46	5.8	7	11	7.8

APPENDIX B

SURFACE SOIL ANALYTICAL RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB06	62SB07	62SB08	62SB08	62SB09
Sample ID	62SB06-00	62SB07-00	62SB08-00	62SB08-00D	62SB09-00
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Volatile Organic Compounds (ug/kg)					
1,1,1,2-Tetrachloroethane	0.68 U	0.76 U	0.88 U	0.63 U	0.6 U
1,1,1-Trichloroethane	0.61 UJ	0.69 UJ	0.8 UJ	0.57 UJ	0.54 UJ
1,1,2,2-Tetrachloroethane	1.5 U	1.7 U	1.9 U	1.4 U	1.3 U
1,1,2-Trichloroethane	1.3 U	1.4 U	1.7 U	1.2 U	1.1 U
1,1-Dichloroethane	0.53 U	0.59 U	0.69 U	0.49 U	0.47 U
1,1-Dichloroethene	0.57 U	0.64 U	0.75 U	0.53 U	0.51 U
1,2,3-Trichloropropane	1.5 U	1.7 U	1.9 U	1.4 U	1.3 U
1,2-Dibromo-3-Chloropropane	3 U	3.3 U	3.9 U	2.7 U	2.6 U
1,2-Dichloroethane	1.1 U	1.2 U	1.4 U	0.98 U	0.94 U
1,2-Dichloropropane	1.2 U	1.3 U	1.5 U	1.1 U	1 U
2-Butanone (MEK)	17 UJ	12 UJ	6.8 UJ	4.3 UJ	5.2 UJ
2-Chloro-1,3-butadiene	0.6 U	0.68 U	0.79 U	0.56 U	0.53 U
2-Hexanone	2.2 U	2.5 U	2.9 U	2.1 U	2 U
3-Chloro-1-propene	1.6 UJ	1.8 UJ	2.1 UJ	1.5 UJ	1.4 U
4-Methyl-2-pentanone (MIBK)	3.1 UJ	3.4 UJ	4 UJ	2.8 UJ	2.7 UJ
Acetone	200 J	150 J	83 J	63 J	72 UJ
Acetonitrile	48 UJ	53 UJ	62 UJ	44 UJ	42 U
Acrolein	20 U	23 U	26 U	19 U	18 U
Acrylonitrile	24 UJ	27 UJ	32 UJ	22 UJ	22 UJ
Benzene	1.4 J	0.94 U	1.1 U	0.77 U	0.74 U
Bromoform	1.2 U	1.3 U	1.5 U	1.1 U	1 U
Bromomethane	1.7 U	1.9 U	2.2 U	1.6 U	1.5 U
Carbon disulfide	0.54 U	0.6 U	0.71 U	0.5 U	0.48 U
Carbon tetrachloride	1.1 UJ	1.2 UJ	1.4 UJ	0.98 UJ	0.94 UJ
Chlorobenzene	0.77 U	0.87 U	1 U	0.71 U	0.68 U
Chlorodibromomethane	0.53 U	0.59 U	0.69 U	0.49 U	0.47 U
Chloroethane	1.3 UJ	1.4 UJ	1.7 UJ	1.2 UJ	1.1 UJ
Chloroform	0.53 U	0.59 U	0.69 U	0.49 U	0.47 U
Chloromethane	0.75 U	0.84 U	0.98 U	0.69 U	0.67 U
cis-1,3-Dichloropropene	0.92 UJ	1 UJ	1.2 UJ	0.85 UJ	0.82 UJ
Dibromomethane	1.3 U	1.4 U	1.7 U	1.2 U	1.1 U
Dichlorobromomethane	0.88 U	0.98 U	1.1 U	0.81 U	0.78 U
Dichlorodifluoromethane	0.94 U	1.1 U	1.2 U	0.87 U	0.83 U
Ethyl methacrylate	2.3 U	2.6 U	3 U	2.1 U	2.1 U
Ethylbenzene	0.79 U	0.89 U	1 U	0.73 U	0.7 U
Ethylene Dibromide	1.6 U	1.8 U	2.1 U	1.5 U	1.4 U
Iodomethane	1.1 UJ	1.2 UJ	1.4 UJ	0.98 UJ	0.94 U
Isobutyl alcohol	73 R	82 R	95 R	67 R	65 U
Methacrylonitrile	25 UJ	28 UJ	33 UJ	23 UJ	22 U
Methyl methacrylate	3.9 UJ	4.4 UJ	5.1 UJ	3.6 UJ	3.5 U

APPENDIX B

SURFACE SOIL ANALYTICAL RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB06	62SB07	62SB08	62SB08	62SB09
Sample ID	62SB06-00	62SB07-00	62SB08-00	62SB08-00D	62SB09-00
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Volatile Organic Compounds (ug/kg)					
Methylene Chloride	1.1 U	1.2 U	1.4 U	0.98 U	0.94 U
Pentachloroethane	2.3 R	2.6 R	3 R	2.1 R	2.1 R
Propionitrile	22 UJ	25 UJ	29 UJ	21 UJ	20 U
Styrene	0.7 U	0.78 U	0.91 U	0.64 U	0.62 U
Tetrachloroethene	0.77 U	0.87 U	1 U	0.71 U	0.68 U
Toluene	1.5 U	0.94 U	1.1 U	0.77 U	0.74 U
trans-1,2-Dichloroethene	1 U	1.2 U	1.3 U	0.95 U	0.91 U
trans-1,3-Dichloropropene	0.92 U	1 U	1.2 U	0.85 U	0.82 U
trans-1,4-Dichloro-2-butene	3.3 U	3.7 U	4.3 U	3 U	2.9 U
Trichloroethene	1.1 U	1.2 U	1.4 U	0.98 U	0.94 U
Trichlorofluoromethane	1.6 U	1.8 U	2.1 UJ	1.5 U	1.4 U
Vinyl acetate	1.6 UJ	1.8 UJ	2.1 U	1.5 UJ	1.4 U
Vinyl chloride	0.61 U	0.69 U	0.8 U	0.57 U	0.54 U
Xylenes, Total	2.4 U	2.7 U	3.2 U	2.2 U	2.2 U
Semivolatile Organic Compounds (ug/kg)					
1,1'-Biphenyl	7.8 U	NA	8 UJ	7.8 UJ	7.9 U
1,2,4,5-Tetrachlorobenzene	6.6 U	NA	6.8 UJ	6.7 UJ	6.8 U
1,2,4-Trichlorobenzene	7.8 U	NA	8 UJ	7.8 UJ	7.9 U
1,2-Dichlorobenzene	7.3 U	NA	7.5 UJ	7.4 UJ	7.5 U
1,3,5-Trinitrobenzene	18 U	NA	18 UJ	18 UJ	18 U
1,3-Dichlorobenzene	6.3 U	NA	6.5 UJ	6.4 UJ	6.4 U
1,3-Dinitrobenzene	4.1 U	NA	4.2 UJ	4.1 UJ	4.2 U
1,4-Dichlorobenzene	6.5 U	NA	11 UJ	15 UJ	6.7 U
1,4-Dioxane	8.4 U	NA	15 J	8.5 UJ	8.6 U
1,4-Naphthoquinone	4.1 U	NA	4.2 UJ	4.1 UJ	4.2 U
2,2'-oxybis[1-chloropropane]	6.6 U	NA	6.8 UJ	6.7 UJ	6.8 U
2,3,4,6-Tetrachlorophenol	4.4 U	NA	4.5 UJ	4.4 UJ	4.5 U
2,4,5-Trichlorophenol	7.1 U	NA	7.3 UJ	7.2 UJ	7.3 UJ
2,4,6-Trichlorophenol	8.3 U	NA	8.5 UJ	8.4 UJ	8.5 U
2,4-Dichlorophenol	8.5 U	NA	8.7 UJ	8.6 UJ	8.7 U
2,4-Dimethylphenol	18 U	NA	18 UJ	18 UJ	18 U
2,4-Dinitrophenol	87 UJ	NA	89 UJ	88 UJ	89 UJ
2,4-Dinitrotoluene	6.2 U	NA	6.4 UJ	6.2 UJ	6.3 U
2,6-Dichlorophenol	6.7 U	NA	6.9 UJ	6.8 UJ	6.9 U
2,6-Dinitrotoluene	6.5 U	NA	6.7 UJ	6.6 UJ	6.7 U
2-Acetylaminofluorene	5.3 U	NA	5.5 UJ	5.4 UJ	5.5 U
2-Chloronaphthalene	6.5 U	NA	6.7 UJ	6.6 UJ	6.7 U
2-Chlorophenol	6.9 U	NA	7.1 UJ	7 UJ	7.1 U
2-Methylnaphthalene	1.8 U	NA	23 J	56 J	1.8 U
2-Methylphenol	8.5 U	NA	8.7 UJ	8.6 UJ	8.7 U

APPENDIX B

SURFACE SOIL ANALYTICAL RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB06	62SB07	62SB08	62SB08	62SB09
Sample ID	62SB06-00	62SB07-00	62SB08-00	62SB08-00D	62SB09-00
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Semivolatile Organic Compounds (ug/kg)					
2-Naphthylamine	21 UJ	NA	22 UJ	21 UJ	21 UJ
2-Nitroaniline	6.8 U	NA	7 UJ	6.9 UJ	7 U
2-Nitrophenol	7.7 U	NA	7.9 UJ	7.7 UJ	7.8 U
2-Picoline	13 U	NA	13 UJ	13 UJ	13 U
2-Toluidine	9.8 U	NA	10 UJ	9.8 UJ	10 U
3 & 4 Methylphenol	7.7 U	NA	7.9 UJ	7.7 UJ	7.8 U
3,3'-Dichlorobenzidine	9.6 UJ	NA	9.9 UJ	9.7 UJ	9.9 U
3,3'-Dimethylbenzidine	190 U	NA	190 UJ	190 UJ	190 UJ
3-Methylcholanthrene	6.4 U	NA	6.6 UJ	6.5 UJ	6.6 U
3-Nitroaniline	4.7 U	NA	4.8 UJ	4.8 UJ	4.8 UJ
4,6-Dinitro-2-methylphenol	6.1 U	NA	6.3 UJ	6.1 UJ	6.2 U
4-Aminobiphenyl	14 U	NA	14 UJ	14 UJ	14 U
4-Bromophenyl phenyl ether	7.4 U	NA	7.7 UJ	7.5 UJ	7.6 U
4-Chloro-3-methylphenol	7.9 U	NA	8.1 UJ	7.9 UJ	8.1 U
4-Chloroaniline	6.3 U	NA	6.5 UJ	6.4 UJ	6.4 U
4-Chlorophenyl phenyl ether	6.5 U	NA	6.7 UJ	6.6 UJ	6.7 U
4-Nitroaniline	8.1 U	NA	8.3 UJ	8.2 UJ	8.3 U
4-Nitrophenol	35 U	NA	36 UJ	35 UJ	35 U
4-Nitroquinoline-1-oxide	12 R	NA	12 R	12 R	12 R
7,12-Dimethylbenz(a)anthracene	9.8 U	NA	10 UJ	9.8 UJ	10 U
Acenaphthene	0.6 U	NA	0.61 UJ	0.6 UJ	0.61 U
Acenaphthylene	1.8 U	NA	1.8 UJ	1.8 UJ	1.8 U
Acetophenone	9 U	NA	9.3 UJ	9.1 UJ	9.2 U
alpha,alpha-Dimethyl phenethylamine	62 UJ	NA	64 UJ	62 UJ	63 U
Aniline	6.6 U	NA	6.8 UJ	6.7 UJ	6.8 U
Anthracene	1.8 U	NA	1.8 UJ	1.8 UJ	1.8 U
Aramite, Total	12 U	NA	12 UJ	12 UJ	12 U
Benzo[a]anthracene	1.8 U	NA	4.8 J	5.2 J	2.6 J
Benzo[a]pyrene	0.69 U	NA	0.71 UJ	0.7 UJ	2.6 J
Benzo[b]fluoranthene	0.8 U	NA	0.82 UJ	0.8 UJ	3.2 J
Benzo[g,h,i]perylene	1.8 U	NA	1.8 UJ	1.8 UJ	5.8 J
Benzo[k]fluoranthene	1 U	NA	1.1 UJ	4 J	2.2 J
Benzyl alcohol	8.4 U	NA	8.6 UJ	8.5 UJ	8.6 U
Bis(2-chloroethoxy)methane	7.1 U	NA	7.3 UJ	7.2 UJ	7.3 U
Bis(2-chloroethyl)ether	6 U	NA	6.1 UJ	6 UJ	6.1 U
Bis(2-ethylhexyl) phthalate	5 U	NA	16 UJ	13 UJ	15 U
Butyl benzyl phthalate	7.5 U	NA	7.8 UJ	7.6 UJ	7.7 U
Chrysene	0.64 U	NA	4.8 J	6.8 J	3.3 J
Diallate	10 U	NA	10 UJ	10 UJ	10 U
Dibenz(a,h)anthracene	0.62 U	NA	0.64 UJ	0.62 UJ	0.63 U

APPENDIX B

SURFACE SOIL ANALYTICAL RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB06	62SB07	62SB08	62SB08	62SB09
Sample ID	62SB06-00	62SB07-00	62SB08-00	62SB08-00D	62SB09-00
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Semivolatile Organic Compounds (ug/kg)					
Dibenzofuran	4.4 U	NA	8.9 J	20 J	4.5 U
Diethyl phthalate	12 U	NA	12 UJ	12 UJ	12 U
Dimethyl phthalate	6.7 U	NA	6.9 UJ	6.8 UJ	6.9 U
Di-n-butyl phthalate	26 U	NA	27 UJ	26 UJ	27 U
Di-n-octyl phthalate	3.5 U	NA	3.6 UJ	3.5 UJ	3.5 U
Dinoseb	18 UJ	NA	18 UJ	18 UJ	18 U
Ethyl methanesulfonate	12 U	NA	12 UJ	12 UJ	12 U
Fluoranthene	1.8 U	NA	6.7 J	8.5 J	5.4 J
Fluorene	0.81 U	NA	0.83 UJ	0.82 UJ	0.83 U
Hexachlorobenzene	7.1 U	NA	7.3 UJ	7.2 UJ	7.3 U
Hexachlorobutadiene	9.5 U	NA	9.8 UJ	9.6 UJ	9.8 U
Hexachlorocyclopentadiene	15 U	NA	15 UJ	15 UJ	15 U
Hexachloroethane	7.8 U	NA	8 UJ	7.8 UJ	7.9 U
Hexachlorophene	870 R	NA	890 UJ	880 UJ	890 U
Hexachloropropene	7.5 U	NA	7.8 UJ	7.6 UJ	7.7 U
Indeno[1,2,3-cd]pyrene	1.3 U	NA	1.3 UJ	1.3 UJ	1.5 J
Isophorone	6.5 U	NA	6.7 UJ	6.6 UJ	6.7 U
Isosafrole	7.4 U	NA	7.7 UJ	7.5 UJ	7.6 U
Methapyrilene	9.8 U	NA	10 UJ	9.8 UJ	10 UJ
Methyl methanesulfonate	9.8 U	NA	10 UJ	9.8 UJ	10 U
Naphthalene	0.63 U	NA	13 J	33 J	1.2 J
Nitrobenzene	7.2 U	NA	7.4 UJ	7.3 UJ	7.4 U
N-Nitro-o-toluidine	6.3 U	NA	6.5 UJ	6.4 UJ	6.4 U
N-Nitrosodiethylamine	13 U	NA	13 UJ	13 UJ	13 U
N-Nitrosodimethylamine	10 U	NA	11 UJ	10 UJ	11 U
N-Nitrosodi-n-butylamine	9.5 U	NA	9.8 UJ	9.6 UJ	9.8 U
N-Nitrosodi-n-propylamine	6.8 U	NA	7 UJ	6.9 UJ	7 U
N-Nitrosodiphenylamine	7.4 U	NA	7.7 UJ	7.5 UJ	7.6 U
N-Nitrosomethylethylamine	6 U	NA	6.1 UJ	6 UJ	6.1 U
N-Nitrosomorpholine	6.9 U	NA	7.1 UJ	7 UJ	7.1 U
N-Nitrosopiperidine	8.9 U	NA	9.2 UJ	9 UJ	9.1 U
N-Nitrosopyrrolidine	9.3 U	NA	9.6 UJ	9.4 UJ	9.6 U
p-Dimethylamino azobenzene	7.4 U	NA	7.7 UJ	7.5 UJ	7.6 U
Pentachlorobenzene	6.5 U	NA	6.7 UJ	6.6 UJ	6.7 U
Pentachloronitrobenzene	6.2 U	NA	6.4 UJ	6.2 UJ	6.3 U
Pentachlorophenol	8.7 U	NA	8.9 UJ	8.8 UJ	8.9 U
Phenacetin	4.9 U	NA	5.1 UJ	5 UJ	5 U
Phenanthrene	1.8 U	NA	29 J	50 J	4.5 J
Phenol	5 U	NA	5.2 UJ	5.1 UJ	5.2 U
p-Phenylene diamine	170 U	NA	170 UJ	170 UJ	170 U

APPENDIX B

SURFACE SOIL ANALYTICAL RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB06	62SB07	62SB08	62SB08	62SB09
Sample ID	62SB06-00	62SB07-00	62SB08-00	62SB08-00D	62SB09-00
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Semivolatile Organic Compounds (ug/kg)					
Pronamide	9.4 U	NA	9.7 UJ	9.5 UJ	9.7 U
Pyrene	1.8 U	NA	9.1 J	11 J	4.8 J
Pyridine	12 U	NA	12 UJ	12 UJ	12 U
Safrole, Total	8.7 U	NA	8.9 UJ	8.8 UJ	8.9 U
Pesticides (ug/kg)					
4,4'-DDD	0.38 U	0.4 U	0.89 J	0.39 U	0.39 U
4,4'-DDE	0.34 U	0.35 U	7.6 J	1.5 J	0.35 U
4,4'-DDT	0.55 U	0.57 U	7.7 J	1.9 J	0.56 U
Aldrin	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
alpha-BHC	0.087 U	0.092 U	0.089 U	0.089 U	0.09 U
beta-BHC	0.23 U	0.24 U	0.24 U	0.24 U	0.24 U
Chlordane (technical)	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Chlorobenzilate	4.9 U	5.2 U	5 U	5 U	5.1 U
delta-BHC	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Dieldrin	0.32 U	0.34 U	0.33 UJ	0.33 UJ	0.33 U
Endosulfan I	0.29 U	0.31 U	0.3 U	0.3 U	0.3 U
Endosulfan II	0.71 U	0.75 U	0.73 U	0.73 U	0.73 U
Endosulfan sulfate	0.28 U	0.3 U	0.29 U	0.29 U	0.29 U
Endrin	0.36 U	0.38 U	0.36 UJ	0.36 UJ	0.37 U
Endrin aldehyde	0.67 U	0.71 U	0.69 U	0.68 U	0.69 U
Endrin ketone	0.36 U	0.38 U	0.36 U	0.36 U	0.37 U
gamma-BHC (Lindane)	0.1 U	0.11 U	0.11 U	0.11 U	0.11 U
Heptachlor	0.24 U	0.25 U	0.25 U	0.25 U	0.25 U
Heptachlor epoxide	0.1 U	0.11 U	0.11 U	0.11 U	0.11 U
Isodrin	0.23 U	0.24 U	0.24 U	0.24 U	0.24 U
Kepone	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Methoxychlor	0.84 U	0.88 U	0.86 U	0.86 U	0.86 U
Toxaphene	44 U	46 U	45 U	45 U	45 U
PCB's (ug/kg)					
PCB-1016	4 U	NA	4.1 U	4.1 U	4.1 U
PCB-1221	14 U	NA	14 U	14 U	14 U
PCB-1232	7.9 U	NA	8 U	8 U	8.1 U
PCB-1242	5 U	NA	5.1 U	5.1 U	5.2 U
PCB-1248	5.3 U	NA	5.5 U	5.5 U	5.5 U
PCB-1254	2.4 U	NA	2.5 U	2.5 U	2.5 U
PCB-1260	5 U	NA	5.1 U	5.1 U	5.2 U

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SURFACE SOIL ANALYTICAL RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB06	62SB07	62SB08	62SB08	62SB09
Sample ID	62SB06-00	62SB07-00	62SB08-00	62SB08-00D	62SB09-00
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Metals (mg/kg)					
Antimony	0.087 UJ	0.076 UJ	0.078 UJ	0.12 UJ	0.16 UJ
Arsenic	3.3	2.3	2.4	3	3.7
Barium	53	350	260 J	170 J	140
Beryllium	0.13	0.42	0.68 J	0.44 J	0.27
Cadmium	0.072 J	0.042 J	0.038 J	0.043 J	0.064 J
Chromium	12	19	7.9 J	15 J	9.6
Cobalt	7.6	18	8.7	7.4	11
Copper	45	140	30	37	60
Lead	2	1.8	1.6	2	12
Mercury	0.0038 U	0.0049 J	0.0093 J	0.007 J	0.004 U
Nickel	6	9.7	3.9	3.7	4.4
Selenium	0.14 J	0.24 J	0.28 J	0.24 J	0.18 J
Silver	0.019 J	0.031 J	0.016 UJ	0.021 J	0.018 J
Thallium	0.12 U	0.12 U	0.12 U	0.12 U	0.13 U
Tin	3.9 U	4.1 U	4.1 U	4.1 U	4.5 J
Vanadium	61 J	160 J	42	48	61
Zinc	29	41	19	22	45

SUBSURFACE SOIL

APPENDIX B

SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB01	62SB01	62SB02	62SB02	62SB03
Sample ID	62SB01-03	62SB01-05	62SB02-01	62SB02-03	62SB03-01
Sample Date	5/31/2008	5/31/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	5.0-7.0	9.0-11.0	1.0-3.0	5.0-7.0	1.0-3.0
Volatile Organic Compounds (ug/kg)					
1,1,1,2-Tetrachloroethane	NA	NA	NA	NA	0.63 U
1,1,1-Trichloroethane	NA	NA	NA	NA	0.57 UJ
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	1.4 U
1,1,2-Trichloroethane	NA	NA	NA	NA	1.2 U
1,1-Dichloroethane	NA	NA	NA	NA	0.49 U
1,1-Dichloroethene	NA	NA	NA	NA	0.53 U
1,2,3-Trichloropropane	NA	NA	NA	NA	1.4 U
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	2.8 U
1,2-Dichloroethane	NA	NA	NA	NA	0.99 U
1,2-Dichloropropane	NA	NA	NA	NA	1.1 U
2-Butanone (MEK)	NA	NA	NA	NA	2.7 UJ
2-Chloro-1,3-butadiene	NA	NA	NA	NA	0.56 U
2-Hexanone	NA	NA	NA	NA	2.1 U
3-Chloro-1-propene	NA	NA	NA	NA	1.5 UJ
4-Methyl-2-pentanone (MIBK)	NA	NA	NA	NA	2.9 UJ
Acetone	NA	NA	NA	NA	24 J
Acetonitrile	NA	NA	NA	NA	44 UJ
Acrolein	NA	NA	NA	NA	19 U
Acrylonitrile	NA	NA	NA	NA	23 UJ
Benzene	NA	NA	NA	NA	0.78 U
Bromoform	NA	NA	NA	NA	1.1 U
Bromomethane	NA	NA	NA	NA	1.6 U
Carbon disulfide	NA	NA	NA	NA	0.5 U
Carbon tetrachloride	NA	NA	NA	NA	0.99 UJ
Chlorobenzene	NA	NA	NA	NA	0.72 U
Chlorodibromomethane	NA	NA	NA	NA	0.49 U
Chloroethane	NA	NA	NA	NA	1.2 UJ
Chloroform	NA	NA	NA	NA	0.49 U
Chloromethane	NA	NA	NA	NA	0.7 U
cis-1,3-Dichloropropene	NA	NA	NA	NA	0.86 UJ
Dibromomethane	NA	NA	NA	NA	1.2 U
Dichlorobromomethane	NA	NA	NA	NA	0.82 U
Dichlorodifluoromethane	NA	NA	NA	NA	0.88 U
Ethyl methacrylate	NA	NA	NA	NA	2.2 U
Ethylbenzene	NA	NA	NA	NA	0.74 U
Ethylene Dibromide	NA	NA	NA	NA	1.5 U
Iodomethane	NA	NA	NA	NA	0.99 UJ
Isobutyl alcohol	NA	NA	NA	NA	68 R

APPENDIX B

SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB01	62SB01	62SB02	62SB02	62SB03
Sample ID	62SB01-03	62SB01-05	62SB02-01	62SB02-03	62SB03-01
Sample Date	5/31/2008	5/31/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	5.0-7.0	9.0-11.0	1.0-3.0	5.0-7.0	1.0-3.0
Volatile Organic Compounds (ug/kg)					
Methacrylonitrile	NA	NA	NA	NA	24 UJ
Methyl methacrylate	NA	NA	NA	NA	3.7 UJ
Methylene Chloride	NA	NA	NA	NA	0.99 U
Pentachloroethane	NA	NA	NA	NA	2.2 R
Propionitrile	NA	NA	NA	NA	21 UJ
Styrene	NA	NA	NA	NA	0.65 U
Tetrachloroethene	NA	NA	NA	NA	0.72 U
Toluene	NA	NA	NA	NA	0.78 U
trans-1,2-Dichloroethene	NA	NA	NA	NA	0.96 U
trans-1,3-Dichloropropene	NA	NA	NA	NA	0.86 U
trans-1,4-Dichloro-2-butene	NA	NA	NA	NA	3.1 U
Trichloroethene	NA	NA	NA	NA	0.99 U
Trichlorofluoromethane	NA	NA	NA	NA	1.5 U
Vinyl acetate	NA	NA	NA	NA	1.5 UJ
Vinyl chloride	NA	NA	NA	NA	0.57 U
Xylenes, Total	NA	NA	NA	NA	2.3 U
Semivolatile Organic Compounds (ug/kg)					
1,1'-Biphenyl	NA	NA	NA	NA	8.1 U
1,2,4,5-Tetrachlorobenzene	NA	NA	NA	NA	6.9 U
1,2,4-Trichlorobenzene	NA	NA	NA	NA	8.1 U
1,2-Dichlorobenzene	NA	NA	NA	NA	7.7 U
1,3,5-Trinitrobenzene	NA	NA	NA	NA	19 U
1,3-Dichlorobenzene	NA	NA	NA	NA	6.6 U
1,3-Dinitrobenzene	NA	NA	NA	NA	4.3 U
1,4-Dichlorobenzene	NA	NA	NA	NA	6.8 U
1,4-Dioxane	NA	NA	NA	NA	8.8 U
1,4-Naphthoquinone	NA	NA	NA	NA	4.3 U
2,2'-oxybis[1-chloropropane]	NA	NA	NA	NA	6.9 U
2,3,4,6-Tetrachlorophenol	NA	NA	NA	NA	4.6 U
2,4,5-Trichlorophenol	NA	NA	NA	NA	7.5 U
2,4,6-Trichlorophenol	NA	NA	NA	NA	8.7 U
2,4-Dichlorophenol	NA	NA	NA	NA	8.9 U
2,4-Dimethylphenol	NA	NA	NA	NA	19 U
2,4-Dinitrophenol	NA	NA	NA	NA	91 UJ
2,4-Dinitrotoluene	NA	NA	NA	NA	6.5 U
2,6-Dichlorophenol	NA	NA	NA	NA	7 U
2,6-Dinitrotoluene	NA	NA	NA	NA	6.8 U
2-Acetylaminofluorene	NA	NA	NA	NA	5.6 U
2-Chloronaphthalene	NA	NA	NA	NA	6.8 U
2-Chlorophenol	NA	NA	NA	NA	7.3 U
2-Methylnaphthalene	NA	NA	NA	NA	1.9 U

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SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB01	62SB01	62SB02	62SB02	62SB03
Sample ID	62SB01-03	62SB01-05	62SB02-01	62SB02-03	62SB03-01
Sample Date	5/31/2008	5/31/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	5.0-7.0	9.0-11.0	1.0-3.0	5.0-7.0	1.0-3.0
Semivolatile Organic Compounds (ug/kg)					
2-Methylphenol	NA	NA	NA	NA	8.9 U
2-Naphthylamine	NA	NA	NA	NA	22 UJ
2-Nitroaniline	NA	NA	NA	NA	7.1 U
2-Nitrophenol	NA	NA	NA	NA	8 U
2-Picoline	NA	NA	NA	NA	13 U
2-Toluidine	NA	NA	NA	NA	10 U
3 & 4 Methylphenol	NA	NA	NA	NA	8 U
3,3'-Dichlorobenzidine	NA	NA	NA	NA	10 UJ
3,3'-Dimethylbenzidine	NA	NA	NA	NA	200 U
3-Methylcholanthrene	NA	NA	NA	NA	6.7 UJ
3-Nitroaniline	NA	NA	NA	NA	4.9 U
4,6-Dinitro-2-methylphenol	NA	NA	NA	NA	6.4 U
4-Aminobiphenyl	NA	NA	NA	NA	14 U
4-Bromophenyl phenyl ether	NA	NA	NA	NA	7.8 U
4-Chloro-3-methylphenol	NA	NA	NA	NA	8.2 U
4-Chloroaniline	NA	NA	NA	NA	6.6 U
4-Chlorophenyl phenyl ether	NA	NA	NA	NA	6.8 U
4-Nitroaniline	NA	NA	NA	NA	8.5 U
4-Nitrophenol	NA	NA	NA	NA	36 U
4-Nitroquinoline-1-oxide	NA	NA	NA	NA	12 R
7,12-Dimethylbenz(a)anthracene	NA	NA	NA	NA	10 UJ
Acenaphthene	NA	NA	NA	NA	0.63 U
Acenaphthylene	NA	NA	NA	NA	1.9 U
Acetophenone	NA	NA	NA	NA	9.5 U
alpha,alpha-Dimethyl phenethylamine	NA	NA	NA	NA	65 UJ
Aniline	NA	NA	NA	NA	6.9 U
Anthracene	NA	NA	NA	NA	1.9 U
Aramite, Total	NA	NA	NA	NA	12 U
Benzo[a]anthracene	NA	NA	NA	NA	1.9 U
Benzo[a]pyrene	NA	NA	NA	NA	0.73 UJ
Benzo[b]fluoranthene	NA	NA	NA	NA	0.84 UJ
Benzo[g,h,i]perylene	NA	NA	NA	NA	1.9 UJ
Benzo[k]fluoranthene	NA	NA	NA	NA	1.1 UJ
Benzyl alcohol	NA	NA	NA	NA	8.8 U
Bis(2-chloroethoxy)methane	NA	NA	NA	NA	7.5 U
Bis(2-chloroethyl)ether	NA	NA	NA	NA	6.3 U
Bis(2-ethylhexyl) phthalate	NA	NA	NA	NA	5.3 U
Butyl benzyl phthalate	NA	NA	NA	NA	7.9 U
Chrysene	NA	NA	NA	NA	0.67 U
Diallate	NA	NA	NA	NA	11 U
Dibenz(a,h)anthracene	NA	NA	NA	NA	0.65 UJ
Dibenzofuran	NA	NA	NA	NA	4.6 U

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SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB01	62SB01	62SB02	62SB02	62SB03
Sample ID	62SB01-03	62SB01-05	62SB02-01	62SB02-03	62SB03-01
Sample Date	5/31/2008	5/31/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	5.0-7.0	9.0-11.0	1.0-3.0	5.0-7.0	1.0-3.0
Semivolatile Organic Compounds (ug/kg)					
Diethyl phthalate	NA	NA	NA	NA	12 U
Dimethyl phthalate	NA	NA	NA	NA	7 U
Di-n-butyl phthalate	NA	NA	NA	NA	27 U
Di-n-octyl phthalate	NA	NA	NA	NA	3.6 UJ
Dinoseb	NA	NA	NA	NA	19 UJ
Ethyl methanesulfonate	NA	NA	NA	NA	12 U
Fluoranthene	NA	NA	NA	NA	1.9 U
Fluorene	NA	NA	NA	NA	0.85 U
Hexachlorobenzene	NA	NA	NA	NA	7.5 U
Hexachlorobutadiene	NA	NA	NA	NA	10 U
Hexachlorocyclopentadiene	NA	NA	NA	NA	15 U
Hexachloroethane	NA	NA	NA	NA	8.1 U
Hexachlorophene	NA	NA	NA	NA	910 R
Hexachloropropene	NA	NA	NA	NA	7.9 U
Indeno[1,2,3-cd]pyrene	NA	NA	NA	NA	1.3 UJ
Isophorone	NA	NA	NA	NA	6.8 U
Isosafrole	NA	NA	NA	NA	7.8 U
Methapyrilene	NA	NA	NA	NA	10 U
Methyl methanesulfonate	NA	NA	NA	NA	10 U
Naphthalene	NA	NA	NA	NA	0.66 U
Nitrobenzene	NA	NA	NA	NA	7.6 U
N-Nitro-o-toluidine	NA	NA	NA	NA	6.6 U
N-Nitrosodiethylamine	NA	NA	NA	NA	13 U
N-Nitrosodimethylamine	NA	NA	NA	NA	11 U
N-Nitrosodi-n-butylamine	NA	NA	NA	NA	10 U
N-Nitrosodi-n-propylamine	NA	NA	NA	NA	7.1 U
N-Nitrosodiphenylamine	NA	NA	NA	NA	7.8 U
N-Nitrosomethylethylamine	NA	NA	NA	NA	6.3 U
N-Nitrosomorpholine	NA	NA	NA	NA	7.3 U
N-Nitrosopiperidine	NA	NA	NA	NA	9.3 U
N-Nitrosopyrrolidine	NA	NA	NA	NA	9.8 U
p-Dimethylamino azobenzene	NA	NA	NA	NA	7.8 U
Pentachlorobenzene	NA	NA	NA	NA	6.8 U
Pentachloronitrobenzene	NA	NA	NA	NA	6.5 U
Pentachlorophenol	NA	NA	NA	NA	9.1 U
Phenacetin	NA	NA	NA	NA	5.2 U
Phenanthrene	NA	NA	NA	NA	1.9 U
Phenol	NA	NA	NA	NA	5.3 U
p-Phenylene diamine	NA	NA	NA	NA	180 U
Pronamide	NA	NA	NA	NA	9.9 U
Pyrene	NA	NA	NA	NA	1.9 U
Pyridine	NA	NA	NA	NA	12 U
Safrole, Total	NA	NA	NA	NA	9.1 U

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SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB01	62SB01	62SB02	62SB02	62SB03
Sample ID	62SB01-03	62SB01-05	62SB02-01	62SB02-03	62SB03-01
Sample Date	5/31/2008	5/31/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	5.0-7.0	9.0-11.0	1.0-3.0	5.0-7.0	1.0-3.0
Pesticides (ug/kg)					
4,4'-DDD	NA	NA	NA	NA	0.4 U
4,4'-DDE	NA	NA	NA	NA	0.35 U
4,4'-DDT	NA	NA	NA	NA	0.57 U
Aldrin	NA	NA	NA	NA	0.12 U
alpha-BHC	NA	NA	NA	NA	0.091 U
beta-BHC	NA	NA	NA	NA	0.24 U
Chlordane (technical)	NA	NA	NA	NA	1.5 U
Chlorobenzilate	NA	NA	NA	NA	5.2 U
delta-BHC	NA	NA	NA	NA	0.13 U
Dieldrin	NA	NA	NA	NA	0.34 U
Endosulfan I	NA	NA	NA	NA	0.31 U
Endosulfan II	NA	NA	NA	NA	0.75 U
Endosulfan sulfate	NA	NA	NA	NA	0.3 U
Endrin	NA	NA	NA	NA	0.37 U
Endrin aldehyde	NA	NA	NA	NA	0.7 U
Endrin ketone	NA	NA	NA	NA	0.37 U
gamma-BHC (Lindane)	NA	NA	NA	NA	0.11 U
Heptachlor	NA	NA	NA	NA	0.25 U
Heptachlor epoxide	NA	NA	NA	NA	0.11 U
Isodrin	NA	NA	NA	NA	0.24 U
Kepone	NA	NA	NA	NA	1.5 U
Methoxychlor	NA	NA	NA	NA	0.88 U
Toxaphene	NA	NA	NA	NA	46 U
PCB's (ug/kg)					
PCB-1016	NA	NA	NA	NA	4.2 U
PCB-1221	NA	NA	NA	NA	14 U
PCB-1232	NA	NA	NA	NA	8.3 U
PCB-1242	NA	NA	NA	NA	5.3 U
PCB-1248	NA	NA	NA	NA	5.6 U
PCB-1254	NA	NA	NA	NA	2.5 U
PCB-1260	NA	NA	NA	NA	5.3 U

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SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB01	62SB01	62SB02	62SB02	62SB03
Sample ID	62SB01-03	62SB01-05	62SB02-01	62SB02-03	62SB03-01
Sample Date	5/31/2008	5/31/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	5.0-7.0	9.0-11.0	1.0-3.0	5.0-7.0	1.0-3.0
Metals (mg/kg)					
Antimony	0.078 UJ	0.083 UJ	0.079 UJ	0.078 UJ	0.079 UJ
Arsenic	1.1	1.1	1	1.1	1.2
Barium	66	87	79	18	41
Beryllium	0.38	0.46	0.49	0.26	0.51
Cadmium	0.032 U	0.034 U	0.033 U	0.032 U	0.033 U
Chromium	38	31	17	18	7.6
Cobalt	11	14	3.8	1.9	6.8
Copper	19	17	13	4.2	16
Lead	2.4	1.7	1.2	0.83	1.3
Mercury	0.018 J	0.053	0.0048 J	0.0038 U	0.0044 U
Nickel	5.3	6.1	3.7	3.2	2.2
Selenium	0.13 U	0.16 J	0.14 J	0.17 J	0.16 J
Silver	0.017 UJ	0.018 UJ	0.017 UJ	0.017 UJ	0.017 UJ
Thallium	0.13 U	0.13 U	0.13 U	0.12 U	0.13 U
Tin	4.2 U	4.4 U	4.2 U	4.1 U	4.2 U
Vanadium	86 J	130 J	41 J	35 J	34 J
Zinc	13	16	9.9	5.3	7.4

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SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB03	62SB04	62SB04	62SB04	62SB05
Sample ID	62SB03-05	62SB04-03	62SB04-03D	62SB04-05	62SB05-01
Sample Date	6/1/2008	5/31/2008	5/31/2008	5/31/2008	6/1/2008
Depth Range	9.0-11.0	5.0-7.0	5.0-7.0	9.0-11.0	1.0-3.0
Volatile Organic Compounds (ug/kg)					
1,1,1,2-Tetrachloroethane	0.77 U	NA	NA	NA	NA
1,1,1-Trichloroethane	0.69 UJ	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	1.7 U	NA	NA	NA	NA
1,1,2-Trichloroethane	1.4 U	NA	NA	NA	NA
1,1-Dichloroethane	0.6 U	NA	NA	NA	NA
1,1-Dichloroethene	0.65 U	NA	NA	NA	NA
1,2,3-Trichloropropane	1.7 U	NA	NA	NA	NA
1,2-Dibromo-3-Chloropropane	3.4 U	NA	NA	NA	NA
1,2-Dichloroethane	1.2 U	NA	NA	NA	NA
1,2-Dichloropropane	1.3 U	NA	NA	NA	NA
2-Butanone (MEK)	3.2 UJ	NA	NA	NA	NA
2-Chloro-1,3-butadiene	0.68 U	NA	NA	NA	NA
2-Hexanone	2.5 U	NA	NA	NA	NA
3-Chloro-1-propene	1.8 UJ	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	3.5 UJ	NA	NA	NA	NA
Acetone	10 J	NA	NA	NA	NA
Acetonitrile	54 UJ	NA	NA	NA	NA
Acrolein	23 U	NA	NA	NA	NA
Acrylonitrile	28 UJ	NA	NA	NA	NA
Benzene	0.95 U	NA	NA	NA	NA
Bromoform	1.3 U	NA	NA	NA	NA
Bromomethane	1.9 U	NA	NA	NA	NA
Carbon disulfide	0.61 U	NA	NA	NA	NA
Carbon tetrachloride	1.2 UJ	NA	NA	NA	NA
Chlorobenzene	0.87 U	NA	NA	NA	NA
Chlorodibromomethane	0.6 U	NA	NA	NA	NA
Chloroethane	1.4 UJ	NA	NA	NA	NA
Chloroform	0.6 U	NA	NA	NA	NA
Chloromethane	0.85 U	NA	NA	NA	NA
cis-1,3-Dichloropropene	1 UJ	NA	NA	NA	NA
Dibromomethane	1.4 U	NA	NA	NA	NA
Dichlorobromomethane	0.99 U	NA	NA	NA	NA
Dichlorodifluoromethane	1.1 U	NA	NA	NA	NA
Ethyl methacrylate	2.6 U	NA	NA	NA	NA
Ethylbenzene	0.9 U	NA	NA	NA	NA
Ethylene Dibromide	1.8 U	NA	NA	NA	NA
Iodomethane	1.2 UJ	NA	NA	NA	NA
Isobutyl alcohol	83 R	NA	NA	NA	NA

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SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB03	62SB04	62SB04	62SB04	62SB05
Sample ID	62SB03-05	62SB04-03	62SB04-03D	62SB04-05	62SB05-01
Sample Date	6/1/2008	5/31/2008	5/31/2008	5/31/2008	6/1/2008
Depth Range	9.0-11.0	5.0-7.0	5.0-7.0	9.0-11.0	1.0-3.0
Volatile Organic Compounds (ug/kg)					
Methacrylonitrile	29 UJ	NA	NA	NA	NA
Methyl methacrylate	4.4 UJ	NA	NA	NA	NA
Methylene Chloride	1.2 U	NA	NA	NA	NA
Pentachloroethane	2.6 R	NA	NA	NA	NA
Propionitrile	25 UJ	NA	NA	NA	NA
Styrene	0.79 U	NA	NA	NA	NA
Tetrachloroethene	0.87 U	NA	NA	NA	NA
Toluene	0.95 U	NA	NA	NA	NA
trans-1,2-Dichloroethene	1.2 U	NA	NA	NA	NA
trans-1,3-Dichloropropene	1 U	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	3.7 U	NA	NA	NA	NA
Trichloroethene	1.2 U	NA	NA	NA	NA
Trichlorofluoromethane	1.8 U	NA	NA	NA	NA
Vinyl acetate	1.8 UJ	NA	NA	NA	NA
Vinyl chloride	0.69 U	NA	NA	NA	NA
Xylenes, Total	2.8 U	NA	NA	NA	NA
Semivolatile Organic Compounds (ug/kg)					
1,1'-Biphenyl	7.7 R	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	6.5 R	NA	NA	NA	NA
1,2,4-Trichlorobenzene	7.7 R	NA	NA	NA	NA
1,2-Dichlorobenzene	7.3 R	NA	NA	NA	NA
1,3,5-Trinitrobenzene	18 R	NA	NA	NA	NA
1,3-Dichlorobenzene	6.2 R	NA	NA	NA	NA
1,3-Dinitrobenzene	4 R	NA	NA	NA	NA
1,4-Dichlorobenzene	6.4 R	NA	NA	NA	NA
1,4-Dioxane	8.3 R	NA	NA	NA	NA
1,4-Naphthoquinone	4 R	NA	NA	NA	NA
2,2'-oxybis[1-chloropropane]	6.5 R	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	4.4 R	NA	NA	NA	NA
2,4,5-Trichlorophenol	7.1 R	NA	NA	NA	NA
2,4,6-Trichlorophenol	8.2 R	NA	NA	NA	NA
2,4-Dichlorophenol	8.4 R	NA	NA	NA	NA
2,4-Dimethylphenol	18 R	NA	NA	NA	NA
2,4-Dinitrophenol	86 R	NA	NA	NA	NA
2,4-Dinitrotoluene	6.1 R	NA	NA	NA	NA
2,6-Dichlorophenol	6.6 R	NA	NA	NA	NA
2,6-Dinitrotoluene	6.4 R	NA	NA	NA	NA
2-Acetylaminofluorene	5.3 R	NA	NA	NA	NA
2-Chloronaphthalene	6.4 R	NA	NA	NA	NA
2-Chlorophenol	6.8 R	NA	NA	NA	NA
2-Methylnaphthalene	1.8 R	NA	NA	NA	NA

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SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB03	62SB04	62SB04	62SB04	62SB05
Sample ID	62SB03-05	62SB04-03	62SB04-03D	62SB04-05	62SB05-01
Sample Date	6/1/2008	5/31/2008	5/31/2008	5/31/2008	6/1/2008
Depth Range	9.0-11.0	5.0-7.0	5.0-7.0	9.0-11.0	1.0-3.0
Semivolatile Organic Compounds (ug/kg)					
2-Methylphenol	8.4 R	NA	NA	NA	NA
2-Naphthylamine	21 R	NA	NA	NA	NA
2-Nitroaniline	6.7 R	NA	NA	NA	NA
2-Nitrophenol	7.6 R	NA	NA	NA	NA
2-Picoline	12 R	NA	NA	NA	NA
2-Toluidine	9.6 R	NA	NA	NA	NA
3 & 4 Methylphenol	7.6 R	NA	NA	NA	NA
3,3'-Dichlorobenzidine	9.5 R	NA	NA	NA	NA
3,3'-Dimethylbenzidine	190 R	NA	NA	NA	NA
3-Methylcholanthrene	6.3 R	NA	NA	NA	NA
3-Nitroaniline	4.7 R	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	6 R	NA	NA	NA	NA
4-Aminobiphenyl	13 R	NA	NA	NA	NA
4-Bromophenyl phenyl ether	7.4 R	NA	NA	NA	NA
4-Chloro-3-methylphenol	7.8 R	NA	NA	NA	NA
4-Chloroaniline	6.2 R	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	6.4 R	NA	NA	NA	NA
4-Nitroaniline	8 R	NA	NA	NA	NA
4-Nitrophenol	34 R	NA	NA	NA	NA
4-Nitroquinoline-1-oxide	11 R	NA	NA	NA	NA
7,12-Dimethylbenz(a)anthracene	9.6 R	NA	NA	NA	NA
Acenaphthene	0.59 R	NA	NA	NA	NA
Acenaphthylene	1.8 R	NA	NA	NA	NA
Acetophenone	8.9 R	NA	NA	NA	NA
alpha,alpha-Dimethyl phenethylamine	61 R	NA	NA	NA	NA
Aniline	6.5 R	NA	NA	NA	NA
Anthracene	1.8 R	NA	NA	NA	NA
Aramite, Total	11 R	NA	NA	NA	NA
Benzo[a]anthracene	1.8 R	NA	NA	NA	NA
Benzo[a]pyrene	0.68 R	NA	NA	NA	NA
Benzo[b]fluoranthene	0.79 R	NA	NA	NA	NA
Benzo[g,h,i]perylene	1.8 R	NA	NA	NA	NA
Benzo[k]fluoranthene	1 R	NA	NA	NA	NA
Benzyl alcohol	8.3 R	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	7.1 R	NA	NA	NA	NA
Bis(2-chloroethyl)ether	5.9 R	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	19 R	NA	NA	NA	NA
Butyl benzyl phthalate	7.5 R	NA	NA	NA	NA
Chrysene	0.63 R	NA	NA	NA	NA
Diallate	10 R	NA	NA	NA	NA
Dibenz(a,h)anthracene	0.61 R	NA	NA	NA	NA
Dibenzofuran	4.4 R	NA	NA	NA	NA

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SWMU 62 - FORMER BUNDY DISPOSAL AREA
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Site ID	62SB03	62SB04	62SB04	62SB04	62SB05
Sample ID	62SB03-05	62SB04-03	62SB04-03D	62SB04-05	62SB05-01
Sample Date	6/1/2008	5/31/2008	5/31/2008	5/31/2008	6/1/2008
Depth Range	9.0-11.0	5.0-7.0	5.0-7.0	9.0-11.0	1.0-3.0
Semivolatile Organic Compounds (ug/kg)					
Diethyl phthalate	11 R	NA	NA	NA	NA
Dimethyl phthalate	6.6 R	NA	NA	NA	NA
Di-n-butyl phthalate	26 R	NA	NA	NA	NA
Di-n-octyl phthalate	3.4 R	NA	NA	NA	NA
Dinoseb	18 R	NA	NA	NA	NA
Ethyl methanesulfonate	11 R	NA	NA	NA	NA
Fluoranthene	1.8 R	NA	NA	NA	NA
Fluorene	0.8 R	NA	NA	NA	NA
Hexachlorobenzene	7.1 R	NA	NA	NA	NA
Hexachlorobutadiene	9.4 R	NA	NA	NA	NA
Hexachlorocyclopentadiene	15 R	NA	NA	NA	NA
Hexachloroethane	7.7 R	NA	NA	NA	NA
Hexachlorophene	860 R	NA	NA	NA	NA
Hexachloropropene	7.5 R	NA	NA	NA	NA
Indeno[1,2,3-cd]pyrene	1.2 R	NA	NA	NA	NA
Isophorone	6.4 R	NA	NA	NA	NA
Isosafrole	7.4 R	NA	NA	NA	NA
Methapyrilene	9.6 R	NA	NA	NA	NA
Methyl methanesulfonate	9.6 R	NA	NA	NA	NA
Naphthalene	0.62 R	NA	NA	NA	NA
Nitrobenzene	7.2 R	NA	NA	NA	NA
N-Nitro-o-toluidine	6.2 R	NA	NA	NA	NA
N-Nitrosodiethylamine	12 R	NA	NA	NA	NA
N-Nitrosodimethylamine	10 R	NA	NA	NA	NA
N-Nitrosodi-n-butylamine	9.4 R	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	6.7 R	NA	NA	NA	NA
N-Nitrosodiphenylamine	7.4 R	NA	NA	NA	NA
N-Nitrosomethylethylamine	5.9 R	NA	NA	NA	NA
N-Nitrosomorpholine	6.8 R	NA	NA	NA	NA
N-Nitrosopiperidine	8.8 R	NA	NA	NA	NA
N-Nitrosopyrrolidine	9.2 R	NA	NA	NA	NA
p-Dimethylamino azobenzene	7.4 R	NA	NA	NA	NA
Pentachlorobenzene	6.4 R	NA	NA	NA	NA
Pentachloronitrobenzene	6.1 R	NA	NA	NA	NA
Pentachlorophenol	8.6 R	NA	NA	NA	NA
Phenacetin	4.9 R	NA	NA	NA	NA
Phenanthrene	1.8 R	NA	NA	NA	NA
Phenol	5 R	NA	NA	NA	NA
p-Phenylene diamine	170 R	NA	NA	NA	NA
Pronamide	9.3 R	NA	NA	NA	NA
Pyrene	1.8 R	NA	NA	NA	NA
Pyridine	11 R	NA	NA	NA	NA
Safrole, Total	8.6 R	NA	NA	NA	NA

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SWMU 62 - FORMER BUNDY DISPOSAL AREA
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NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB03	62SB04	62SB04	62SB04	62SB05
Sample ID	62SB03-05	62SB04-03	62SB04-03D	62SB04-05	62SB05-01
Sample Date	6/1/2008	5/31/2008	5/31/2008	5/31/2008	6/1/2008
Depth Range	9.0-11.0	5.0-7.0	5.0-7.0	9.0-11.0	1.0-3.0
Pesticides (ug/kg)					
4,4'-DDD	0.38 U	NA	NA	NA	NA
4,4'-DDE	0.33 U	NA	NA	NA	NA
4,4'-DDT	0.54 U	NA	NA	NA	NA
Aldrin	0.11 U	NA	NA	NA	NA
alpha-BHC	0.087 U	NA	NA	NA	NA
beta-BHC	0.23 U	NA	NA	NA	NA
Chlordane (technical)	1.5 U	NA	NA	NA	NA
Chlorobenzilate	4.9 U	NA	NA	NA	NA
delta-BHC	0.13 U	NA	NA	NA	NA
Dieldrin	0.32 U	NA	NA	NA	NA
Endosulfan I	0.29 U	NA	NA	NA	NA
Endosulfan II	0.71 U	NA	NA	NA	NA
Endosulfan sulfate	0.28 U	NA	NA	NA	NA
Endrin	0.36 U	NA	NA	NA	NA
Endrin aldehyde	0.67 U	NA	NA	NA	NA
Endrin ketone	0.36 U	NA	NA	NA	NA
gamma-BHC (Lindane)	0.1 U	NA	NA	NA	NA
Heptachlor	0.24 U	NA	NA	NA	NA
Heptachlor epoxide	0.1 U	NA	NA	NA	NA
Isodrin	0.23 U	NA	NA	NA	NA
Kepone	1.5 U	NA	NA	NA	NA
Methoxychlor	0.84 U	NA	NA	NA	NA
Toxaphene	44 U	NA	NA	NA	NA
PCB's (ug/kg)					
PCB-1016	4 U	NA	NA	NA	NA
PCB-1221	14 U	NA	NA	NA	NA
PCB-1232	7.8 U	NA	NA	NA	NA
PCB-1242	5 U	NA	NA	NA	NA
PCB-1248	5.3 U	NA	NA	NA	NA
PCB-1254	2.4 U	NA	NA	NA	NA
PCB-1260	5 U	NA	NA	NA	NA

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SWMU 62 - FORMER BUNDY DISPOSAL AREA
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NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB03	62SB04	62SB04	62SB04	62SB05
Sample ID	62SB03-05	62SB04-03	62SB04-03D	62SB04-05	62SB05-01
Sample Date	6/1/2008	5/31/2008	5/31/2008	5/31/2008	6/1/2008
Depth Range	9.0-11.0	5.0-7.0	5.0-7.0	9.0-11.0	1.0-3.0
Metals (mg/kg)					
Antimony	0.073 UJ	0.087 UJ	0.076 UJ	0.11 UJ	0.07 UJ
Arsenic	1.9	1.3	1.4	1.3	1.2
Barium	410	67	83	240	83
Beryllium	1	0.35	0.37	0.53	0.42
Cadmium	0.03 U	0.033 J	0.031 U	0.033 U	0.029 U
Chromium	2.6	5.3 J	21 J	39	1.4
Cobalt	13	6.1	6.1	29	7.6
Copper	37	11	11	15	5.4
Lead	0.6	1.5	1.2	2.8	0.43
Mercury	0.0039 U	0.0042 U	0.0041 U	0.0044 U	0.0038 U
Nickel	3	3 J	4.8 J	5.3	1.4
Selenium	0.2 J	0.15 J	0.17 J	0.13 J	0.12 J
Silver	0.015 UJ	0.016 UJ	0.016 UJ	0.017 UJ	0.015 UJ
Thallium	0.12 U	0.12 U	0.12 U	0.13 U	0.11 U
Tin	3.9 U	4 U	4 U	4.3 U	3.7 U
Vanadium	32 J	37 J	44 J	120 J	30 J
Zinc	18	10	11	15	8.8

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SWMU 62 - FORMER BUNDY DISPOSAL AREA
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NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB05	62SB06	62SB06	62SB07	62SB07
Sample ID	62SB05-02	62SB06-01	62SB06-03	62SB07-01	62SB07-02
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	3.0-5.0	1.0-3.0	5.0-7.0	1.0-3.0	3.0-5.0
Volatile Organic Compounds (ug/kg)					
1,1,1,2-Tetrachloroethane	NA	0.77 U	0.76 U	NA	NA
1,1,1-Trichloroethane	NA	0.7 UJ	0.68 UJ	NA	NA
1,1,2,2-Tetrachloroethane	NA	1.7 U	1.7 U	NA	NA
1,1,2-Trichloroethane	NA	1.5 U	1.4 U	NA	NA
1,1-Dichloroethane	NA	0.6 U	0.59 U	NA	NA
1,1-Dichloroethene	NA	0.65 U	0.64 U	NA	NA
1,2,3-Trichloropropane	NA	1.7 U	1.7 U	NA	NA
1,2-Dibromo-3-Chloropropane	NA	3.4 U	3.3 U	NA	NA
1,2-Dichloroethane	NA	1.2 U	1.2 U	NA	NA
1,2-Dichloropropane	NA	1.3 U	1.3 U	NA	NA
2-Butanone (MEK)	NA	4.1 UJ	3.2 UJ	NA	NA
2-Chloro-1,3-butadiene	NA	0.69 U	0.67 U	NA	NA
2-Hexanone	NA	2.5 U	2.5 U	NA	NA
3-Chloro-1-propene	NA	1.8 UJ	1.8 UJ	NA	NA
4-Methyl-2-pentanone (MIBK)	NA	3.5 UJ	3.4 UJ	NA	NA
Acetone	NA	40 J	14 J	NA	NA
Acetonitrile	NA	54 UJ	53 UJ	NA	NA
Acrolein	NA	23 U	22 U	NA	NA
Acrylonitrile	NA	28 UJ	27 UJ	NA	NA
Benzene	NA	0.95 U	0.93 U	NA	NA
Bromoform	NA	1.3 U	1.3 U	NA	NA
Bromomethane	NA	1.9 U	1.9 U	NA	NA
Carbon disulfide	NA	0.68 J	0.6 U	NA	NA
Carbon tetrachloride	NA	1.2 UJ	1.2 UJ	NA	NA
Chlorobenzene	NA	0.88 U	0.86 U	NA	NA
Chlorodibromomethane	NA	0.6 U	0.59 U	NA	NA
Chloroethane	NA	1.5 UJ	1.4 UJ	NA	NA
Chloroform	NA	0.6 U	0.59 U	NA	NA
Chloromethane	NA	0.86 U	0.84 U	NA	NA
cis-1,3-Dichloropropene	NA	1.1 UJ	1 UJ	NA	NA
Dibromomethane	NA	1.5 U	1.4 U	NA	NA
Dichlorobromomethane	NA	1 U	0.98 U	NA	NA
Dichlorodifluoromethane	NA	1.1 U	1.1 U	NA	NA
Ethyl methacrylate	NA	2.7 U	2.6 U	NA	NA
Ethylbenzene	NA	0.91 U	0.89 U	NA	NA
Ethylene Dibromide	NA	1.8 U	1.8 U	NA	NA
Iodomethane	NA	1.2 UJ	1.2 UJ	NA	NA
Isobutyl alcohol	NA	83 R	81 R	NA	NA

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SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB05	62SB06	62SB06	62SB07	62SB07
Sample ID	62SB05-02	62SB06-01	62SB06-03	62SB07-01	62SB07-02
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	3.0-5.0	1.0-3.0	5.0-7.0	1.0-3.0	3.0-5.0
Volatile Organic Compounds (ug/kg)					
Methacrylonitrile	NA	29 UJ	28 UJ	NA	NA
Methyl methacrylate	NA	4.5 UJ	4.4 UJ	NA	NA
Methylene Chloride	NA	1.2 U	1.2 U	NA	NA
Pentachloroethane	NA	2.7 R	2.6 R	NA	NA
Propionitrile	NA	25 UJ	25 UJ	NA	NA
Styrene	NA	0.8 U	0.78 U	NA	NA
Tetrachloroethene	NA	0.88 U	0.86 U	NA	NA
Toluene	NA	0.95 U	0.93 U	NA	NA
trans-1,2-Dichloroethene	NA	1.2 U	1.1 U	NA	NA
trans-1,3-Dichloropropene	NA	1.1 U	1 U	NA	NA
trans-1,4-Dichloro-2-butene	NA	3.7 U	3.7 U	NA	NA
Trichloroethene	NA	1.2 U	1.2 U	NA	NA
Trichlorofluoromethane	NA	1.8 U	1.8 U	NA	NA
Vinyl acetate	NA	1.8 UJ	1.8 UJ	NA	NA
Vinyl chloride	NA	0.7 U	0.68 U	NA	NA
Xylenes, Total	NA	2.8 U	2.7 U	NA	NA
Semivolatile Organic Compounds (ug/kg)					
1,1'-Biphenyl	NA	8 U	8.6 U	NA	NA
1,2,4,5-Tetrachlorobenzene	NA	6.8 U	7.3 U	NA	NA
1,2,4-Trichlorobenzene	NA	8 U	8.6 U	NA	NA
1,2-Dichlorobenzene	NA	7.6 U	8.1 U	NA	NA
1,3,5-Trinitrobenzene	NA	18 U	20 U	NA	NA
1,3-Dichlorobenzene	NA	6.5 U	6.9 U	NA	NA
1,3-Dinitrobenzene	NA	4.2 U	4.5 U	NA	NA
1,4-Dichlorobenzene	NA	6.7 U	7.2 U	NA	NA
1,4-Dioxane	NA	8.7 U	9.3 U	NA	NA
1,4-Naphthoquinone	NA	4.2 U	4.5 U	NA	NA
2,2'-oxybis[1-chloropropane]	NA	6.8 U	7.3 U	NA	NA
2,3,4,6-Tetrachlorophenol	NA	4.5 U	4.9 U	NA	NA
2,4,5-Trichlorophenol	NA	7.4 U	7.9 U	NA	NA
2,4,6-Trichlorophenol	NA	8.5 U	9.1 U	NA	NA
2,4-Dichlorophenol	NA	8.8 U	9.4 U	NA	NA
2,4-Dimethylphenol	NA	18 U	20 U	NA	NA
2,4-Dinitrophenol	NA	90 UJ	96 UJ	NA	NA
2,4-Dinitrotoluene	NA	6.4 U	6.8 U	NA	NA
2,6-Dichlorophenol	NA	6.9 U	7.4 U	NA	NA
2,6-Dinitrotoluene	NA	6.7 U	7.2 U	NA	NA
2-Acetylaminofluorene	NA	5.5 U	5.9 U	NA	NA
2-Chloronaphthalene	NA	6.7 U	7.2 U	NA	NA
2-Chlorophenol	NA	7.1 U	7.6 U	NA	NA
2-Methylnaphthalene	NA	1.8 U	2 U	NA	NA

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SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB05	62SB06	62SB06	62SB07	62SB07
Sample ID	62SB05-02	62SB06-01	62SB06-03	62SB07-01	62SB07-02
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	3.0-5.0	1.0-3.0	5.0-7.0	1.0-3.0	3.0-5.0
Semivolatile Organic Compounds (ug/kg)					
2-Methylphenol	NA	8.8 U	9.4 U	NA	NA
2-Naphthylamine	NA	22 UJ	23 UJ	NA	NA
2-Nitroaniline	NA	7 U	7.5 U	NA	NA
2-Nitrophenol	NA	7.9 U	8.4 U	NA	NA
2-Picoline	NA	13 U	14 U	NA	NA
2-Toluidine	NA	10 U	11 U	NA	NA
3 & 4 Methylphenol	NA	7.9 U	8.4 U	NA	NA
3,3'-Dichlorobenzidine	NA	10 UJ	11 UJ	NA	NA
3,3'-Dimethylbenzidine	NA	190 U	210 U	NA	NA
3-Methylcholanthrene	NA	6.6 U	7.1 U	NA	NA
3-Nitroaniline	NA	4.9 U	5.2 U	NA	NA
4,6-Dinitro-2-methylphenol	NA	6.3 U	6.7 U	NA	NA
4-Aminobiphenyl	NA	14 U	15 U	NA	NA
4-Bromophenyl phenyl ether	NA	7.7 U	8.2 U	NA	NA
4-Chloro-3-methylphenol	NA	8.1 U	8.7 U	NA	NA
4-Chloroaniline	NA	6.5 U	6.9 U	NA	NA
4-Chlorophenyl phenyl ether	NA	6.7 U	7.2 U	NA	NA
4-Nitroaniline	NA	8.3 U	8.9 U	NA	NA
4-Nitrophenol	NA	36 U	38 U	NA	NA
4-Nitroquinoline-1-oxide	NA	12 R	13 R	NA	NA
7,12-Dimethylbenz(a)anthracene	NA	10 U	11 U	NA	NA
Acenaphthene	NA	0.62 U	0.66 U	NA	NA
Acenaphthylene	NA	1.8 U	2 U	NA	NA
Acetophenone	NA	9.3 U	9.9 U	NA	NA
alpha,alpha-Dimethyl phenethylamine	NA	64 UJ	68 UJ	NA	NA
Aniline	NA	6.8 U	7.3 U	NA	NA
Anthracene	NA	1.8 U	2 U	NA	NA
Aramite, Total	NA	12 U	13 U	NA	NA
Benzo[a]anthracene	NA	1.8 U	2 U	NA	NA
Benzo[a]pyrene	NA	0.71 U	0.76 U	NA	NA
Benzo[b]fluoranthene	NA	0.82 U	0.88 U	NA	NA
Benzo[g,h,i]perylene	NA	1.8 U	2 U	NA	NA
Benzo[k]fluoranthene	NA	1.1 U	1.2 U	NA	NA
Benzyl alcohol	NA	8.7 U	9.3 U	NA	NA
Bis(2-chloroethoxy)methane	NA	7.4 U	7.9 U	NA	NA
Bis(2-chloroethyl)ether	NA	6.2 U	6.6 U	NA	NA
Bis(2-ethylhexyl) phthalate	NA	8 U	26 U	NA	NA
Butyl benzyl phthalate	NA	7.8 U	8.3 U	NA	NA
Chrysene	NA	0.66 U	0.71 U	NA	NA
Diallate	NA	10 U	11 U	NA	NA
Dibenz(a,h)anthracene	NA	0.64 U	0.68 U	NA	NA
Dibenzofuran	NA	4.5 U	4.9 U	NA	NA

APPENDIX B

SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB05	62SB06	62SB06	62SB07	62SB07
Sample ID	62SB05-02	62SB06-01	62SB06-03	62SB07-01	62SB07-02
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	3.0-5.0	1.0-3.0	5.0-7.0	1.0-3.0	3.0-5.0
Semivolatile Organic Compounds (ug/kg)					
Diethyl phthalate	NA	12 U	13 U	NA	NA
Dimethyl phthalate	NA	6.9 U	7.4 U	NA	NA
Di-n-butyl phthalate	NA	27 U	29 U	NA	NA
Di-n-octyl phthalate	NA	3.6 U	3.8 U	NA	NA
Dinoseb	NA	18 UJ	20 UJ	NA	NA
Ethyl methanesulfonate	NA	12 U	13 U	NA	NA
Fluoranthene	NA	1.8 U	2 U	NA	NA
Fluorene	NA	0.83 U	0.89 U	NA	NA
Hexachlorobenzene	NA	7.4 U	7.9 U	NA	NA
Hexachlorobutadiene	NA	9.8 U	11 U	NA	NA
Hexachlorocyclopentadiene	NA	15 U	16 U	NA	NA
Hexachloroethane	NA	8 U	8.6 U	NA	NA
Hexachlorophene	NA	900 R	960 R	NA	NA
Hexachloropropene	NA	7.8 U	8.3 U	NA	NA
Indeno[1,2,3-cd]pyrene	NA	1.3 U	1.4 U	NA	NA
Isophorone	NA	6.7 U	7.2 U	NA	NA
Isosafrole	NA	7.7 U	8.2 U	NA	NA
Methapyrilene	NA	10 U	11 U	NA	NA
Methyl methanesulfonate	NA	10 U	11 U	NA	NA
Naphthalene	NA	0.65 U	0.69 U	NA	NA
Nitrobenzene	NA	7.5 U	8 U	NA	NA
N-Nitro-o-toluidine	NA	6.5 U	6.9 U	NA	NA
N-Nitrosodiethylamine	NA	13 U	14 U	NA	NA
N-Nitrosodimethylamine	NA	11 U	11 U	NA	NA
N-Nitrosodi-n-butylamine	NA	9.8 U	11 U	NA	NA
N-Nitrosodi-n-propylamine	NA	7 U	7.5 U	NA	NA
N-Nitrosodiphenylamine	NA	7.7 U	8.2 U	NA	NA
N-Nitrosomethylethylamine	NA	6.2 U	6.6 U	NA	NA
N-Nitrosomorpholine	NA	7.1 U	7.6 U	NA	NA
N-Nitrosopiperidine	NA	9.2 U	9.8 U	NA	NA
N-Nitrosopyrrolidine	NA	9.6 U	10 U	NA	NA
p-Dimethylamino azobenzene	NA	7.7 U	8.2 U	NA	NA
Pentachlorobenzene	NA	6.7 U	7.2 U	NA	NA
Pentachloronitrobenzene	NA	6.4 U	6.8 U	NA	NA
Pentachlorophenol	NA	9 U	9.6 U	NA	NA
Phenacetin	NA	5.1 U	5.4 U	NA	NA
Phenanthrene	NA	1.8 U	2 U	NA	NA
Phenol	NA	5.2 U	5.6 U	NA	NA
p-Phenylene diamine	NA	170 U	190 U	NA	NA
Pronamide	NA	9.7 U	10 U	NA	NA
Pyrene	NA	1.8 U	2 U	NA	NA
Pyridine	NA	12 U	13 U	NA	NA
Safrole, Total	NA	9 U	9.6 U	NA	NA

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SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB05	62SB06	62SB06	62SB07	62SB07
Sample ID	62SB05-02	62SB06-01	62SB06-03	62SB07-01	62SB07-02
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	3.0-5.0	1.0-3.0	5.0-7.0	1.0-3.0	3.0-5.0
Pesticides (ug/kg)					
4,4'-DDD	NA	0.39 U	0.41 U	NA	NA
4,4'-DDE	NA	0.35 U	0.37 U	NA	NA
4,4'-DDT	NA	0.56 U	0.6 U	NA	NA
Aldrin	NA	0.12 U	0.13 U	NA	NA
alpha-BHC	NA	0.089 U	0.095 U	NA	NA
beta-BHC	NA	0.24 U	0.25 U	NA	NA
Chlordane (technical)	NA	1.5 U	1.6 U	NA	NA
Chlorobenzilate	NA	5.1 U	5.4 U	NA	NA
delta-BHC	NA	0.13 U	0.14 U	NA	NA
Dieldrin	NA	0.33 U	0.36 U	NA	NA
Endosulfan I	NA	0.3 U	0.32 U	NA	NA
Endosulfan II	NA	0.73 U	0.78 U	NA	NA
Endosulfan sulfate	NA	0.29 U	0.31 U	NA	NA
Endrin	NA	0.37 U	0.39 U	NA	NA
Endrin aldehyde	NA	0.69 U	0.73 U	NA	NA
Endrin ketone	NA	0.37 U	0.39 U	NA	NA
gamma-BHC (Lindane)	NA	0.11 U	0.11 U	NA	NA
Heptachlor	NA	0.25 U	0.26 U	NA	NA
Heptachlor epoxide	NA	0.11 U	0.11 U	NA	NA
Isodrin	NA	0.24 U	0.25 U	NA	NA
Kepone	NA	1.5 U	1.6 U	NA	NA
Methoxychlor	NA	0.86 U	0.92 U	NA	NA
Toxaphene	NA	45 U	48 U	NA	NA
PCB's (ug/kg)					
PCB-1016	NA	4.1 U	4.4 U	NA	NA
PCB-1221	NA	14 U	15 U	NA	NA
PCB-1232	NA	8.1 U	8.6 U	NA	NA
PCB-1242	NA	5.2 U	5.5 U	NA	NA
PCB-1248	NA	5.5 U	5.8 U	NA	NA
PCB-1254	NA	2.5 U	2.6 U	NA	NA
PCB-1260	NA	5.2 U	5.5 U	NA	NA

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SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB05	62SB06	62SB06	62SB07	62SB07
Sample ID	62SB05-02	62SB06-01	62SB06-03	62SB07-01	62SB07-02
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	3.0-5.0	1.0-3.0	5.0-7.0	1.0-3.0	3.0-5.0
Metals (mg/kg)					
Antimony	0.072 UJ	0.078 UJ	0.49 UJ	0.1 UJ	0.095 UJ
Arsenic	0.99	1	5.2	1.1	0.84
Barium	58	350	430	110	240
Beryllium	0.26	0.21	0.85	0.3	0.23
Cadmium	0.028 U	0.032 U	0.032 U	0.035 U	0.029 U
Chromium	20	29	1.8	1.9	2.2
Cobalt	4.1	17	2.3	4.7	5.6
Copper	6.1	140	2.6	50	55
Lead	0.36	0.65	2	0.32 U	0.28 U
Mercury	0.011 J	0.027	0.0043 J	0.0042 U	0.0035 U
Nickel	1.5	19	0.74	1.5	1.6
Selenium	0.11 J	0.14 J	0.46 J	0.13 U	0.11 U
Silver	0.015 UJ	0.036 J	0.017 UJ	0.018 UJ	0.015 UJ
Thallium	0.11 U	0.13 U	0.12 U	0.13 U	0.11 U
Tin	3.6 U	4.2 U	4.1 U	4.5 U	3.8 U
Vanadium	25 J	110 J	31 J	35	34
Zinc	6.2	40	3.8 J	16	17

APPENDIX B

SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB08	62SB08	62SB08	62SB09	62SB09
Sample ID	62SB08-01	62SB08-02	62SB08-02D	62SB09-01	62SB09-02
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	1.0-3.0	3.0-5.0	3.0-5.0	1.0-3.0	3.0-5.0
Volatile Organic Compounds (ug/kg)					
1,1,1,2-Tetrachloroethane	0.76 U	0.72 U	0.61 U	0.75 U	0.77 U
1,1,1-Trichloroethane	0.69 UJ	0.65 UJ	0.55 UJ	0.68 UJ	0.7 UJ
1,1,2,2-Tetrachloroethane	1.7 U	1.6 U	1.3 U	1.6 U	1.7 U
1,1,2-Trichloroethane	1.4 U	1.4 U	1.1 U	1.4 U	1.5 U
1,1-Dichloroethane	0.6 U	0.56 U	0.48 U	0.59 U	0.61 U
1,1-Dichloroethene	0.64 U	0.61 U	0.51 U	0.63 U	0.65 U
1,2,3-Trichloropropane	1.7 U	1.6 U	1.3 U	1.6 U	1.7 U
1,2-Dibromo-3-Chloropropane	3.3 U	3.2 U	2.7 U	3.3 U	3.4 U
1,2-Dichloroethane	1.2 U	1.1 U	0.95 U	1.2 U	1.2 U
1,2-Dichloropropane	1.3 U	1.2 U	1 U	1.3 U	1.3 U
2-Butanone (MEK)	3.2 UJ	3 UJ	3.3 UJ	3.2 UJ	6.1 UJ
2-Chloro-1,3-butadiene	0.68 U	0.64 U	0.54 U	0.67 U	0.69 U
2-Hexanone	2.5 U	2.4 U	2 U	2.5 U	2.5 U
3-Chloro-1-propene	1.8 UJ	1.7 U	1.4 U	1.8 U	1.8 U
4-Methyl-2-pentanone (MIBK)	3.5 UJ	3.3 UJ	2.8 UJ	3.4 UJ	3.5 UJ
Acetone	39 J	40 UJ	30 UJ	28 UJ	5.3 UJ
Acetonitrile	54 UJ	51 U	43 U	53 U	54 U
Acrolein	23 U	21 U	18 U	22 U	23 U
Acrylonitrile	27 UJ	26 UJ	22 UJ	27 UJ	28 UJ
Benzene	0.94 U	0.89 U	0.75 U	0.93 U	0.96 U
Bromoform	1.3 U	1.2 U	1 U	1.3 U	1.3 U
Bromomethane	1.9 U	1.8 U	1.5 U	1.9 U	1.9 U
Carbon disulfide	0.62 J	0.57 U	0.49 U	0.6 U	0.62 U
Carbon tetrachloride	1.2 UJ	1.1 UJ	0.95 UJ	1.2 UJ	1.2 UJ
Chlorobenzene	0.87 U	0.82 U	0.69 U	0.86 U	0.88 U
Chlorodibromomethane	0.6 U	0.56 U	0.48 U	0.59 U	0.61 U
Chloroethane	1.4 UJ	1.4 UJ	1.1 UJ	1.4 UJ	1.5 UJ
Chloroform	0.6 U	0.56 U	0.48 U	0.59 U	0.61 U
Chloromethane	0.85 U	0.8 U	0.68 U	0.83 U	0.86 U
cis-1,3-Dichloropropene	1 UJ	0.98 UJ	0.83 UJ	1 UJ	1.1 UJ
Dibromomethane	1.4 U	1.4 U	1.1 U	1.4 U	1.5 U
Dichlorobromomethane	0.99 U	0.93 U	0.79 U	0.97 U	1 U
Dichlorodifluoromethane	1.1 U	1 U	0.85 U	1 U	1.1 U
Ethyl methacrylate	2.6 U	2.5 U	2.1 U	2.6 U	2.7 U
Ethylbenzene	0.89 U	0.84 U	0.71 U	0.88 U	0.91 U
Ethylene Dibromide	1.8 U	1.7 U	1.4 U	1.8 U	1.8 U
Iodomethane	1.2 UJ	1.1 U	0.95 U	1.2 U	2.4 J
Isobutyl alcohol	82 R	78 U	66 U	81 U	84 U

APPENDIX B

SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB08	62SB08	62SB08	62SB09	62SB09
Sample ID	62SB08-01	62SB08-02	62SB08-02D	62SB09-01	62SB09-02
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	1.0-3.0	3.0-5.0	3.0-5.0	1.0-3.0	3.0-5.0
Volatile Organic Compounds (ug/kg)					
Methacrylonitrile	29 UJ	27 U	23 U	28 U	29 U
Methyl methacrylate	4.4 UJ	4.2 U	3.5 U	4.3 U	4.5 U
Methylene Chloride	1.2 U	1.1 U	0.95 U	1.2 U	1.2 U
Pentachloroethane	2.6 R	2.5 R	2.1 R	2.6 R	2.7 R
Propionitrile	25 UJ	24 U	20 U	25 U	25 U
Styrene	0.79 U	0.74 U	0.63 U	0.77 U	0.8 U
Tetrachloroethene	0.87 U	0.82 U	0.69 U	0.86 U	0.88 U
Toluene	0.94 U	0.89 U	0.75 U	0.93 U	0.96 U
trans-1,2-Dichloroethene	1.2 U	1.1 U	0.92 U	1.1 U	1.2 U
trans-1,3-Dichloropropene	1 U	0.98 U	0.83 U	1 U	1.1 U
trans-1,4-Dichloro-2-butene	3.7 U	3.5 U	2.9 U	3.6 U	3.8 U
Trichloroethene	1.2 U	1.1 U	0.95 U	1.2 U	1.2 U
Trichlorofluoromethane	1.8 U	1.7 U	1.4 U	1.8 U	1.8 U
Vinyl acetate	1.8 UJ	1.7 U	1.4 U	1.8 U	1.8 U
Vinyl chloride	0.69 U	0.65 U	0.55 U	0.68 U	0.7 U
Xylenes, Total	2.7 U	2.6 U	2.2 U	2.7 U	2.8 U
Semivolatile Organic Compounds (ug/kg)					
1,1'-Biphenyl	7.9 U	8.3 U	7.8 U	8 U	7.7 U
1,2,4,5-Tetrachlorobenzene	6.7 U	7.1 U	6.7 U	6.9 U	6.5 U
1,2,4-Trichlorobenzene	7.9 U	8.3 U	7.8 U	8 U	7.7 U
1,2-Dichlorobenzene	7.5 U	7.9 U	7.4 U	7.6 U	7.3 U
1,3,5-Trinitrobenzene	18 U	19 U	18 U	18 U	18 U
1,3-Dichlorobenzene	6.4 U	6.7 U	6.3 U	6.5 U	6.2 U
1,3-Dinitrobenzene	4.2 U	4.4 U	4.1 U	4.2 U	4 U
1,4-Dichlorobenzene	6.6 U	7 U	6.6 U	6.7 U	6.4 U
1,4-Dioxane	8.5 U	9 U	8.5 U	8.7 U	8.3 U
1,4-Naphthoquinone	4.2 U	4.4 U	4.1 U	4.2 U	4 U
2,2'-oxybis[1-chloropropane]	6.7 U	7.1 U	6.7 U	6.9 U	6.5 U
2,3,4,6-Tetrachlorophenol	4.5 U	4.7 U	4.4 U	4.6 U	4.4 U
2,4,5-Trichlorophenol	7.2 UJ	7.6 UJ	7.2 U	7.4 UJ	7.1 U
2,4,6-Trichlorophenol	8.4 U	8.9 U	8.4 U	8.6 U	8.2 U
2,4-Dichlorophenol	8.6 U	9.1 U	8.6 U	8.8 U	8.4 U
2,4-Dimethylphenol	18 U	19 U	18 U	18 U	18 U
2,4-Dinitrophenol	88 UJ	93 UJ	88 U	90 UJ	86 U
2,4-Dinitrotoluene	6.3 U	6.6 U	6.2 U	6.4 U	6.1 U
2,6-Dichlorophenol	6.8 U	7.2 U	6.8 U	7 U	6.6 U
2,6-Dinitrotoluene	6.6 U	7 U	6.6 U	6.7 U	6.4 U
2-Acetylaminofluorene	5.4 U	5.7 U	5.4 U	5.5 U	5.3 U
2-Chloronaphthalene	6.6 U	7 U	6.6 U	6.7 U	6.4 U
2-Chlorophenol	7 U	7.4 U	7 U	7.2 U	6.9 U
2-Methylnaphthalene	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U

APPENDIX B

SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB08	62SB08	62SB08	62SB09	62SB09
Sample ID	62SB08-01	62SB08-02	62SB08-02D	62SB09-01	62SB09-02
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	1.0-3.0	3.0-5.0	3.0-5.0	1.0-3.0	3.0-5.0
Semivolatile Organic Compounds (ug/kg)					
2-Methylphenol	8.6 U	9.1 U	8.6 U	8.8 U	8.4 U
2-Naphthylamine	21 UJ	22 UJ	21 UJ	22 UJ	21 UJ
2-Nitroaniline	6.9 U	7.3 U	6.9 U	7.1 U	6.7 U
2-Nitrophenol	7.8 U	8.2 U	7.7 U	7.9 U	7.6 U
2-Picoline	13 U	13 U	13 U	13 U	12 U
2-Toluidine	9.9 U	10 U	9.8 U	10 U	9.7 U
3 & 4 Methylphenol	7.8 U	8.2 U	7.7 U	7.9 U	7.6 U
3,3'-Dichlorobenzidine	9.8 U	10 U	9.7 U	10 U	9.5 U
3,3'-Dimethylbenzidine	190 UJ	200 UJ	190 UJ	200 UJ	190 UJ
3-Methylcholanthrene	6.5 U	6.9 U	6.4 U	6.6 U	6.3 U
3-Nitroaniline	4.8 UJ	5.1 UJ	4.8 U	4.9 UJ	4.7 U
4,6-Dinitro-2-methylphenol	6.2 U	6.5 U	6.1 U	6.3 U	6 U
4-Aminobiphenyl	14 U	15 U	14 U	14 U	13 U
4-Bromophenyl phenyl ether	7.6 U	8 U	7.5 U	7.7 U	7.4 U
4-Chloro-3-methylphenol	8 U	8.4 U	7.9 U	8.2 U	7.8 U
4-Chloroaniline	6.4 U	6.7 U	6.3 U	6.5 U	6.2 U
4-Chlorophenyl phenyl ether	6.6 U	7 U	6.6 U	6.7 U	6.4 U
4-Nitroaniline	8.2 U	8.7 U	8.1 U	8.4 U	8 U
4-Nitrophenol	35 U	37 U	35 U	36 U	34 U
4-Nitroquinoline-1-oxide	12 R	12 R	12 R	12 R	11 R
7,12-Dimethylbenz(a)anthracene	9.9 U	10 U	9.8 U	10 U	9.7 U
Acenaphthene	0.61 U	0.64 U	0.6 U	0.62 U	0.59 U
Acenaphthylene	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U
Acetophenone	9.2 U	9.7 U	9.1 U	9.4 U	8.9 U
alpha,alpha-Dimethyl phenethylamine	63 U	66 U	62 U	64 U	61 U
Aniline	6.7 U	7.1 U	6.7 U	6.9 U	6.5 U
Anthracene	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U
Aramite, Total	12 U	12 U	12 U	12 U	11 U
Benzo[a]anthracene	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U
Benzo[a]pyrene	0.7 U	0.74 U	0.7 U	0.72 U	0.69 U
Benzo[b]fluoranthene	0.81 UJ	0.85 UJ	0.8 UJ	0.83 UJ	0.79 UJ
Benzo[g,h,i]perylene	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U
Benzo[k]fluoranthene	1.1 U	1.1 U	1.1 U	1.1 U	1 U
Benzyl alcohol	8.5 U	9 U	8.5 U	8.7 U	8.3 U
Bis(2-chloroethoxy)methane	7.2 U	7.6 U	7.2 U	7.4 U	7.1 U
Bis(2-chloroethyl)ether	6.1 U	6.4 U	6 U	6.2 U	5.9 U
Bis(2-ethylhexyl) phthalate	13 U	39 U	16 U	12 U	15 U
Butyl benzyl phthalate	7.7 U	8.1 U	7.6 U	7.8 U	7.5 U
Chrysene	0.65 U	0.69 U	0.64 U	0.66 U	0.63 U
Diallate	10 U	11 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	0.63 U	0.66 U	0.62 U	0.64 U	0.61 U
Dibenzofuran	4.5 U	4.7 U	4.4 U	4.6 U	4.4 U

APPENDIX B

SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB08	62SB08	62SB08	62SB09	62SB09
Sample ID	62SB08-01	62SB08-02	62SB08-02D	62SB09-01	62SB09-02
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	1.0-3.0	3.0-5.0	3.0-5.0	1.0-3.0	3.0-5.0
Semivolatile Organic Compounds (ug/kg)					
Diethyl phthalate	12 U	12 U	12 U	12 U	11 U
Dimethyl phthalate	6.8 U	7.2 U	6.8 U	7 U	6.6 U
Di-n-butyl phthalate	27 U	28 U	26 U	27 U	26 U
Di-n-octyl phthalate	3.5 U	3.7 U	3.5 U	3.6 U	3.4 U
Dinoseb	18 U	19 U	18 U	18 U	18 U
Ethyl methanesulfonate	12 U	12 U	12 U	12 U	11 U
Fluoranthene	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U
Fluorene	0.82 U	0.87 U	0.81 U	0.84 U	0.8 U
Hexachlorobenzene	7.2 U	7.6 U	7.2 U	7.4 U	7.1 U
Hexachlorobutadiene	9.7 U	10 U	9.6 U	9.9 U	9.4 U
Hexachlorocyclopentadiene	15 U	16 U	15 U	15 U	15 U
Hexachloroethane	7.9 U	8.3 U	7.8 U	8 U	7.7 U
Hexachlorophene	880 U	930 U	880 U	900 U	860 U
Hexachloropropene	7.7 U	8.1 U	7.6 U	7.8 U	7.5 U
Indeno[1,2,3-cd]pyrene	1.3 U	1.3 U	1.3 U	1.3 U	1.2 U
Isophorone	6.6 U	7 U	6.6 U	6.7 U	6.4 U
Isosafrole	7.6 U	8 U	7.5 U	7.7 U	7.4 U
Methapyrilene	9.9 UJ	10 UJ	9.8 U	10 UJ	9.7 U
Methyl methanesulfonate	9.9 U	10 U	9.8 U	10 U	9.7 U
Naphthalene	0.64 UJ	0.67 UJ	0.82 J	0.65 UJ	0.62 UJ
Nitrobenzene	7.3 U	7.8 U	7.3 U	7.5 U	7.2 U
N-Nitro-o-toluidine	6.4 U	6.7 U	6.3 U	6.5 U	6.2 U
N-Nitrosodiethylamine	13 U	13 U	13 U	13 U	12 U
N-Nitrosodimethylamine	10 U	11 U	10 U	11 U	10 U
N-Nitrosodi-n-butylamine	9.7 U	10 U	9.6 U	9.9 U	9.4 U
N-Nitrosodi-n-propylamine	6.9 U	7.3 U	6.9 U	7.1 U	6.7 U
N-Nitrosodiphenylamine	7.6 U	8 U	7.5 U	7.7 U	7.4 U
N-Nitrosomethylethylamine	6.1 U	6.4 U	6 U	6.2 U	5.9 U
N-Nitrosomorpholine	7 U	7.4 U	7 U	7.2 U	6.9 U
N-Nitrosopiperidine	9 U	9.6 U	9 U	9.2 U	8.8 U
N-Nitrosopyrrolidine	9.5 U	10 U	9.4 U	9.7 U	9.2 U
p-Dimethylamino azobenzene	7.6 U	8 U	7.5 U	7.7 U	7.4 U
Pentachlorobenzene	6.6 U	7 U	6.6 U	6.7 U	6.4 U
Pentachloronitrobenzene	6.3 U	6.6 U	6.2 UJ	6.4 U	6.1 UJ
Pentachlorophenol	8.8 U	9.3 U	8.8 U	9 U	8.6 U
Phenacetin	5 U	5.3 U	5 U	5.1 U	4.9 U
Phenanthrene	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U
Phenol	5.1 U	5.4 U	5.1 U	5.2 U	5 U
p-Phenylene diamine	170 U	180 U	170 U	170 U	170 U
Pronamide	9.6 U	10 U	9.5 U	9.8 U	9.3 U
Pyrene	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U
Pyridine	12 U	12 U	12 U	12 U	11 U
Safrole, Total	8.8 U	9.3 U	8.8 U	9 U	8.6 U

APPENDIX B

SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB08	62SB08	62SB08	62SB09	62SB09
Sample ID	62SB08-01	62SB08-02	62SB08-02D	62SB09-01	62SB09-02
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	1.0-3.0	3.0-5.0	3.0-5.0	1.0-3.0	3.0-5.0
Pesticides (ug/kg)					
4,4'-DDD	0.39 U	0.4 U	0.38 U	0.4 U	0.37 U
4,4'-DDE	0.34 U	0.36 U	0.34 U	0.35 U	0.33 U
4,4'-DDT	0.56 U	0.58 U	0.55 U	0.57 U	0.54 U
Aldrin	0.12 U	0.12 U	0.12 U	0.12 U	0.11 U
alpha-BHC	0.089 U	0.093 U	0.088 U	0.091 U	0.086 U
beta-BHC	0.24 U	0.25 U	0.23 U	0.24 U	0.23 U
Chlordane (technical)	1.5 U	1.6 U	1.5 U	1.5 U	1.5 U
Chlorobenzilate	5 U	5.3 U	5 U	5.2 U	4.9 U
delta-BHC	0.13 U	0.13 U	0.13 U	0.13 U	0.12 U
Dieldrin	0.33 U	0.35 U	0.33 U	0.34 U	0.32 U
Endosulfan I	0.3 U	0.31 U	0.3 U	0.31 U	0.29 U
Endosulfan II	0.73 U	0.76 U	0.72 U	0.75 U	0.71 U
Endosulfan sulfate	0.29 U	0.3 U	0.29 U	0.3 U	0.28 U
Endrin	0.36 U	0.38 U	0.36 U	0.37 U	0.35 U
Endrin aldehyde	0.69 U	0.72 U	0.68 U	0.7 U	0.66 U
Endrin ketone	0.36 U	0.38 U	0.36 U	0.37 U	0.35 U
gamma-BHC (Lindane)	0.11 U	0.11 U	0.11 U	0.11 U	0.1 U
Heptachlor	0.25 U	0.26 U	0.24 U	0.25 U	0.24 U
Heptachlor epoxide	0.11 U	0.11 U	0.11 U	0.11 U	0.1 U
Isodrin	0.24 U	0.25 U	0.23 U	0.24 U	0.23 U
Kepone	1.5 U	1.6 U	1.5 U	1.5 U	1.5 U
Methoxychlor	0.86 U	0.9 U	0.84 U	0.88 U	0.83 U
Toxaphene	45 U	47 U	44 U	46 U	44 U
PCB's (ug/kg)					
PCB-1016	4.1 U	4.3 U	4 U	4.2 U	3.9 U
PCB-1221	14 U	15 U	14 U	14 U	13 U
PCB-1232	8 U	8.4 U	7.9 U	8.3 U	7.8 U
PCB-1242	5.2 U	5.4 U	5.1 U	5.3 U	5 U
PCB-1248	5.5 U	5.7 U	5.4 U	5.6 U	5.3 U
PCB-1254	2.5 U	2.6 U	2.4 U	2.5 U	2.4 U
PCB-1260	5.2 U	5.4 U	5.1 U	5.3 U	5 U

APPENDIX B

SUBSURFACE SOIL ANALYTICA RESULTS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Site ID	62SB08	62SB08	62SB08	62SB09	62SB09
Sample ID	62SB08-01	62SB08-02	62SB08-02D	62SB09-01	62SB09-02
Sample Date	6/1/2008	6/1/2008	6/1/2008	6/1/2008	6/1/2008
Depth Range	1.0-3.0	3.0-5.0	3.0-5.0	1.0-3.0	3.0-5.0
Metals (mg/kg)					
Antimony	0.1 UJ	0.11 UJ	0.11 UJ	0.09 UJ	0.071 UJ
Arsenic	1.8	1.4	1.9	2	1.4
Barium	130	160	140	160	180
Beryllium	0.84	0.45	0.36	1	1.2
Cadmium	0.031 U	0.033 U	0.037 J	0.032 U	0.029 U
Chromium	1.9	4.8	8.2	2.4	1.7
Cobalt	7.4	4.5	6.9	4.7	7.5
Copper	22	22	19	9.1	4.2
Lead	0.54	1.1	2	0.5	0.34
Mercury	0.0043 U	0.026	0.033	0.0042 U	0.0039 U
Nickel	1.4	2.3	3.2	1.1	1
Selenium	0.2 J	0.35 J	0.36 J	0.2 J	0.15 J
Silver	0.016 UJ	0.03 J	0.022 J	0.016 UJ	0.015 UJ
Thallium	0.12 U	0.13 U	0.12 U	0.12 U	0.11 U
Tin	4 U	4.2 U	3.9 U	4.1 U	3.8 U
Vanadium	33	38	42	32	25
Zinc	13	10	12	14	17

QA/QC DATA

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - QA/QC SAMPLES
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	QATB01	62TB01	62TB03	71TB02
Date	5/2/2008	5/31/2008	6/1/2008	5/31/2008
Volatile Organic Compounds (mg/L)				
1,1,1,2-Tetrachloroethane	0.29 U	0.29 U	0.29 U	NA
1,1,1-Trichloroethane	0.39 U	0.39 U	0.39 U	NA
1,1,2,2-Tetrachloroethane	0.26 U	0.26 U	0.26 U	NA
1,1,2-Trichloroethane	0.51 U	0.51 U	0.51 U	NA
1,1-Dichloroethane	0.32 U	0.32 U	0.32 U	NA
1,1-Dichloroethene	0.36 U	0.36 U	0.36 U	NA
1,2,3-Trichloropropane	0.42 U	0.42 U	0.42 U	NA
1,2-Dibromo-3-Chloropropane	0.48 U	0.48 UJ	0.48 UJ	NA
1,2-Dichloroethane	0.31 U	0.31 U	0.31 U	NA
1,2-Dichloropropane	0.36 U	0.36 U	0.36 U	NA
2-Butanone (MEK)	0.6 U	0.6 U	0.6 U	NA
2-Chloro-1,3-butadiene	0.35 U	0.35 U	0.35 U	NA
2-Hexanone	0.68 U	0.68 U	0.68 U	NA
3-Chloro-1-propene	0.46 U	0.46 U	0.46 U	NA
4-Methyl-2-pentanone (MIBK)	0.6 U	0.6 U	0.6 U	NA
Acetone	5 U	5 U	5 U	NA
Acetonitrile	15 U	15 U	15 U	NA
Acrolein	18 U	18 UJ	18 UJ	NA
Acrylonitrile	3.8 U	3.8 U	3.8 U	NA
Benzene	0.32 U	0.32 U	0.32 U	NA
Bromoform	0.41 U	0.41 U	0.41 U	NA
Bromomethane	0.5 U	0.5 UJ	0.5 UJ	NA
Carbon disulfide	0.17 U	0.17 U	0.17 U	NA
Carbon tetrachloride	0.27 U	0.27 U	0.27 U	NA
Chlorobenzene	0.34 U	0.34 U	0.34 U	NA
Chlorodibromomethane	0.3 U	0.3 U	0.3 U	NA
Chloroethane	1 U	1 UJ	1 UJ	NA
Chloroform	0.29 U	0.29 U	0.29 U	NA
Chloromethane	0.28 U	0.28 UJ	0.28 UJ	NA
cis-1,3-Dichloropropene	0.37 U	0.37 UJ	0.37 UJ	NA
Dibromomethane	0.29 U	0.29 U	0.29 U	NA
Dichlorobromomethane	0.34 U	0.34 U	0.34 U	NA
Dichlorodifluoromethane	0.33 U	0.33 U	0.33 U	NA
Ethyl methacrylate	1 U	1 U	1 U	NA
Ethylbenzene	0.3 U	0.3 U	0.3 U	NA
Ethylene Dibromide	0.3 U	0.3 U	0.3 U	NA
Iodomethane	1 U	1 U	1 U	NA

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - QA/QC SAMPLES
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	QATB01	62TB01	62TB03	71TB02
Date	5/2/2008	5/31/2008	6/1/2008	5/31/2008
Volatile Organic Compounds (mg/L)				
Isobutyl alcohol	19 U	19 U	19 U	NA
Methacrylonitrile	6.6 U	6.6 U	6.6 U	NA
Methyl methacrylate	0.38 U	0.38 U	0.38 U	NA
Methylene Chloride	1 U	1 U	1 U	NA
Pentachloroethane	1.3 UJ	1.3 R	1.3 R	NA
Propionitrile	9.2 U	9.2 U	9.2 U	NA
Styrene	0.36 U	0.36 U	0.36 U	NA
Tetrachloroethene	0.28 U	0.28 U	0.28 U	NA
Toluene	0.31 U	0.31 U	0.31 U	NA
trans-1,2-Dichloroethene	0.3 U	0.3 U	0.3 U	NA
trans-1,3-Dichloropropene	0.27 U	0.27 UJ	0.27 UJ	NA
trans-1,4-Dichloro-2-butene	0.83 U	0.83 U	0.83 U	NA
Trichloroethene	0.4 U	0.4 U	0.4 U	NA
Trichlorofluoromethane	0.29 U	0.29 UJ	0.29 UJ	NA
Vinyl acetate	0.62 UJ	0.62 U	0.62 U	NA
Vinyl chloride	0.2 U	0.2 U	0.2 U	NA
Xylenes, Total	0.87 U	0.87 U	0.87 U	NA
Semivolatile Organic Compounds (ug/L)				
1,1'-Biphenyl	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA	NA
1,3,5-Trinitrobenzene	NA	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA
1,3-Dinitrobenzene	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA
1,4-Dioxane	NA	NA	NA	NA
1,4-Naphthoquinone	NA	NA	NA	NA
2,2'-oxybis[1-chloropropane]	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	NA	NA	NA	NA
2,4,5-Trichlorophenol	NA	NA	NA	NA
2,4,6-Trichlorophenol	NA	NA	NA	NA
2,4-Dichlorophenol	NA	NA	NA	NA
2,4-Dimethylphenol	NA	NA	NA	NA
2,4-Dinitrophenol	NA	NA	NA	NA
2,4-Dinitrotoluene	NA	NA	NA	NA
2,6-Dichlorophenol	NA	NA	NA	NA
2,6-Dinitrotoluene	NA	NA	NA	NA
2-Acetylaminofluorene	NA	NA	NA	NA
2-Chloronaphthalene	NA	NA	NA	NA
2-Chlorophenol	NA	NA	NA	NA

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - QA/QC SAMPLES
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	QATB01	62TB01	62TB03	71TB02
Date	5/2/2008	5/31/2008	6/1/2008	5/31/2008
Semivolatile Organic Compounds (ug/L)				
2-Methylnaphthalene	NA	NA	NA	NA
2-Methylphenol	NA	NA	NA	NA
2-Naphthylamine	NA	NA	NA	NA
2-Nitroaniline	NA	NA	NA	NA
2-Nitrophenol	NA	NA	NA	NA
2-Picoline	NA	NA	NA	NA
2-Toluidine	NA	NA	NA	NA
3 & 4 Methylphenol	NA	NA	NA	NA
3,3'-Dichlorobenzidine	NA	NA	NA	NA
3,3'-Dimethylbenzidine	NA	NA	NA	NA
3-Methylcholanthrene	NA	NA	NA	NA
3-Nitroaniline	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	NA	NA	NA	NA
4-Aminobiphenyl	NA	NA	NA	NA
4-Bromophenyl phenyl ether	NA	NA	NA	NA
4-Chloro-3-methylphenol	NA	NA	NA	NA
4-Chloroaniline	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	NA	NA	NA	NA
4-Nitroaniline	NA	NA	NA	NA
4-Nitrophenol	NA	NA	NA	NA
4-Nitroquinoline-1-oxide	NA	NA	NA	NA
7,12-Dimethylbenz(a)anthracene	NA	NA	NA	NA
Acenaphthene	NA	NA	NA	NA
Acenaphthylene	NA	NA	NA	NA
Acetophenone	NA	NA	NA	NA
alpha,alpha-Dimethyl phenethylamine	NA	NA	NA	NA
Aniline	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA
Aramite, Total	NA	NA	NA	NA
Benzo[a]anthracene	NA	NA	NA	NA
Benzo[a]pyrene	NA	NA	NA	NA
Benzo[b]fluoranthene	NA	NA	NA	NA
Benzo[g,h,i]perylene	NA	NA	NA	NA
Benzo[k]fluoranthene	NA	NA	NA	NA
Benzyl alcohol	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	NA	NA	NA	NA
Bis(2-chloroethyl)ether	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	NA	NA	NA	NA
Butyl benzyl phthalate	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA
Diallate	NA	NA	NA	NA
Dibenz(a,h)anthracene	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA
Diethyl phthalate	NA	NA	NA	NA

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - QA/QC SAMPLES
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	QATB01	62TB01	62TB03	71TB02
Date	5/2/2008	5/31/2008	6/1/2008	5/31/2008
Semivolatile Organic Compounds (ug/L)				
Dimethyl phthalate	NA	NA	NA	NA
Di-n-butyl phthalate	NA	NA	NA	NA
Di-n-octyl phthalate	NA	NA	NA	NA
Dinoseb	NA	NA	NA	NA
Ethyl methanesulfonate	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA
Hexachlorobenzene	NA	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA	NA
Hexachlorocyclopentadiene	NA	NA	NA	NA
Hexachloroethane	NA	NA	NA	NA
Hexachlorophene	NA	NA	NA	NA
Hexachloropropene	NA	NA	NA	NA
Indeno[1,2,3-cd]pyrene	NA	NA	NA	NA
Isophorone	NA	NA	NA	NA
Isosafrole	NA	NA	NA	NA
Methapyrilene	NA	NA	NA	NA
Methyl methanesulfonate	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA
Nitrobenzene	NA	NA	NA	NA
N-Nitro-o-toluidine	NA	NA	NA	NA
N-Nitrosodiethylamine	NA	NA	NA	NA
N-Nitrosodimethylamine	NA	NA	NA	NA
N-Nitrosodi-n-butylamine	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	NA	NA	NA	NA
N-Nitrosodiphenylamine	NA	NA	NA	NA
N-Nitrosomethylethylamine	NA	NA	NA	NA
N-Nitrosomorpholine	NA	NA	NA	NA
N-Nitrosopiperidine	NA	NA	NA	NA
N-Nitrosopyrrolidine	NA	NA	NA	NA
p-Dimethylamino azobenzene	NA	NA	NA	NA
Pentachlorobenzene	NA	NA	NA	NA
Pentachloronitrobenzene	NA	NA	NA	NA
Pentachlorophenol	NA	NA	NA	NA
Phenacetin	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA
Phenol	NA	NA	NA	NA
p-Phenylene diamine	NA	NA	NA	NA
Pronamide	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA
Pyridine	NA	NA	NA	NA
Safrole, Total	NA	NA	NA	NA

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - QA/QC SAMPLES
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	QATB01	62TB01	62TB03	71TB02
Date	5/2/2008	5/31/2008	6/1/2008	5/31/2008
Pesticides/PCBs (ug/L)				
4,4'-DDD	NA	NA	NA	NA
4,4'-DDE	NA	NA	NA	NA
4,4'-DDT	NA	NA	NA	NA
Aldrin	NA	NA	NA	NA
alpha-BHC	NA	NA	NA	NA
beta-BHC	NA	NA	NA	NA
Chlordane (technical)	NA	NA	NA	NA
Chlorobenzilate	NA	NA	NA	NA
delta-BHC	NA	NA	NA	NA
Dieldrin	NA	NA	NA	NA
Pesticides/PCBs (ug/L)				
Endosulfan I	NA	NA	NA	NA
Endosulfan II	NA	NA	NA	NA
Endosulfan sulfate	NA	NA	NA	NA
Endrin	NA	NA	NA	NA
Endrin aldehyde	NA	NA	NA	NA
Endrin ketone	NA	NA	NA	NA
gamma-BHC (Lindane)	NA	NA	NA	NA
Heptachlor	NA	NA	NA	NA
Heptachlor epoxide	NA	NA	NA	NA
Isodrin	NA	NA	NA	NA
Kepone	NA	NA	NA	NA
Methoxychlor	NA	NA	NA	NA
PCB-1016	NA	NA	NA	NA
PCB-1221	NA	NA	NA	NA
PCB-1232	NA	NA	NA	NA
PCB-1242	NA	NA	NA	NA
PCB-1248	NA	NA	NA	NA
PCB-1254	NA	NA	NA	NA
PCB-1260	NA	NA	NA	NA
Toxaphene	NA	NA	NA	NA
Metals (mg/L)				
Antimony	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA
Barium	NA	NA	NA	NA
Beryllium	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA
Chromium	NA	NA	NA	NA
Cobalt	NA	NA	NA	NA
Copper	NA	NA	NA	NA
Lead	NA	NA	NA	NA
Mercury	NA	NA	NA	NA
Nickel	NA	NA	NA	NA
Selenium	NA	NA	NA	NA

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - QA/QC SAMPLES
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	QATB01	62TB01	62TB03	71TB02
Date	5/2/2008	5/31/2008	6/1/2008	5/31/2008
Metals (mg/L)				
Silver	NA	NA	NA	NA
Thallium	NA	NA	NA	NA
Tin	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA
Zinc	NA	NA	NA	NA
TPH DRO (mg/L)				
Diesel Range Organics [C10-C28]	NA	NA	NA	NA
Gasoline Range Organics (GRO)-C6-C10	0.012 U	NA	0.012 U	0.012 U

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - QA/QC SAMPLES
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	61TB02	ER24	ER25	FB01
Date	5/31/2008	5/31/2008	6/1/2008	5/2/2008
Volatile Organic Compounds (mg/L)				
1,1,1,2-Tetrachloroethane	0.29 U	0.29 U	0.29 U	0.29 U
1,1,1-Trichloroethane	0.39 U	0.39 U	0.39 U	0.39 U
1,1,2,2-Tetrachloroethane	0.26 U	0.26 U	0.26 U	0.26 U
1,1,2-Trichloroethane	0.51 U	0.51 U	0.51 U	0.51 U
1,1-Dichloroethane	0.32 U	0.32 U	0.32 U	0.32 U
1,1-Dichloroethene	0.36 U	0.36 U	0.36 U	0.36 U
1,2,3-Trichloropropane	0.42 U	0.42 U	0.42 U	0.42 U
1,2-Dibromo-3-Chloropropane	0.48 U	0.48 U	0.48 U	0.48 U
1,2-Dichloroethane	0.31 U	0.31 U	0.31 U	0.31 U
1,2-Dichloropropane	0.36 U	0.36 U	0.36 U	0.36 U
2-Butanone (MEK)	0.79 J	1.1 J	0.74 J	0.69 J
2-Chloro-1,3-butadiene	0.35 U	0.35 U	0.35 U	0.35 U
2-Hexanone	0.68 U	0.68 U	0.68 U	0.68 U
3-Chloro-1-propene	0.46 U	0.46 U	0.46 U	0.46 U
4-Methyl-2-pentanone (MIBK)	0.6 U	0.6 U	0.6 U	0.6 U
Acetone	6.1 J	6.6 J	5 U	5 U
Acetonitrile	15 U	15 U	15 U	15 U
Acrolein	18 UJ	18 UJ	18 UJ	18 U
Acrylonitrile	3.8 U	3.8 U	3.8 U	3.8 U
Benzene	0.32 U	1.2	1.3	0.32 U
Bromoform	0.41 U	0.41 U	0.41 U	0.41 U
Bromomethane	0.5 U	0.5 U	0.5 U	0.5 UJ
Carbon disulfide	0.19 J	0.17 U	0.17 U	0.17 U
Carbon tetrachloride	0.27 U	0.27 U	0.27 U	0.27 U
Chlorobenzene	0.34 U	0.34 U	0.34 U	0.34 U
Chlorodibromomethane	0.3 U	0.3 U	0.3 U	0.3 U
Chloroethane	1 U	1 U	1 U	1 U
Chloroform	0.29 U	0.29 U	0.29 U	0.29 U
Chloromethane	0.28 U	0.28 U	0.28 U	0.28 UJ
cis-1,3-Dichloropropene	0.37 U	0.37 U	0.37 U	0.37 U
Dibromomethane	0.29 U	0.29 U	0.29 U	0.29 U
Dichlorobromomethane	0.34 U	0.34 U	0.34 U	0.34 U
Dichlorodifluoromethane	0.33 U	0.33 U	0.33 U	0.33 U
Ethyl methacrylate	1 U	1 U	1 U	1 U
Ethylbenzene	0.3 U	0.3 U	0.3 U	0.3 U
Ethylene Dibromide	0.3 U	0.3 U	0.3 U	0.3 U
Iodomethane	1 U	1 U	1 U	1 U

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - QA/QC SAMPLES
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	61TB02	ER24	ER25	FB01
Date	5/31/2008	5/31/2008	6/1/2008	5/2/2008
Volatile Organic Compounds (mg/L)				
Isobutyl alcohol	19 UJ	19 UJ	19 UJ	19 U
Methacrylonitrile	6.6 U	6.6 U	6.6 U	6.6 U
Methyl methacrylate	0.38 U	0.38 U	0.38 U	0.38 U
Methylene Chloride	1 U	1 U	1 U	1 U
Pentachloroethane	1.3 R	1.3 R	1.3 R	1.3 UJ
Propionitrile	9.2 UJ	9.2 UJ	9.2 UJ	9.2 U
Styrene	0.36 U	0.38 J	0.36 U	0.36 U
Tetrachloroethene	0.28 U	0.28 U	1.5	0.28 U
Toluene	0.31 U	0.5 J	0.52 J	0.31 U
trans-1,2-Dichloroethene	0.3 U	0.3 U	0.3 U	0.3 U
trans-1,3-Dichloropropene	0.27 U	0.27 U	0.27 U	0.27 U
trans-1,4-Dichloro-2-butene	0.83 U	0.83 U	0.83 U	0.83 U
Trichloroethene	0.4 U	0.4 U	0.4 U	0.4 U
Trichlorofluoromethane	0.29 U	0.29 U	0.29 U	0.29 U
Vinyl acetate	0.62 U	0.62 U	0.62 U	0.62 UJ
Vinyl chloride	0.2 U	0.2 U	0.2 U	0.2 U
Xylenes, Total	0.87 U	0.87 U	1.3 J	0.87 U
Semivolatile Organic Compounds (ug/L)				
1,1'-Biphenyl	NA	0.17 UJ	0.17 UJ	0.17 UJ
1,2,4,5-Tetrachlorobenzene	NA	0.23 UJ	0.23 UJ	0.23 UJ
1,2,4-Trichlorobenzene	NA	0.13 UJ	0.13 UJ	0.13 UJ
1,2-Dichlorobenzene	NA	0.13 UJ	0.13 UJ	0.13 UJ
1,3,5-Trinitrobenzene	NA	0.2 UJ	0.2 UJ	0.2 UJ
1,3-Dichlorobenzene	NA	0.12 UJ	0.12 UJ	0.12 UJ
1,3-Dinitrobenzene	NA	0.22 UJ	0.22 UJ	0.22 UJ
1,4-Dichlorobenzene	NA	0.12 UJ	0.12 UJ	0.16 J
1,4-Dioxane	NA	0.49 UJ	0.49 UJ	0.49 UJ
1,4-Naphthoquinone	NA	0.16 UJ	0.16 UJ	0.16 UJ
2,2'-oxybis[1-chloropropane]	NA	0.097 UJ	0.097 UJ	0.097 UJ
2,3,4,6-Tetrachlorophenol	NA	0.29 UJ	0.29 UJ	0.29 UJ
2,4,5-Trichlorophenol	NA	0.16 UJ	0.16 UJ	0.16 UJ
2,4,6-Trichlorophenol	NA	0.16 UJ	0.16 UJ	0.16 UJ
2,4-Dichlorophenol	NA	0.15 UJ	0.15 UJ	0.15 UJ
2,4-Dimethylphenol	NA	0.4 UJ	0.4 UJ	0.4 UJ
2,4-Dinitrophenol	NA	2.4 UJ	2.4 UJ	2.4 UJ
2,4-Dinitrotoluene	NA	0.17 UJ	0.17 UJ	0.17 UJ
2,6-Dichlorophenol	NA	0.21 UJ	0.21 UJ	0.21 UJ
2,6-Dinitrotoluene	NA	0.15 UJ	0.15 UJ	0.15 UJ
2-Acetylaminofluorene	NA	0.19 UJ	0.19 UJ	0.19 UJ
2-Chloronaphthalene	NA	0.12 UJ	0.12 UJ	0.12 UJ
2-Chlorophenol	NA	0.15 UJ	0.15 UJ	0.15 UJ

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SUMMARY OF ANALYTICAL RESULTS - QA/QC SAMPLES
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	61TB02	ER24	ER25	FB01
Date	5/31/2008	5/31/2008	6/1/2008	5/2/2008
Semivolatile Organic Compounds (ug/L)				
2-Methylnaphthalene	NA	0.032 J	0.038 J	0.022 UJ
2-Methylphenol	NA	0.15 UJ	0.15 UJ	0.15 UJ
2-Naphthylamine	NA	1.1 UJ	1.1 UJ	1.1 UJ
2-Nitroaniline	NA	0.14 UJ	0.14 UJ	0.14 UJ
2-Nitrophenol	NA	0.17 UJ	0.17 UJ	0.17 UJ
2-Picoline	NA	0.57 UJ	0.57 UJ	0.57 UJ
2-Toluidine	NA	0.32 UJ	0.32 UJ	0.32 UJ
3 & 4 Methylphenol	NA	0.15 UJ	0.15 UJ	0.15 UJ
3,3'-Dichlorobenzidine	NA	3.7 UJ	3.7 UJ	3.7 UJ
3,3'-Dimethylbenzidine	NA	3.7 UJ	3.7 UJ	3.7 UJ
3-Methylcholanthrene	NA	0.2 UJ	0.2 UJ	0.2 UJ
3-Nitroaniline	NA	0.28 UJ	0.28 UJ	0.28 UJ
4,6-Dinitro-2-methylphenol	NA	0.49 UJ	0.49 UJ	0.49 UJ
4-Aminobiphenyl	NA	0.68 UJ	0.68 UJ	0.68 UJ
4-Bromophenyl phenyl ether	NA	0.16 UJ	0.16 UJ	0.16 UJ
4-Chloro-3-methylphenol	NA	0.16 UJ	0.16 UJ	0.16 UJ
4-Chloroaniline	NA	0.4 UJ	0.4 UJ	0.4 UJ
4-Chlorophenyl phenyl ether	NA	0.15 UJ	0.15 UJ	0.15 UJ
4-Nitroaniline	NA	0.26 UJ	0.26 UJ	0.26 UJ
4-Nitrophenol	NA	0.18 UJ	0.18 UJ	0.18 UJ
4-Nitroquinoline-1-oxide	NA	0.26 R	0.26 R	0.26 R
7,12-Dimethylbenz(a)anthracene	NA	0.2 UJ	0.2 UJ	0.2 UJ
Acenaphthene	NA	0.019 UJ	0.024 J	0.019 UJ
Acenaphthylene	NA	0.049 UJ	0.049 UJ	0.049 UJ
Acetophenone	NA	0.49 J	0.75 J	0.38 J
alpha,alpha-Dimethyl phenethylamine	NA	1.3 UJ	1.3 UJ	1.3 UJ
Aniline	NA	0.4 UJ	0.4 UJ	0.4 UJ
Anthracene	NA	0.021 UJ	0.021 UJ	0.021 UJ
Aramite, Total	NA	0.49 UJ	0.49 UJ	0.49 UJ
Benzo[a]anthracene	NA	0.025 UJ	0.025 UJ	0.025 UJ
Benzo[a]pyrene	NA	0.024 UJ	0.024 UJ	0.024 UJ
Benzo[b]fluoranthene	NA	0.036 UJ	0.036 UJ	0.036 UJ
Benzo[g,h,i]perylene	NA	0.023 UJ	0.023 UJ	0.023 UJ
Benzo[k]fluoranthene	NA	0.019 UJ	0.019 UJ	0.019 UJ
Benzyl alcohol	NA	0.16 UJ	0.16 UJ	0.16 UJ
Bis(2-chloroethoxy)methane	NA	0.15 UJ	0.15 UJ	0.15 UJ
Bis(2-chloroethyl)ether	NA	0.14 UJ	0.14 UJ	0.14 UJ
Bis(2-ethylhexyl) phthalate	NA	0.43 J	0.34 UJ	0.34 UJ
Butyl benzyl phthalate	NA	0.17 UJ	0.17 UJ	0.17 UJ
Chrysene	NA	0.027 UJ	0.027 UJ	0.027 UJ
Diallate	NA	0.19 UJ	0.19 UJ	0.19 UJ
Dibenz(a,h)anthracene	NA	0.023 UJ	0.023 UJ	0.023 UJ
Dibenzofuran	NA	0.097 UJ	0.097 UJ	0.097 UJ
Diethyl phthalate	NA	0.2 J	0.18 UJ	0.33 J

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - QA/QC SAMPLES
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	61TB02	ER24	ER25	FB01
Date	5/31/2008	5/31/2008	6/1/2008	5/2/2008
Semivolatile Organic Compounds (ug/L)				
Dimethyl phthalate	NA	0.17 UJ	0.17 UJ	0.17 UJ
Di-n-butyl phthalate	NA	0.62 J	0.48 J	1.2 J
Di-n-octyl phthalate	NA	0.097 UJ	0.097 UJ	0.097 UJ
Dinoseb	NA	0.49 UJ	0.49 UJ	0.49 UJ
Ethyl methanesulfonate	NA	0.23 UJ	0.23 UJ	0.23 UJ
Fluoranthene	NA	0.049 UJ	0.049 UJ	0.049 UJ
Fluorene	NA	0.018 UJ	0.018 UJ	0.018 UJ
Hexachlorobenzene	NA	0.16 UJ	0.16 UJ	0.16 UJ
Hexachlorobutadiene	NA	0.13 UJ	0.13 UJ	0.13 UJ
Hexachlorocyclopentadiene	NA	0.49 UJ	0.49 UJ	0.49 UJ
Hexachloroethane	NA	0.15 UJ	0.15 UJ	0.15 UJ
Hexachlorophene	NA	49 UJ	49 UJ	49 R
Hexachloropropene	NA	0.12 UJ	0.12 UJ	0.12 UJ
Indeno[1,2,3-cd]pyrene	NA	0.022 UJ	0.022 UJ	0.022 UJ
Isophorone	NA	0.15 UJ	0.15 UJ	0.15 UJ
Isosafrole	NA	0.3 UJ	0.3 UJ	0.3 UJ
Methapyrilene	NA	0.26 UJ	0.26 UJ	0.26 UJ
Methyl methanesulfonate	NA	0.46 UJ	0.46 UJ	0.46 UJ
Naphthalene	NA	0.65 J	0.64 J	0.049 UJ
Nitrobenzene	NA	0.14 UJ	0.14 UJ	0.14 UJ
N-Nitro-o-toluidine	NA	0.24 UJ	0.24 UJ	0.24 UJ
N-Nitrosodiethylamine	NA	0.32 UJ	0.32 UJ	0.32 UJ
N-Nitrosodimethylamine	NA	0.19 UJ	0.19 UJ	0.19 UJ
N-Nitrosodi-n-butylamine	NA	0.18 UJ	0.18 UJ	0.18 UJ
N-Nitrosodi-n-propylamine	NA	0.13 UJ	0.13 UJ	0.13 UJ
N-Nitrosodiphenylamine	NA	0.17 UJ	0.17 UJ	0.17 UJ
N-Nitrosomethylethylamine	NA	0.28 UJ	0.28 UJ	0.28 UJ
N-Nitrosomorpholine	NA	0.19 UJ	0.19 UJ	0.19 UJ
N-Nitrosopiperidine	NA	0.22 UJ	0.22 UJ	0.22 UJ
N-Nitrosopyrrolidine	NA	0.25 UJ	0.25 UJ	0.25 UJ
p-Dimethylamino azobenzene	NA	0.6 UJ	0.6 UJ	0.6 UJ
Pentachlorobenzene	NA	0.27 UJ	0.27 UJ	0.27 UJ
Pentachloronitrobenzene	NA	0.3 R	0.3 R	0.3 UJ
Pentachlorophenol	NA	0.18 UJ	0.18 UJ	0.18 UJ
Phenacetin	NA	0.2 UJ	0.2 UJ	0.2 UJ
Phenanthrene	NA	0.017 UJ	0.017 UJ	0.017 UJ
Phenol	NA	0.14 UJ	0.14 UJ	0.14 UJ
p-Phenylene diamine	NA	2.4 UJ	2.4 UJ	2.4 UJ
Pronamide	NA	0.25 UJ	0.25 UJ	0.25 UJ
Pyrene	NA	0.026 UJ	0.026 UJ	0.026 UJ
Pyridine	NA	0.22 UJ	0.22 UJ	0.22 UJ
Safrole, Total	NA	0.23 UJ	0.23 UJ	0.23 UJ

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - QA/QC SAMPLES
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	61TB02	ER24	ER25	FB01
Date	5/31/2008	5/31/2008	6/1/2008	5/2/2008
Pesticides/PCBs (ug/L)				
4,4'-DDD	NA	0.0057 UJ	0.0057 UJ	NA
4,4'-DDE	NA	0.0095 UJ	0.0095 UJ	NA
4,4'-DDT	NA	0.015 UJ	0.015 UJ	NA
Aldrin	NA	0.0058 UJ	0.0058 UJ	NA
alpha-BHC	NA	0.0079 UJ	0.0079 UJ	NA
beta-BHC	NA	0.008 UJ	0.008 UJ	NA
Chlordane (technical)	NA	0.048 UJ	0.048 UJ	NA
Chlorobenzilate	NA	0.14 UJ	0.14 UJ	NA
delta-BHC	NA	0.0067 UJ	0.0067 UJ	NA
Dieldrin	NA	0.0076 UJ	0.0076 UJ	NA
Pesticides/PCBs (ug/L)				
Endosulfan I	NA	0.0053 UJ	0.0053 UJ	NA
Endosulfan II	NA	0.0049 UJ	0.0049 UJ	NA
Endosulfan sulfate	NA	0.0068 UJ	0.0068 UJ	NA
Endrin	NA	0.0076 UJ	0.0076 UJ	NA
Endrin aldehyde	NA	0.0087 UJ	0.0087 UJ	NA
Endrin ketone	NA	0.0088 UJ	0.0088 UJ	NA
gamma-BHC (Lindane)	NA	0.0057 UJ	0.0057 UJ	NA
Heptachlor	NA	0.0044 UJ	0.0044 UJ	NA
Heptachlor epoxide	NA	0.0068 UJ	0.0068 UJ	NA
Isodrin	NA	0.0096 UJ	0.0096 UJ	NA
Kepone	NA	0.049 UJ	0.049 UJ	NA
Methoxychlor	NA	0.022 UJ	0.022 UJ	NA
PCB-1016	NA	1.3 UJ	1.3 UJ	NA
PCB-1221	NA	0.094 UJ	0.094 UJ	NA
PCB-1232	NA	0.39 UJ	0.39 UJ	NA
PCB-1242	NA	0.081 UJ	0.081 UJ	NA
PCB-1248	NA	0.093 UJ	0.093 UJ	NA
PCB-1254	NA	0.081 UJ	0.081 UJ	NA
PCB-1260	NA	0.088 UJ	0.088 UJ	NA
Toxaphene	NA	0.097 UJ	0.097 UJ	NA
Metals (mg/L)				
Antimony	NA	0.36 U	0.36 U	0.36 UJ
Arsenic	NA	0.52 J	0.45 J	0.28 UJ
Barium	NA	2 U	2 U	2 UJ
Beryllium	NA	0.065 U	0.065 U	0.065 UJ
Cadmium	NA	0.12 U	0.12 U	0.12 UJ
Chromium	NA	0.6 U	0.86 J	0.6 UJ
Cobalt	NA	0.029 U	0.085 J	0.029 UJ
Copper	NA	1.2 U	4 J	2.1 J
Lead	NA	0.15 U	0.17 J	0.38 J
Mercury	NA	0.08 U	0.08 U	0.08 UJ
Nickel	NA	0.32 U	1.1	0.32 UJ
Selenium	NA	0.6 U	0.6 U	0.6 UJ

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - QA/QC SAMPLES
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	61TB02	ER24	ER25	FB01
Date	5/31/2008	5/31/2008	6/1/2008	5/2/2008
Metals (mg/L)				
Silver	NA	0.09 UJ	0.09 UJ	0.09 UJ
Thallium	NA	0.55 U	0.55 U	0.55 UJ
Tin	NA	1.6 J	1.3 J	0.9 UJ
Vanadium	NA	0.8 U	1.7 J	0.8 UJ
Zinc	NA	6.5 U	6.5 U	6.5 UJ
TPH DRO (mg/L)				
Diesel Range Organics [C10-C28]	NA	0.028 J	0.028 J	0.028 UJ
Gasoline Range Organics (GRO)-C6-C10	NA	0.012 U	0.012 U	0.012 U

IDW DATA

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - IDW (SOIL)
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I - RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	**74IDW01**	
Sampling Date	**6/5/2008**	
TCLP VOA - 8260B (mg/L)		
Benzene	0.13	U
Carbon tetrachloride	0.11	U
Chlorobenzene	0.14	U
Chloroform	0.12	U
1,2-Dichloroethane	0.12	U
1,1-Dichloroethene	0.14	U
2-Butanone (MEK)	0.24	U
Tetrachloroethene	0.11	U
Trichloroethene	0.16	U
Vinyl chloride	0.08	U
TCLP Metals (mg/L)		
Arsenic	0.059	U
Barium	0.8	J
Cadmium	0.0053	U
Chromium	0.025	J
Lead	0.042	J
Selenium	0.036	U
Silver	0.0051	U
Mercury	0.008	U
Metals (mg/kg)		
Arsenic	1.9	
Barium	83	
Cadmium	0.063	J
Chromium	63	
Lead	5.5	
Selenium	0.93	
Silver	0.032	J B
Copper	79	
Nickel	21	
Thallium	0.13	U
Tin	4.4	U
Vanadium	240	
Zinc	45	
Antimony	0.22	J
Beryllium	0.39	
Cobalt	21	B
Mercury	0.0087	J
General Chemistry		
Ignitability - mm/sec	NB	
Cyanide, Reactive - mg/Kg	100	U
Sulfide, Reactive - mg/Kg	50	U
pH - SU	8.99	

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - IDW (SOIL)
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I - RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Notes:

U: Undetected at the Limit of Detection.
J: Estimated: The analyte was positively identified; the quantitation is an estimation
B: Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.
NB: No burn

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - IDW (WATER)
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I - RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	**74IDW02**	
Sampling Date	**6/5/2008**	
GC/MS VOA - 8260B (ug/L)		
Acetone	14	J
Acetonitrile	15	U
Acrolein	18	U
Acrylonitrile	3.8	U
Benzene	0.32	U
Bromoform	0.41	U
Bromomethane	0.5	U
2-Butanone (MEK)	5	J
Carbon disulfide	0.17	U
Carbon tetrachloride	0.27	U
Chlorobenzene	0.34	U
2-Chloro-1,3-butadiene	0.35	U
Chlorodibromomethane	0.3	U
Chloroethane	1	U
Chloroform	0.74	J
Chloromethane	0.28	U
3-Chloro-1-propene	0.46	U
cis-1,3-Dichloropropene	0.37	U
1,2-Dibromo-3-Chloropropane	0.48	U
Dibromomethane	0.29	U
Dichlorobromomethane	0.34	U
Dichlorodifluoromethane	0.33	U
1,1-Dichloroethane	0.32	U
1,2-Dichloroethane	0.31	U
1,1-Dichloroethene	0.36	U
1,2-Dichloropropane	0.36	U
Ethylbenzene	0.3	U
Ethylene Dibromide	0.3	U
Ethyl methacrylate	1	U
2-Hexanone	0.68	U
Iodomethane	1	U
Isobutyl alcohol	19	U
Methacrylonitrile	6.6	U
Methylene Chloride	1	U
Methyl methacrylate	0.38	U
4-Methyl-2-pentanone (MIBK)	0.6	U
Pentachloroethane	1.3	U
Propionitrile	9.2	U
Styrene	0.36	U
1,1,1,2-Tetrachloroethane	0.29	U
1,1,2,2-Tetrachloroethane	0.26	U
Tetrachloroethene	0.28	U
Toluene	0.31	U
trans-1,4-Dichloro-2-butene	0.83	U
trans-1,2-Dichloroethene	0.3	U
trans-1,3-Dichloropropene	0.27	U

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS - IDW (WATER)
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I - RFI REPORT
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	**74IDW02**	
Sampling Date	**6/5/2008**	
GC/MS VOA - 8260B (ug/L)		
1,1,1-Trichloroethane	0.39	U
1,1,2-Trichloroethane	0.51	U
Trichloroethene	0.4	U
Trichlorofluoromethane	0.29	U
1,2,3-Trichloropropane	0.42	U
Vinyl acetate	0.62	U
Vinyl chloride	0.2	U
Xylenes, Total	0.87	U
Metals (ug/L)		
Antimony	0.44	JB
Arsenic	3.9	
Barium	200	
Beryllium	0.9	
Cadmium	0.12	U
Chromium	60	
Cobalt	47	B
Copper	210	
Lead	5.4	
Nickel	29	
Selenium	1.3	J
Silver	0.11	J
Thallium	0.55	U
Tin	2.2	JB
Vanadium	260	
Zinc	120	
Mercury	0.08	U
General Chemistry		
Flashpoint - Degrees F	>140	
Cyanide, Reactive - mg/Kg	100	U
Sulfide, Reactive - mg/Kg	50	U
pH - SU	10.3	H

U: Undetected at the Limit of Detection.
J: Estimated: The analyte was positively identified; the quantitation is an estimation
B: Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.
H: Sample was prepped or analyzed beyond the specified holding time.

APPENDIX C
PHASE I RFI DATA VALIDATION SUMMARIES

TEST AMERICA SAVANNAH SDG 36419-4

DataQual

Environmental Services, LLC

Michael Baker, Jr., Inc.
Airside Business Park
100 Airside Drive
Moon Township, PA 15108

July 29, 2008
SDG# SWMU36419-4, Test America-Savannah
NAPR Puerto Rico

Dear Mr. Kimes,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # SWMU36419-4. The data validation was performed in accordance with the SW-846 methods utilized by the laboratory, the Region II Standard Operating Procedures for the Validation of Organic Data Acquired Using SW-846 Methods (8260B-Rev 2, January 2006- SOP #HW-24 and 8270D-Rev 3, October 2006- SOP #HW-22), and professional judgment. Region II has not developed a validation checklist SOP for the methods used to assess the inorganic methods in this SDG (SW-846 methods 6020B, 7470A) or the organic methods for hydrocarbons (SW-846 methods 8015_DRO and 8015_GRO). Therefore, alternative worksheets were provided. Region II flagging conventions were used. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	VOA App IX	SVOA App IX	DRO/GRO	GRO	Metals
ER01	680-36419-37	water	X	X	X		X
ER02	680-36419-38	water	X	X	X		X
ER03	680-36419-39	water	X	X	X		X
ER04	680-36419-40	water	X	X			X
ER05	680-36419-41	water	X	X			X
FB01	680-36419-42	water	X	X	X		X
FB02	680-36419-43	water	X	X	X		X
QATB01	680-36419-44	water	X			X	

The samples were evaluated based on the following criteria:

- Data Completeness *
- Sample Condition
- Technical Holding Times
- GC/MS Tuning *
- GC Performance *
- Initial/Continuing Calibrations
- ICSA/ICSAB Standards
- CRDL Standards *
- Blanks *
- Internal Standards *
- Surrogate Recoveries *

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- Laboratory Control Samples *
- Matrix Spike Recoveries NA
- Matrix Duplicate RPDs NA
- Serial Dilutions *
- Field Duplicates NA
- Identification/Quantitation
- Reporting Limits *
- Tentatively Identified Compounds NA

* - indicates that qualifications were not required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. Please note that the reviewer added an F to the sample ID to indicate dissolved metals analysis when necessary. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page.

VOA

The continuing calibrations exhibited some compounds with low RRF values, which resulted in qualifying non-detected values as rejected for these compounds. Due to high %D values, in the continuing calibrations, some compounds were qualified as estimated.

SVOA

One sample was re-extracted out of holding time due to non-compliant surrogate recoveries; qualifications were added to the data.

All samples were received at the laboratory at an elevated temperature above 10°C. In accordance with Region II guidelines the samples were qualified as estimated (J/UJ).

The initial and continuing calibrations exhibited some compounds with low RRF values, which resulted in the qualification of non-detected values as rejected for those compounds. Due to high %D values, in the continuing calibrations, some compounds were qualified as estimated.

Two samples exhibited low internal standard area recoveries that resulted in qualifications to the associated compounds.

Two of the associated LCS exhibited non-compliant results that required one compound to be qualified as estimated.

DRO/GRO

Two DRO samples were received at the laboratory at an elevated temperature above 10°C. In accordance with Region II guidelines the samples FB01 and FB02 were qualified as estimated J/UJ.

Metals

All samples were received at the laboratory at an elevated temperature above 10°C. In accordance with Region II guidelines the samples were qualified as estimated J/UJ.

The associated ICSA/ICSAB standards exhibited non-compliant recoveries for the analytes silver and cadmium. These analytes were qualified as estimated in all samples.

Specific Evaluation of Data

Data Completeness

The SDG was received complete and intact. Resubmissions were not required. Clarification questions were asked of the laboratory regarding the metals fraction. A copy of the e-mail correspondence is included in the validation worksheets. Clarification questions were asked of the laboratory regarding the GRO/DRO fraction. A copy of these e-mail correspondences is included in the project file.

Technical Holding Times

According to chain of custody records, sampling was performed on 04/28-05/02/08 and samples were received at the laboratory 05/05/08. All sample preparation and analysis was performed within Region II and/or method holding time requirements with the following exceptions.

SVOA

The re-extraction of sample ER04RE exceeded the extraction holding time; therefore all results were qualified as estimated (J/UJ).

Sample Condition

SVOA

All samples were received at the laboratory at an elevated temperature of 11.8°C. In accordance with the Region II guidelines, therefore all samples received above 10°C are qualified as estimated (J/UJ).

DRO/GRO

Two DRO samples were received at the laboratory at an elevated temperature of 11.8°C. In accordance with the Region II guidelines, therefore the DRO results in samples FB01 and FB02 were qualified as estimated J/UJ.

Metals

The metals samples were received in a cooler with a temperature of 11.8°C. All reported results in the samples in this SDG were qualified as estimated J/UJ.

Initial/Continuing Calibration

VOA

Calibration standards exhibited RRFs and %Ds that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results are qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
CC 05/08/08	pentachloroethane vinyl acetate	67.2% 30.1%	ER01, ER02, ER03, ER04, ER05	J/UJ
CC 05/09/08	pentachloroethane vinyl acetate	67.6% 28.9%	FB02, QATB01	J/UJ
CC 05/11/08	pentachloroethane chloromethane bromomethane vinyl acetate	80.9% 24.1% 24.3% 25.0%	FB01	J/UJ

SVOA

Calibration standards exhibited RRFs and %Ds that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results are qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
IC 05/01/08	hexachlorophene	0.0466	ER01, ER02, ER03, ER05, FB01, FB02	J/R
CC 05/13/08	4-nitroquinoline-1-oxide hexachlorophene	0.03507 0.03126	ER01	J/R
	n-nitrosomorpholine hexachloropropene n-nitroso-di-n-butylamine methapyrilene 3,3-dimethylbenzidine aramite, total 4-nitrophenol 4,6-dinitro-2-methylphenol	23.2% 32.6% 28.6% 32.7% 45.6% 38.7% 23.5% 43.1%		J/UJ
CC 05/14/08	4-nitroquinoline-1-oxide hexachlorophene	0.03234 0.04782	ER02, ER03, ER05, FB01, FB02	J/R
	4-nitrophenol 2,4-dinitrotoluene 4,6-dinitro-2-methylphenol dibenz(a,h)anthracene benzo(g,h,i)perylene n-nitrosomorpholine hexachloropropene n-nitroso-di-n-butylamine methapyrilene aramite, total	23.4% 21.9% 42.7% 23.8% 23.3% 24.0% 32.5% 29.0% 29.1% 33.3%		J/UJ
IC 05/28/08	4-nitroquinoline-1-oxide	0.0276	ER04RE	J/R
CC 05/29/08	4-nitroquinoline-1-oxide hexachlorophene	0.02872 0.04644	ER04RE	J/R
	3-nitroaniline 4-nitrophenol 4-nitroaniline, 3,3-dimethylbenzidine	20.1% 20.5% 29.0% 46.5%		J/UJ

ICSA/ICSAB Standards

Metals

The ICSAB standards associated with the metals analysis exhibited non-compliant recoveries less than the lower QC limit for the analyte cadmium (78%) and silver (77%/74%). Based on Region II guidelines, reported positive and non-detect results for cadmium and silver were qualified as estimated J/UJ in all samples.

Internal Standards

SVOA

Sample ER05 exhibited a low recovery for internal standard perylene-d12; therefore all associated compounds were qualified as estimated (J/UJ).

Sample ER04RE exhibited an extremely low recovery for internal standard perylene-d12; therefore all associated compounds positive results were qualified as estimated (J) and non-detected compounds were qualified as rejected (R).

LCS

SVOA

The LCS associated for sample ER01 exhibited low recovery for hexachlorocyclopentadiene at 7%. The results for this compound were qualified as estimated (J/UJ) in sample ER01.

The LCS associated for samples ER02, ER03, ER05, FB01 and FB02 exhibited low recovery for hexachlorocyclopentadiene at 4%. The results for this compound were qualified as estimated (J/UJ) in these samples.

Identification/Quantitation

VOA

Sample FB02 was reanalyzed to confirm positive results in the initial analysis. The reanalysis exhibited concurring results. The reanalysis was not used in favor of the initial analysis.

SVOA

All samples were re-extracted out of holding time due to non-compliant LCS recoveries. The re-extracted samples were not used, except for sample ER04RE, due to exceeded holding times.

Sample ER04 was not used due to low surrogate recoveries. The sample was re-extracted and exhibited compliant surrogate recoveries; therefore the initial analysis was not used in favor of the re-extraction.

Sample ER04RERA was not used due to non-compliant internal standard recoveries.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Jacqueline Cleveland

Jacqueline Cleveland
Vice President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q flag
ER01, ER02, ER03, ER04, ER05	pentachloroethane vinyl acetate	+/-	J/UJ
FB02, QATB01	pentachloroethane vinyl acetate	+/-	J/UJ
FB01	pentachloroethane chloromethane bromomethane vinyl acetate	+/-	J/UJ
FB02RA	all results	+/-	R

SVOA

Sample ID	Compound	Results	Q flag
ER04RE	all results	+/-	J/UJ
all samples	all results	+/-	J/UJ
ER01, ER02, ER03, ER05, FB01, FB02	hexachlorophene	+/-	J/R
ER01	4-nitroquinoline-1-oxide hexachlorophene	+/-	J/R
ER01	n-nitrosomorpholine hexachloropropene n-nitroso-di-n-butylamine methapyrilene 3,3-dimethylbenzidine aramite, total 4-nitrophenol 4,6-dinitro-2-methylphenol	+/-	J/UJ
ER02, ER03, ER05, FB01, FB02	4-nitroquinoline-1-oxide hexachlorophene	+/-	J/R
ER02, ER03, ER05, FB01, FB02	4-nitrophenol 2,4-dinitrotoluene 4,6-dinitro-2-methylphenol dibenz(a,h)anthracene benzo(g,h,i)perylene n-nitrosomorpholine hexachloropropene n-nitroso-di-n-butylamine methapyrilene aramite, total	+/-	J/UJ
ER04RE	4-nitroquinoline-1-oxide	+/-	J/R
ER04RE	4-nitroquinoline-1-oxide hexachlorophene	+/-	J/R
ER04RE	3-nitroaniline 4-nitrophenol 4-nitroaniline, 3,3-dimethylbenzidine	+/-	J/UJ

Summary of Data Qualifications, continued

SVOA

ER05	all compounds associated with: perylene-d12	+/-	J/UJ
ER04RE	all compounds associated with: perylene-d12	+/-	J/R
ER01, ER02, ER03, ER05, FB01, FB02	hexachlorocyclopentadiene	+/-	J/UJ
ER01RE, ER02RE, ER03RE, ER05RE, FB01RE, FB02RE	all results	+/-	R
ER04, ER04RERA	all results	+/-	R

DRO/GRO

Sample ID	Compound	Results	Q flag
FB01, FB02	DRO	+/-	J/UJ

Metals

Sample ID	Analyte	Results	Q flag
all samples	all analytes	+/-	J/UJ
all samples	cadmium silver	+/-	J/UJ

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
N	analyte has been tentatively identified
JN	analyte has been tentatively identified, estimated value
R	result is rejected; the presence or absence of the analyte cannot be verified

Method/Preparation/Field QC Blank Qualification Flags (Q-Flags)

Organic Methods

NA	The sample result for the blank contaminant is greater than the RL (2X sample RL for common laboratory contaminants) when the blank value is less than the RL. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U*	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is qualified as non-detect U at the reported concentration.
RL**	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is changed to the RL and qualified as non-detect U.

* This guideline is used when the laboratory is reporting non-detects to the MDL. ** This guideline is used when the laboratory is reporting non-detects to the RL.

Inorganic Methods

ICB/CCB/PB Action:

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the ICB/CCB/PB result is less or greater than the RL.

Glossary of Qualification Flags and Abbreviations, continued

R -	Sample result is greater than the RL and less than the ICB/CCB/PB value when the ICB/CCB/PB value is greater than the RL.
J -	Sample result is greater than the ICB/CCB/PB value but less than 10X the ICB/CCB/PB value when ICB/CCB/PB value is greater than the RL.
J/UJ -	Sample result is less than 10X RL when blank result is below the negative RL.

Field QC Blank action:

Note – Use field blanks to qualify data only if field blank results are greater than prep blank results.

Do not use rinsate blank associated with soils to qualify water samples and vice versa.

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the FB result is less or greater than the RL.
R -	Sample result is greater than the RL and less than the FB value when the FB value is greater than the RL.
J -	Sample result is greater than the FB value but less than 10X the FB value when FB value is greater than the RL.

General Abbreviations

RL	reporting limit
IDL	instrument detection limit
MDL	method detection limit
CRDL	contract required detection limit
CRQL	contract required quantitation limit
+	positive result
-	non-detect result

TEST AMERICA SAVANNAH SDG 37251-1

DataQual

Environmental Services, LLC

Michael Baker, Jr., Inc.
Airside Business Park
100 Airside Drive
Moon Township, PA 15108

September 29, 2008
SDG# SWMU37251-1, Test America-Savannah
NAPR SWMU 62, Puerto Rico

Dear Mr. Kimes,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # SWMU37251-1. The data validation was performed in accordance with the SW-846 methods utilized by the laboratory, the Region II Standard Operating Procedures for the Validation of Organic Data Acquired Using SW-846 Methods (8260B-Rev 2, January 2006- SOP #HW-24, 8270D-Rev 3, SOP #HW-22, October 2006, 8081B SOP # HW-44, Rev 1 October 2006, and 8082A, October 2006- SOP # HW-45, Rev 1), and professional judgment. Region II has not developed a validation checklist SOP for the methods used to assess the inorganic methods in this SDG (SW-846 methods 6020B, 7471A). Therefore, alternative worksheets were provided. Region II flagging conventions were used. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	VOA App IX	SVOA App IX	Pesticides	PCBs	Metals
62SB01-00	680-37251-1	soil	X		X		X
62SB01-03	680-37251-2	soil					X
62SB01-05	680-37251-3	soil					X
62SB04-00	680-37251-4	soil	X		X		X
62SB04-03	680-37251-5	soil					X
62SB04-03D	680-37251-6	soil					X
62SB04-05	680-37251-7	soil					X
62SB02-00	680-37251-8	soil	X		X		X
62SB02-01	680-37251-9	soil					X
62SB02-03	680-37251-10	soil					X
62SB03-00	680-37251-11	soil	X	X	X	X	X
62SB03-01	680-37251-12	soil	X	X	X	X	X
62SB03-05	680-37251-13	soil	X	X	X	X	X
62SB05-00	680-37251-14	soil	X		X		X
62SB05-01	680-37251-15	soil					X
62SB05-02	680-37251-16	soil					X
62SB06-00	680-37251-17	soil	X	X	X	X	X
62SB06-01	680-37251-18	soil	X	X	X	X	X
62SB06-03	680-37251-19	soil	X	X	X	X	X
62SB07-00	680-37251-22	soil	X		X		X
62SB04-00MS	680-37251-4MS	soil					X
62SB04-00MSD	680-37251-4MSD	soil					X

The samples were evaluated based on the following criteria:

- Data Completeness *
- Sample Condition *
- Technical Holding Times *
- GC/MS Tuning *
- GC Performance *
- Initial/Continuing Calibrations
- ICSA/ICSAB Standards
- CRDL Standards *
- Blanks
- Internal Standards
- Surrogate Recoveries
- Laboratory Control Samples *
- Matrix Spike Recoveries
- Matrix Duplicate RPDs *
- Serial Dilutions *
- Field Duplicates
- Identification/Quantitation
- Reporting Limits *
- Tentatively Identified Compounds NA

* - indicates that qualifications were not required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page.

VOA

The continuing calibrations exhibited some compounds with low RRF values, which resulted in qualifying non-detected values as rejected for these compounds. Due to high %D values, in the continuing calibrations, some compounds were qualified as estimated.

Blank contamination was noted in the method and QC blanks associated with samples in this batch. Qualifications were added to the data.

SVOA

The initial and continuing calibrations exhibited some compounds with low RRF values, which resulted in qualifying non-detected values as rejected for these compounds. Due to high % RSD and %D values, in the initial and continuing calibrations, some compounds were qualified as estimated.

Internal standard area recoveries were low in one of the field samples that resulted in qualifications to the data.

Blank contamination was noted in the method blanks associated with samples in this batch. Qualifications were added to the data.

One sample exhibited surrogate recoveries below 10% that resulted in qualify positive results as estimated and rejecting non-detected results.

Pesticides/PCBs

No qualification of the data was required.

Metals

The ICSAB standards exhibited non-compliant recoveries below the QC limit for the analyte silver. Based on Region II guidelines all positive and non-detect results for silver were qualified as estimated J/UJ.

Blank contamination was noted and qualification was required in the samples in this SDG.

The matrix spike pair submitted in this SDG exhibited non-compliant recoveries in both the MS and the MSD for the analytes antimony and vanadium. All results for antimony, and vanadium in the metals samples were qualified as estimated J/UJ. The analyte vanadium was recovered in the MS & MSD below the QC limits (<10%). The analyte was not rejected as suggested by the validation guidelines because the spike added amount was only 0.2 ug/L less than 4X the native sample concentration. At this 4X point the spike recoveries are no longer used to flag the data. Therefore, the validator flagged the vanadium results as estimated J/UJ.

The field duplicate pairs exhibited non-compliant RPDs for two analytes. These analytes were qualified as estimated in the field duplicate pairs.

Specific Evaluation of Data

Data Completeness

The SDG was received complete and intact. Resubmissions were required for the SVOA fraction. A Form V was submitted for the SVOA fraction with incorrect sample ID

listed, the laboratory was contacted and a corrected form was received and included in this review. Resubmissions were required for the pesticide/PCB fraction due to incorrectly reported retention times and retention time windows. The laboratory provided all necessary corrected forms. A copy of the e-mail communication is included in the validation worksheets. Clarification questions were asked of the laboratory regarding the metals fraction. A copy of the e-mail correspondence is included in the validation worksheets. Clarification questions were asked of the laboratory regarding the GRO/DRO fraction. A copy of these e-mail correspondences is included in the project file.

Technical Holding Times

According to chain of custody records, sampling was performed on 05/31-06/01/08 and samples were received at the laboratory 06/03/08. All sample preparation and analysis was performed within Region II and/or method holding time requirements.

Initial/Continuing Calibration

VOA

Calibration standards exhibited %Ds and RRF values that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results are qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
CC 06/10/08	pentachloroethane	168.9%	62SB01-00, 62SB04-00	J/R
	iodomethane	31.3%		J/UJ
	acetonitrile	29.9%		
	3-chloro-1-propene	26.7%		
	2-chloro-1,3-butadiene	23.3%		
	propionitrile	23.8%		
	methacrylonitrile	21.5%		
	methyl methacrylate	20.1%		
	chloroethane	38.8%		
	acetone	27.5%		
	2-butanone	29.8%		
	1,1,1-trichloroethane	29.7%		
	carbon tetrachloride	27.6%		
	cis-1,3-dichloropropene	26.0%		
	4-methyl-2-pentanone	43.8%		
	1,2-dibromo-3-chloropropane	21.3%		

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
CC 06/11/08	pentachloroethane isobutyl alcohol	192.0% 0.04821	62SB02-00, 62SB03-00, 62SB03-01, 62SB03-05, 62SB05-00, 62SB06-00, 62SB06-01, 62SB06-03, 62SB07-00	J/R
	iodomethane acetonitrile 3-chloro-1-propene acrylonitrile propionitrile methacrylonitrile methyl methacrylate chloroethane acetone vinyl acetate 2-butanone 1,1,1-trichloroethane carbon tetrachloride cis-1,3-dichloropropene 4-methyl-2-pentanone	32.1% 37.0% 27.5% 24.2% 30.3% 26.7% 25.0% 36.5% 26.7% 20.5% 26.5% 28.9% 29.5% 26.8% 43.6%		J/UJ

SVOA

Calibration standards exhibited %RSD, %Ds and RRF values that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results are qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
IC 05/23/08	2,4-dinitrophenol	25.82%	all samples	J/UJ
IC 05/28/08	4-nitroquinoline-1-oxide	0.0276	all samples	J/R
	2-naphthylamine	28.636%		J/UJ
CC 06/16/08	4-nitroquinoline-1-oxide hexachlorophene	0.02985 0.03887	all samples	J/R
	3,3'-dichlorobenzidine dinoseb a,a-dimethylphenethylamine famphur	44.1% 21.3% 22.4% 32.0%		J/UJ

ICSA/ICSAB Standards

Metals

The ICSAB standards associated with the total metals analysis exhibited non-compliant recoveries less than the lower QC limit for the analyte silver (79%/78%). Based on Region II guidelines, reported positive and non-detect results for silver were qualified as estimated J/UJ in all samples.

Blanks

VOA

The associated method and/or QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table. Please note that the laboratory reported non-detect results down to the MDL for this project. Therefore, the blank flagging actions were modified as follows to take this into consideration. Positive results greater than the MDL but less than the CRQL are qualified as U at the reported concentration when affected by blank contamination.

Blank ID	Compound	Concentration	Reporting Limit	Action Level
Method Blank	acetone	4.8J ug/Kg	50 ug/Kg	2X RL
method Blank	toluene	1.0J ug/Kg	5.0 ug/Kg	RL
FB01	2-butanone	0.69J ug/L	10 ug/L	2X RL

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag
62SB01-00, 62SB04-00, 62SB02-00, 62SB03-00, 62SB06-00, 62SB06-01, 62SB07-00	2-butanone	U at reported value
62SB06-00	toluene	U at reported value
62SB04-00	acetone	U at reported value

SVOA

The associated method and/or QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table. Please note that the laboratory reported non-detect results down to the MDL for this project. Therefore, the blank flagging actions were modified as follows to take this into consideration. Positive results greater than the MDL but less than the CRQL are qualified as U at the reported concentration when affected by blank contamination.

Blank ID	Compound	Concentration	Reporting Limit	Action Level
Method Blank	bis(2-ethylhexyl)phthalate	7.8J ug/Kg	33 ug/Kg	2X RL

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag
62SB03-00, 62SB03-05, 62SB06-01, 62SB06-03	bis(2-ethylhexyl)phthalate	U at reported value

Metals

Associated blanks exhibited contamination as noted in the following table. The laboratory reported non-detect results to the MDL for this project. Therefore, the blank

006

flagging actions were modified to take this into consideration. Please see the Glossary of Qualification Flags and Abbreviations for details.

Blank ID	Analyte	Concentration	Action Level	Q Flag
ICB	antimony	0.08160J ug/L	>MDL up to RL	U

Please note, when qualifying samples for CCB contamination, associated samples are those just prior to or just following a CCB. Therefore, not all analytes in all samples are flagged for CCB contamination.

Associated samples and required qualifications are noted in the following table.

Sample ID	Analyte	Q Flag
all samples >MDL up to RL	antimony	U

Internal Standards

SVOA

Sample 62SB03-01 exhibited low internal standard area recovery for perylene-d12; therefore all compounds associated with this standard were qualified as estimated (J/UJ).

Surrogate Recoveries

SVOA

Sample 62SB03-05 exhibited low surrogate recovery for 2-fluorophenol at 2% (QC limit 41-110%), phenol-d5 at 8% (QC limit 43-110%), nitrobenzene-d5 at 2% (QC limit 36-110%) and 2-fluorobiphenyl at 12% (QC limit 44-110%); therefore all positive results were qualified as estimated (J) and non-detected results were qualified as rejected (R).

Matrix Spikes

Metals

The matrix spike pair submitted in this SDG exhibited non-compliant %R's for antimony, requiring qualification in the field samples. A summary of these non-compliances and affected samples are noted in the following table. Please note that the analyte vanadium was recovered in the MS & MSD below the QC limits (<10%). The analyte was not rejected as suggested by the validation guidelines because the spike added amount was only 0.2 ug/L less than 4X the native sample concentration. At this 4X point the spike recoveries are no longer used to flag the data. Therefore, the validator flagged the vanadium results as estimated J/UJ.

MS	Analytes	Samples	%R	Q Flag
62SB04-00	antimony	all samples	56/61	J/UJ
	vanadium		1/6	

Field Duplicates

Metals

The field duplicate pair of samples 62SB04-03 and 62SB04-03D exhibited metals results that did not compare. The analytes chromium (119%) and nickel (46%) exhibited RPDs that were ≥35% but less than 120% and were qualified as estimated J in both samples.

Identification/Quantitation

SVOA

Sample 62SB03-01RA was not used in favor of the initial analysis due to non-compliant internal standard area recoveries.

Sample 62SB03-05RE was not used in favor of the initial analysis due to grossly exceeded extraction holding time.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff
President

Jacqueline Cleveland
Vice President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q flag
62SB01-00, 62SB04-00	pentachloroethane	+/-	J/R
62SB01-00, 62SB04-00	iodomethane acetonitrile 3-chloro-1-propene 2-chloro-1,3-butadiene propionitrile methacrylonitrile methyl methacrylate chloroethane acetone 2-butanone 1,1,1-trichloroethane carbon tetrachloride cis-1,3-dichloropropene 4-methyl-2-pentanone 1,2-dibromo-3-chloropropane	+/-	J/UJ
62SB02-00, 62SB03-00, 62SB03-01, 62SB03-05, 62SB05-00, 62SB06-00, 62SB06-01, 62SB06-03, 62SB07-00	pentachloroethane isobutyl alcohol	+/-	J/R
62SB02-00, 62SB03-00, 62SB03-01, 62SB03-05, 62SB05-00, 62SB06-00, 62SB06-01, 62SB06-03, 62SB07-00	iodomethane acetonitrile 3-chloro-1-propene acrylonitrile propionitrile methacrylonitrile methyl methacrylate chloroethane acetone vinyl acetate 2-butanone 1,1,1-trichloroethane carbon tetrachloride cis-1,3-dichloropropene 4-methyl-2-pentanone	+/-	J/UJ
62SB01-00, 62SB04-00, 62SB02-00, 62SB03-00, 62SB06-00, 62SB06-01, 62SB07-00	2-butanone	+	U at reported value
62SB06-00	toluene	+	U at reported value
62SB04-00	acetone	+	U at reported value

Summary of Data Qualifications, continued

SVOA

Sample ID	Compound	Results	Q flag
all samples	2,4-dinitrophenol	+/-	J/UJ
all samples	4-nitroquinoline-1-oxide	+/-	J/R
all samples	2-naphthylamine	+/-	J/UJ
all samples	4-nitroquinoline-1-oxide hexachlorophene	+/-	J/R
all samples	3,3'-dichlorobenzidine dinoseb a,a-dimethylphenethylamine famphur	+/-	J/UJ
62SB03-00, 62SB03-05, 62SB06-01, 62SB06-03	bis(2-ethylhexyl)phthalate	+	U at reported value
62SB03-01	all compounds associated with: perylene-d12	+/-	J/UJ
62SB03-05	all results	+/-	J/R
62SB03-01RA, 62SB03-05RE	all results	+/-	R

Pesticides/PCBs

Sample ID	Compound	Results	Q flag
No qualifications			

Metals

Sample ID	Analyte	Results	Q flag
all samples	silver	+/-	J/UJ
all samples	antimony	>MDL up to RL	U
all samples	antimony vanadium	+/-	J/UJ
62SB04-03, 62SB04-03D	chromium nickel	+	J

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
N	analyte has been tentatively identified
JN	analyte has been tentatively identified, estimated value
R	result is rejected; the presence or absence of the analyte cannot be verified

Method/Preparation/Field QC Blank Qualification Flags (Q-Flags)

Organic Methods

NA	The sample result for the blank contaminant is greater than the RL (2X sample RL for common laboratory contaminants) when the blank value is less than the RL. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U*	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is qualified as non-detect U at the reported concentration.
RL**	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is changed to the RL and qualified as non-detect U.

* This guideline is used when the laboratory is reporting non-detects to the MDL. ** This guideline is used when the laboratory is reporting non-detects to the RL.

Inorganic Methods

ICB/CCB/PB Action:

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the ICB/CCB/PB result is less or greater than the RL.

Glossary of Qualification Flags and Abbreviations, continued

R -	Sample result is greater than the RL and less than the ICB/CCB/PB value when the ICB/CCB/PB value is greater than the RL.
J -	Sample result is greater than the ICB/CCB/PB value but less than 10X the ICB/CCB/PB value when ICB/CCB/PB value is greater than the RL.
J/UJ -	Sample result is less than 10X RL when blank result is below the negative RL.

Field QC Blank action:

Note – Use field blanks to qualify data only if field blank results are greater than prep blank results.
Do not use rinsate blank associated with soils to qualify water samples and vice versa.

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the FB result is less or greater than the RL.
R -	Sample result is greater than the RL and less than the FB value when the FB value is greater than the RL.
J -	Sample result is greater than the FB value but less than 10X the FB value when FB value is greater than the RL.

General Abbreviations

RL	reporting limit
IDL	instrument detection limit
MDL	method detection limit
CRDL	contract required detection limit
CRQL	contract required quantitation limit
+	positive result
-	non-detect result

TEST AMERICA SAVANNAH SDG 37251-2

DataQual

Environmental Services, LLC

Michael Baker, Jr., Inc.
Airside Business Park
100 Airside Drive
Moon Township, PA 15108

September 29, 2008
SDG# SWMU37251-2, Test America-Savannah
NAPR SWMU 62, Puerto Rico

Dear Mr. Kimes,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # SWMU37251-2. The data validation was performed in accordance with the SW-846 methods utilized by the laboratory, the Region II Standard Operating Procedures for the Validation of Organic Data Acquired Using SW-846 Methods (8260B-Rev 2, January 2006- SOP #HW-24 and 8270D-Rev 3, October 2006- SOP #HW-22, 8081B SOP # HW-44, Rev 1 October 2006, and 8082A, October 2006- SOP # HW-45, Rev 1), and professional judgment. Region II has not developed a validation checklist SOP for the methods used to assess the inorganic methods in this SDG (SW-846 methods 6020B, 7471A). Therefore, alternative worksheets were provided. Region II flagging conventions were used. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	VOA App IX	SVOA App IX	Pesticides	PCB	Metals
62SB07-01	680-37251-23	soil					X
62SB07-02	680-37251-24	soil					X
62SB08-00	680-37251-25	soil	X	X	X	X	X
62SB08-00D	680-37251-26	soil	X	X	X	X	X
62SB08-01	680-37251-27	soil	X	X	X	X	X
62SB08-02	680-37251-28	soil	X	X	X	X	X
62SB08-02D	680-37251-29	soil	X	X	X	X	X
62SB09-00	680-37251-30	soil	X	X	X	X	X
62SB09-01	680-37251-31	soil	X	X	X	X	X
62SB09-02	680-37251-32	soil	X	X	X	X	X
62SB08-00 MS	680-37251-25MS	soil	X	X	X	X	X
62SB08-00 MSD	680-37251-25MSD	soil	X	X	X	X	X
62SB08-02 MS	680-37251-28MS	soil	X	X	X	X	X
62SB08-02 MSD	680-37251-28MSD	soil	X	X	X	X	X

The following quality control samples were provided with this SDG: sample 62SB08-00D–field duplicate of sample 62SB08-00; sample 62SB08-02D-field duplicate of sample 62SB08-02. The samples were evaluated based on the following criteria:

- Data Completeness *
- Sample Condition *
- Technical Holding Times *
- GC/MS Tuning *

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- GC Performance *
- Initial/Continuing Calibrations
- ICSA/ICSAB Standards
- CRDL Standards *
- Blanks
- Internal Standards
- Surrogate Recoveries *
- Laboratory Control Samples *
- Matrix Spike Recoveries
- Matrix Duplicate RPDs *
- Serial Dilutions *
- Field Duplicates
- Identification/Quantitation
- Reporting Limits *
- Tentatively Identified Compounds NA

* - indicates that qualifications were not required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page.

VOA

The continuing calibrations exhibited some compounds with low RRF values, which resulted in qualifying non-detected values as rejected for these compounds. Due to high %D values, in the continuing calibrations, some compounds were qualified as estimated.

Blank contamination was noted in the method and QC blanks associated with samples in this batch. Qualifications were added to the data.

SVOA

The continuing calibrations exhibited some compounds with low RRF values, which resulted in qualifying non-detected values as rejected for these compounds. Due to high % RSD and %D values, in the initial and continuing calibrations, some compounds were qualified as estimated.

Internal standard area recoveries were low in one of the field samples that resulted in qualifications to the data.

Blank contamination was noted in the method and QC blanks associated with samples in this batch. Qualifications were added to the data.

One of the associated matrix spike and matrix spike duplicate exhibited low recoveries for several compounds; results for these compounds were qualified as estimated in the associated sample.

Pesticides/PCBs

Three compounds in one of the MS/MSD pairs submitted exhibited low recovery. These compounds were qualified as estimated J/UJ in the native sample and the field duplicate.

The field duplicate pairs exhibited RPDs >100% for two compounds. These results were flagged as estimated J in the field duplicate pair.

Some reported positive results exhibited column quantitation %Ds greater than 25%. These results were flagged based on Region II guidelines.

Metals

The ICSAB standards exhibited non-compliant recoveries below the QC limit for the analyte silver. Based on Region II guidelines all positive and non-detect results for silver were qualified as estimated J/UJ.

Blank contamination was noted and qualification was required in the samples in this SDG.

The matrix spike pairs submitted in this SDG exhibited non-compliant recoveries in both the MS and the MSD for the analytes tin and antimony. All results for antimony in the metals samples were qualified as estimated J/UJ. All positive results for the analyte vanadium were qualified as estimated J.

The field duplicate pair exhibited non-compliant RPDs for three analytes. These analytes were qualified as estimated in the field duplicate pairs.

Specific Evaluation of Data

Data Completeness

Resubmissions were required for the pesticide/PCB fraction due to incorrectly reported retention times and retention time windows. The laboratory provided all necessary corrected forms. A copy of the e-mail communication is included in the validation

worksheets. Clarification questions were asked of the laboratory regarding the metals fraction. A copy of the e-mail correspondence is included in the validation worksheets. Clarification questions were asked of the laboratory regarding the GRO/DRO fraction. A copy of these e-mail correspondences is included in the project file.

Technical Holding Times

According to chain of custody records, sampling was performed on 06/01/08 and samples were received at the laboratory 06/03/08. All sample preparation and analysis was performed within Region II and/or method holding time requirements.

Initial/Continuing Calibration

VOA

Calibration standards exhibited %Ds and RRF values that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results are qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
CC 06/11/08	pentachloroethane	192.0%	62SB08-00, 62SB08-00D, 62SB08-01	J/R
	isobutyl alcohol	0.04821		
	iodomethane	32.1%		J/UJ
	acetonitrile	37.0%		
	3-chloro-1-propene	27.5%		
	acrylonitrile	24.2%		
	propionitrile	30.3%		
	methacrylonitrile	26.7%		
	methyl methacrylate	25.0%		
	chloroethane	36.5%		
	acetone	26.7%		
	vinyl acetate	20.5%		
	2-butanone	26.5%		
	1,1,1-trichloroethane	28.9%		
	carbon tetrachloride	29.5%		
	cis-1,3-dichloropropene	26.8%		
	4-methyl-2-pentanone	43.6%		
CC 06/12/08	pentachloroethane	161.9%	62SB08-02, 62SB08-02D, 62SB09-00, 62SB09-01	J/R
	acrylonitrile	24.1%		J/UJ
	chloroethane	34.4%		
	acetone	27.1%		
	2-butanone	26.4%		
	1,1,1-trichloroethane	29.2%		
	1,1-dichloropropene	32.3%		
	carbon tetrachloride	27.9%		
	cis-1,3-dichloropropene	25.5%		
	4-methyl-2-pentanone	39.2%		
CC 06/13/08	pentachloroethane	182.6%	62SB09-02	J/R

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
	acrylonitrile chloroethane acetone 2-butanone 1,1,1-trichloroethane 1,1-dichloropropene carbon tetrachloride cis-1,3-dichloropropene 4-methyl-2-pentanone	28.2% 45.3% 29.4% 31.4% 31.4% 35.9% 29.9% 29.8% 45.6%		J/UJ

SVOA

Calibration standards exhibited %RSD, %Ds and RRF values that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results are qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
IC 06/23/08	naphthalene	15.221%	all samples	J/UJ
CC 06/24/08	4-nitroquinoline-1-oxide	0.02682	62SB08-01, 62SB08-02, 62SB09-00, 62SB09-01, 62SB08-00D	J/R
	2,4,5-trichlorophenol 3-nitroaniline 2,4-dinitrophenol benzo(b)fluoranthene 2-naphthylamine methapyrilene 3,3-dimethylbenzidine	20.7% 20.7% 26.6% 26.5% 41.9% 21.0% 59.6%		J/UJ
CC 06/25/08	4-nitroquinoline-1-oxide	0.02650	62SB08-00	J/R
	3,3'-dichlorobenzidine benzo(g,h,i)perylene a,a-dimethylphenethylamine pentachloronitrobenzene 3,3-dimethylbenzidine	29.9% 26.9% 23.3% 25.4% 56.5%		J/UJ
CC 06/27/08	4-nitroquinoline-1-oxide	0.02587	62SB08-02D, 62SB09-02	J/R
	benzo(b)fluoranthene 2-naphthylamine pentachloronitrobenzene 3,3-dimethylbenzidine	27.7% 46.6% 20.1% 49.6%		J/UJ

ICSA/ICSAB Standards

Metals

The ICSAB standards associated with the total metals analysis exhibited non-compliant recoveries less than the lower QC limit for the analyte silver (79%/78%/78%/79%). Based on Region II guidelines, reported positive and non-detect results for silver were qualified as estimated J/UJ in all samples.

Blanks

VOA

The associated method and/or QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table. Please note that the laboratory reported non-detect results down to the MDL for this project. Therefore, the blank flagging actions were modified as follows to take this into consideration. Positive results greater than the MDL but less than the CRQL are qualified as U at the reported concentration when affected by blank contamination.

Blank ID	Compound	Concentration	Reporting Limit	Action Level
Method Blank	acetone	4.9J ug/Kg	50 ug/Kg	2X RL
FB01	2-butanol	0.69J ug/L	10 ug/L	2X RL

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag
62SB08-02, 62SB08-02D, 62SB09-00, 62SB09-01	acetone	U at reported value
62SB08-00, 62SB08-00D, 62SB08-02D, 62SB09-00, 62SB09-02	2-butanol	U at reported value

SVOA

The associated method and/or QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table. Please note that the laboratory reported non-detect results down to the MDL for this project. Therefore, the blank flagging actions were modified as follows to take this into consideration. Positive results greater than the MDL but less than the CRQL are qualified as U at the reported concentration when affected by blank contamination.

Blank ID	Compound	Concentration	Reporting Limit	Action Level
Method Blank	bis(2-ethylhexyl)phthalate	7.8J ug/Kg	33 ug/Kg	2X RL
FB01	1,4-dichlorobenzene	0.16J ug/L	0.97 ug/L	RL

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag
62SB08-01, 62SB08-02, 62SB09-00, 62SB09-01, 62SB08-00D, 62SB08-02D, 62SB09-02, 62SB08-00	bis(2-ethylhexyl)phthalate	U at reported value
62SB08-00, 62SB08-00D	1,4-dichlorobenzene	U at reported value

Metals

Associated blanks exhibited contamination as noted in the following table. The laboratory reported non-detect results to the MDL for this project. Therefore, the blank flagging actions were modified to take this into consideration. Please see the Glossary of

Qualification Flags and Abbreviations for details.

Blank ID	Analyte	Concentration	Action Level	Q Flag
ICB	antimony	0.08160J ug/L	>MDL up to RL	U
ICB	antimony	0.07517J ug/L	>MDL up to RL	U
FB01	lead	0.38J ug/L	>MDL up to RL	U

Please note, when qualifying samples for CCB contamination, associated samples are those just prior to or just following a CCB. Therefore, not all analytes in all samples are flagged for CCB contamination.

Associated samples and required qualifications are noted in the following table.

Sample ID	Analyte	Q Flag
all samples >MDL up to RL	antimony	U
all samples >MDL up to RL	lead	U

Internal Standards

SVOA

Sample 62SB08-00 exhibited low internal standard area recovery for perylene-d12; therefore all compounds associated with this standard were qualified as estimated (J/UJ).

Matrix Spikes

SVOA

A matrix spike and matrix spike duplicate was submitted for sample 62SB08-00 and duplicate 62SB08-00D. The MS and the MSD exhibited non-compliant recoveries for almost half of the spiked compounds ranging from zero to 231% recovery. It is the professional opinion of the data validator that there was a matrix effect exhibited in these samples and therefore all results were qualified as estimated J/UJ.

Pesticides/PCBs

The MS/MSD of sample 62SB08-00 exhibited non-compliant recoveries below the QC limits in both the MS/MSD for three compounds. The compounds 4,4'-DDE, dieldrin and endrin were flagged as noted in the following table.

MS	Compound	Samples Affected	%R	Q Flag
62SB08-00	4,4'-DDE	62SB08-00, 62SB08-00D	14/14	J/UJ
	dieldrin		36/36	
	endrin		0/34	

Metals

The matrix spike pairs submitted in this SDG exhibited non-compliant %R's for antimony and tin, requiring qualification in the field samples. A summary of these non-compliances and affected samples are noted in the following table.

MS	Analytes	Samples	%R	Q Flag
62SB08-00	antimony	all samples	67/73	J/UJ
62SB08-02	tin	all samples	132/131	J

Field Duplicates

SVOA

Sample 62SB08-00 and duplicate sample 62SB08-00D did not exhibit comparable results for naphthalene at 87% RPD and 2-methylnaphthalene at 200% RPD; therefore results for these compounds will be qualified as estimated (J/UJ).

Pesticides/PCBs

The field duplicate pair of samples 62SB08-00 and 62SB08-00D exhibited positive results above the reporting limits for two compounds that exhibited RPDs >100%. These compounds, 4,4'-DDE (111%) and 4,4'-DDT (121%) were qualified as estimated J in both samples.

Metals

The field duplicate pair of samples 62SB08-00 and 62SB08-00D exhibited metals results that did not compare. The analytes barium (42%), beryllium (43%) and chromium (62%) exhibited RPDs that were ≥35% but less than 120% and were qualified as estimated J in both samples.

Identification/Quantitation

SVOA

Sample 62SB08-00RA was not used in favor of the initial analysis due to non-compliant internal standard area recoveries.

Pesticides/PCBs

The samples 62SB09-01 and 62SB09-02 were re-extracted outside holding time due to non-compliant surrogate recoveries for one of the surrogate compounds. These RE samples are rejected in favor of the results reported from the original extraction analyses.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff
President

Jacqueline Cleveland
Vice President

009

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q flag
62SB08-00, 62SB08-00D, 62SB08-01	pentachloroethane isobutyl alcohol	+/-	J/R
62SB08-00, 62SB08-00D, 62SB08-01	iodomethane acetonitrile 3-chloro-1-propene acrylonitrile propionitrile methacrylonitrile methyl methacrylate chloroethane acetone vinyl acetate 2-butanone 1,1,1-trichloroethane carbon tetrachloride cis-1,3-dichloropropene 4-methyl-2-pentanone	+/-	J/UJ
62SB08-02, 62SB08-02D, 62SB09-00, 62SB09-01	pentachloroethane	+/-	J/R
62SB08-02, 62SB08-02D, 62SB09-00, 62SB09-01	acrylonitrile chloroethane acetone 2-butanone 1,1,1-trichloroethane 1,1-dichloropropene carbon tetrachloride cis-1,3-dichloropropene 4-methyl-2-pentanone	+/-	J/UJ
62SB09-02	pentachloroethane	+/-	J/R
62SB09-02	acrylonitrile chloroethane acetone 2-butanone 1,1,1-trichloroethane 1,1-dichloropropene carbon tetrachloride cis-1,3-dichloropropene 4-methyl-2-pentanone	+/-	J/UJ
62SB08-02, 62SB08-02D, 62SB09-00, 62SB09-01	acetone	+	U at reported value
62SB08-00, 62SB08-00D, 62SB08-02D, 62SB09-00, 62SB09-02	2-butanol	+	U at reported value

Summary of Data Qualifications, continued

SVOA

Sample ID	Compound	Results	Q flag
all samples	naphthalene	+/-	J/UJ
62SB08-01, 62SB08-02, 62SB09-00, 62SB09-01, 62SB08-00D	4-nitroquinoline-1-oxide	+/-	J/R
62SB08-01, 62SB08-02, 62SB09-00, 62SB09-01, 62SB08-00D	2,4,5-trichlorophenol 3-nitroaniline 2,4-dinitrophenol benzo(b)fluoranthene 2-naphthylamine methapyrilene 3,3-dimethylbenzidine	+/-	J/UJ
62SB08-00	4-nitroquinoline-1-oxide	+/-	J/R
62SB08-00	3,3'-dichlorobenzidine benzo(g,h,i)perylene a,a-dimethylphenethylamine pentachloronitrobenzene 3,3-dimethylbenzidine	+/-	J/UJ
62SB08-02D, 62SB09-02	4-nitroquinoline-1-oxide	+/-	J/R
62SB08-02D, 62SB09-02	benzo(b)fluoranthene 2-naphthylamine pentachloronitrobenzene 3,3-dimethylbenzidine	+/-	J/UJ
62SB08-01, 62SB08-02, 62SB09-00, 62SB09-01, 62SB08-00D, 62SB08-02D, 62SB09-02, 62SB08-00	bis(2-ethylhexyl)phthalate	+	U at reported value
62SB08-00, 62SB08-00D	1,4-dichlorobenzene	+	U at reported value
62SB08-00	all compounds associated with: perylene-d12	+/-	J/UJ
62SB08-00, 62SB08-00D	all results	+/-	J/UJ
62SB08-00, 62SB08-00D	naphthalene, 2-methylnaphthalene	+/-	J/UJ
62SB08-00RA	all results	+/-	R

Pesticides/PCBs

Sample ID	Compound	Results	Q flag
62SB08-00, 62SB08-00D	4,4'-DDE dieldrin endrin	+/-	J/UJ
62SB08-00	4,4'-DDE 4,4,'-DDD 4,4'-DDT	+	J
62SB09-01RE, 62SB09-02RE	all compounds	+/-	R
62SB08-00, 62SB08-00D	4,4'-DDE 4,4'-DDT	+	J

Summary of Data Qualifications, continued

Metals

Sample ID	Analyte	Results	Q flag
all samples	silver	+/-	J/UJ
all samples >MDL up to RL	antimony lead	>MDL up to RL	U
all samples	antimony	+/-	J/UJ
all samples	tin	+	J
62SB08-00, 62SB08-00D	barium beryllium chromium	+	J

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
N	analyte has been tentatively identified
JN	analyte has been tentatively identified, estimated value
R	result is rejected; the presence or absence of the analyte cannot be verified

Method/Preparation/Field QC Blank Qualification Flags (Q-Flags)

Organic Methods

NA	The sample result for the blank contaminant is greater than the RL (2X sample RL for common laboratory contaminants) when the blank value is less than the RL. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U*	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is qualified as non-detect U at the reported concentration.
RL**	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is changed to the RL and qualified as non-detect U.

* This guideline is used when the laboratory is reporting non-detects to the MDL. ** This guideline is used when the laboratory is reporting non-detects to the RL.

Inorganic Methods

ICB/CCB/PB Action:

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the ICB/CCB/PB result is less or greater than the RL.

Glossary of Qualification Flags and Abbreviations, continued

R -	Sample result is greater than the RL and less than the ICB/CCB/PB value when the ICB/CCB/PB value is greater than the RL.
J -	Sample result is greater than the ICB/CCB/PB value but less than 10X the ICB/CCB/PB value when ICB/CCB/PB value is greater than the RL.
J/UJ -	Sample result is less than 10X RL when blank result is below the negative RL.

Field QC Blank action:

Note – Use field blanks to qualify data only if field blank results are greater than prep blank results.
Do not use rinsate blank associated with soils to qualify water samples and vice versa.

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the FB result is less or greater than the RL.
R -	Sample result is greater than the RL and less than the FB value when the FB value is greater than the RL.
J -	Sample result is greater than the FB value but less than 10X the FB value when FB value is greater than the RL.

General Abbreviations

RL	reporting limit
IDL	instrument detection limit
MDL	method detection limit
CRDL	contract required detection limit
CRQL	contract required quantitation limit
+	positive result
-	non-detect result

TEST AMERICA SAVANNAH SDG 37251-3

DataQual

Environmental Services, LLC

Michael Baker, Jr., Inc.
Airside Business Park
100 Airside Drive
Moon Township, PA 15108

September 29, 2008
SDG# SWMU37251-3, Test America-Savannah
NAPR SWMU 62, Puerto Rico

Dear Mr. Kimes,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # SWMU37251-3. The data validation was performed in accordance with the SW-846 methods utilized by the laboratory, the Region II Standard Operating Procedures for the Validation of Organic Data Acquired Using SW-846 Methods (8260B-Rev 2, January 2006- SOP #HW-24 and 8270D-Rev 3, October 2006- SOP #HW-22), and professional judgment. Region II has not developed a validation checklist SOP for the methods used to assess the inorganic methods in this SDG (SW-846 methods 6020B, 7470A) or the organic methods for hydrocarbons (SW-846 methods 8015_DRO and 8015_GRO). Therefore, alternative worksheets were provided. Region II flagging conventions were used. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	VOA App IX	LL PAH	DRO/GRO	GRO	Metals
62TB01	680-37251-20	water	X				
ER23	680-37251-21	water	X	X	X		X
62TB03	680-37251-33	water	X			X	

The samples were evaluated based on the following criteria:

- Data Completeness *
- Sample Condition *
- Technical Holding Times *
- GC/MS Tuning *
- GC Performance *
- Initial/Continuing Calibrations
- ICSA/ICSAB Standards
- CRDL Standards *
- Blanks *
- Internal Standards *
- Surrogate Recoveries *
- Laboratory Control Samples *
- Matrix Spike Recoveries NA
- Matrix Duplicate RPDs NA

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- Serial Dilutions *
- Field Duplicates NA
- Identification/Quantitation *
- Reporting Limits *
- Tentatively Identified Compounds NA

* - indicates that qualifications were not required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page.

VOA

Due to high %D values, in the continuing calibrations, some compounds were qualified as estimated.

LL-PAH

No qualifications to the data were required.

DRO/GRO

No qualifications to the data were required.

Metals

No qualifications to the data were required.

Specific Evaluation of Data

Data Completeness

The SDG was received complete and intact. Resubmissions were not required. Clarification questions were asked of the laboratory regarding the metals fraction. A copy of the e-mail correspondence is included in the validation worksheets. Clarification

questions were asked of the laboratory regarding the GRO/DRO fraction. A copy of these e-mail correspondences is included in the project file.

Technical Holding Times

According to chain of custody records, sampling was performed on 05/31-06/01/08 and samples were received at the laboratory 06/03/08. All sample preparation and analysis was performed within Region II and/or method holding time requirements.

Initial/Continuing Calibration

VOA

Calibration standards exhibited %Ds values that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results are qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
CC 06/08/08	pentachloroethane	103.2%	all samples	J/R
	acrolein	50.5%		J/UJ
	chloromethane	31.1%		
	bromomethane	50.2%		
	chloroethane	26.3%		
	trichlorofluoromethane	21.3%		
	cis-1,3-dichloropropene	21.8%		
	trans-1,3-dichloropropene	21.1%		
	1,2-dibromo-3-chloropropane	30.3%		

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff
President

Jacqueline Cleveland
Vice President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q flag
all samples	pentachloroethane	+/-	J/R
all samples	acrolein chloromethane bromomethane chloroethane trichlorofluoromethane cis-1,3-dichloropropene trans-1,3-dichloropropene 1,2-dibromo-3-chloropropane	+/-	J/UJ

LL PAH

Sample ID	Compound	Results	Q flag
No qualifications			

DRO/GRO

Sample ID	Compound	Results	Q flag
No qualifications			

Metals

Sample ID	Analyte	Results	Q flag
No qualifications			

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
N	analyte has been tentatively identified
JN	analyte has been tentatively identified, estimated value
R	result is rejected; the presence or absence of the analyte cannot be verified

Method/Preparation/Field QC Blank Qualification Flags (Q-Flags)

Organic Methods

NA	The sample result for the blank contaminant is greater than the RL (2X sample RL for common laboratory contaminants) when the blank value is less than the RL. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U*	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is qualified as non-detect U at the reported concentration.
RL**	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is changed to the RL and qualified as non-detect U.

* This guideline is used when the laboratory is reporting non-detects to the MDL. ** This guideline is used when the laboratory is reporting non-detects to the RL.

Inorganic Methods

ICB/CCB/PB Action:

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the ICB/CCB/PB result is less or greater than the RL.

Glossary of Qualification Flags and Abbreviations, continued

R -	Sample result is greater than the RL and less than the ICB/CCB/PB value when the ICB/CCB/PB value is greater than the RL.
J -	Sample result is greater than the ICB/CCB/PB value but less than 10X the ICB/CCB/PB value when ICB/CCB/PB value is greater than the RL.
J/UJ -	Sample result is less than 10X RL when blank result is below the negative RL.

Field QC Blank action:

Note – Use field blanks to qualify data only if field blank results are greater than prep blank results.
Do not use rinsate blank associated with soils to qualify water samples and vice versa.

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the FB result is less or greater than the RL.
R -	Sample result is greater than the RL and less than the FB value when the FB value is greater than the RL.
J -	Sample result is greater than the FB value but less than 10X the FB value when FB value is greater than the RL.

General Abbreviations

RL	reporting limit
IDL	instrument detection limit
MDL	method detection limit
CRDL	contract required detection limit
CRQL	contract required quantitation limit
+	positive result
-	non-detect result

TEST AMERICA SAVANNAH SDG 37369-2

DataQual

Environmental Services, LLC

Michael Baker, Jr., Inc.
Airside Business Park
100 Airside Drive
Moon Township, PA 15108

November 23, 2008
SDG# SWMU37369-2, Test America-Savannah
NAPR SWMU 61, Puerto Rico

Dear Mr. Kimes,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # SWMU37369-2. The data validation was performed in accordance with the SW-846 methods utilized by the laboratory, the Region II Standard Operating Procedures for the Validation of Organic Data Acquired Using SW-846 Methods (8260B-Rev 2, January 2006- SOP #HW-24 and 8270D-Rev 3, October 2006- SOP #HW-22), and professional judgment. Region II has not developed a validation checklist SOP for the methods used to assess the inorganic methods in this SDG (SW-846 methods 6020B, 7471A). Therefore, alternative worksheets were provided. Region II flagging conventions were used. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	VOA App IX	SVOA App IX	Metals
61SB12-00	680-37369-21	soil	X	X	X
61SB12-01	680-37369-22	soil	X	X	X
61SB12-05	680-37369-23	soil	X	X	X
61SB18-05	680-37369-24	soil	X	X	X
61SB19-01	680-37369-25	soil	X	X	X
61SB19-02	680-37369-26	soil	X	X	X
61SB19-00	680-37369-27	soil	X	X	X
61TB02	680-37369-28	water	X		
61SB17-01	680-37369-34	soil	X	X	X
61SB12-05D	680-37369-39	soil	X	X	X
61SB18-05MS	680-37369-24MS	soil			X
61SB18-05MSD	680-37369-24MSD	soil			X

The following quality control sample was provided with this SDG: sample 61SB12-05D-field duplicate of sample 61SB12-05; and sample 61TB02-trip blank. The samples were evaluated based on the following criteria:

- Data Completeness *
- Sample Condition *
- Technical Holding Times *
- GC/MS Tuning *
- GC Performance *
- Initial/Continuing Calibrations

- ICSA/ICSAB Standards
- CRDL Standards *
- Blanks
- Internal Standards *
- Surrogate Recoveries *
- Laboratory Control Samples
- Matrix Spike Recoveries
- Matrix Duplicate RPDs *
- Serial Dilutions
- Field Duplicates
- Identification/Quantitation *
- Reporting Limits *
- Tentatively Identified Compounds NA

* - indicates that qualifications were not required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page.

VOA

The continuing calibrations exhibited some compounds with low RRF values, which resulted in qualifying non-detected values as rejected for these compounds. Due to high %D values, in the continuing calibrations, some compounds were qualified as estimated.

Blank contamination was noted in the method and QC blanks associated with samples in this batch. Qualifications were added to the data.

The field duplicate pair did not exhibit comparable result that required qualifications to the data.

SVOA

The continuing calibrations exhibited some compounds with low RRF values, which resulted in qualifying non-detected values as rejected for these compounds. Due to high %RSD and %D values, in the initial and continuing calibrations, some compounds were qualified as estimated.

The associated laboratory control spike exhibited non-compliant recovery for pentachlorophenol; therefore all samples were qualified as estimated for this compound.

Blank contamination was noted in the method and QC blanks associated with samples in this batch. Qualifications were added to the data.

Metals

The ICSAB standards exhibited non-compliant recoveries below the QC limit for the analyte silver. Based on Region II guidelines all positive and non-detect results for silver were qualified as estimated J/UJ.

Blank contamination was noted and qualification was required in the samples in this SDG.

The matrix spikes pair submitted in this SDG exhibited non-compliant recoveries in both the MS and the MSD for the analytes antimony and nickel for which qualifications were required. All results for antimony and nickel in the metals samples were qualified as estimated J/UJ.

The serial dilution submitted in this SDG exhibited a non-compliant %D for the analyte cobalt. All results for cobalt in the metals samples were qualified as estimated J/UJ.

The field duplicate pair exhibited a non-compliant RPD for one analyte. This analyte was qualified as estimated in the field duplicate pair.

Specific Evaluation of Data

Data Completeness

The SDG was received complete and intact. Resubmissions were not required. Clarification questions were asked of the laboratory regarding the metals fraction. A copy of the e-mail correspondence is included in the validation worksheets.

Technical Holding Times

According to chain of custody records, sampling was performed on 05/31 and 06/03/08 and samples were received at the laboratory 06/05/08. All sample preparation and analysis was performed within Region II and/or method holding time requirements.

Initial/Continuing Calibration

VOA

Calibration standards exhibited RRFs and %Ds values that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results are qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
CC 06/11/08	pentachloroethane	107.5%	61TB02	J/R
	acrolein	63.1%		J/UJ
	propionitrile	20.9%		
	isobutyl alcohol	34.0%		
CC 06/14/08	isobutyl alcohol	0.02332	61SB12-01, 61SB12-05, 61SB18-05, 61SB19-01, 61SB19-02, 61SB19-00, 61SB17-01	J/R
	acrolein	37.3%		J/UJ
	iodomethane	22.0%		
	acetonitrile	30.4%		
	3-chloro-1-propene	43.3%		
	pentachloroethane	29.7%		
	2-butanone	31.1%		
	4-methyl-2-pentanone	35.2%		
	2-hexanone	32.9%		
	1,1,2,2-tetrachloroethane	23.4%		
	1,2,3-trichloropropane	25.6%		
	1,2-dibromo-3-chloropropane	28.6%		
CC 06/16/08	pentachloroethane	188.4%	61SB12-00	J/R
	acrolein	32.1%		J/UJ
	acrylonitrile	34.8%		
	chloroethane	52.4%		
	acetone	23.2%		
	2-butanone	23.4%		
	4-methyl-2-pentanone	38.3%		
	1,1,2,2-tetrachloroethane	21.6%		
CC 06/17/08	pentachloroethane	122.1%	61SB12-05D	J/R
	acrolein	36.7%		J/UJ
	acrylonitrile	33.0%		
	ethyl methacrylate	21.5%		
	trans-1,4-dichloro-2-butene	23.5%		
	chloroethane	38.1%		
	acetone	30.9%		
	2-butanone	30.0%		
	1,1,1-trichloroethane	29.5%		
	carbon tetrachloride	28.8%		
	cis-1,3-dichloropropene	32.9%		
	4-methyl-2-pentanone	48.2%		
	1,1,2-trichloroethane	21.2%		

SVOA

Calibration standards exhibited %RSD, %Ds and RRF values that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results are qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
IC 06/23/08	naphthalene	15.2%	all samples	J/UJ
CC 07/01/08	4-nitroquinoline-1-oxide	0.02743	61SB12-00,	J/R
	2,4-dinitrophenol	21.7%	61SB12-01,	J/UJ
	benzo(g,h,i)perylene	21.4%	61SB12-05,	
	2-naphthylamine	33.0%	61SB18-05,	
	pentachloronitrobenzene	26.5%	61SB19-01,	
	methapyrilene	26.0%	61SB19-00,	
	aramite, total	35.5%	61SB17-01,	
	famphur	30.5%	61SB12-05D	
CC 07/02/08	4-nitroquinoline-1-oxide	0.02683	61SB19-02	J/R
	hexachlorocyclopentadiene	21.9%		J/UJ
	2,4-dinitrophenol	27.5%		
	3,3'-dichlorobenzidine	23.7%		
	benzo(b)fluoranthene	30.4%		
	benzo(g,h,i)perylene	20.6%		
	hexachloropropene	28.2%		
	2-naphthylamine	42.6%		
	pentachloronitrobenzene	27.2%		
	methapyrilene	23.7%		
	3,3-dimethylbenzidine	58.0%		
	famphur	25.8%		

ICSA/ICSAB Standards

Metals

The ICSAB standards associated with the metals analysis exhibited non-compliant recoveries less than the lower QC limit for the analyte silver (78%/79%/78%). Based on Region II guidelines, reported positive and non-detect results for silver were qualified as estimated J/UJ in all samples.

Blanks

VOA

The associated method and/or QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table. Please note that the laboratory reported non-detect results down to the MDL for this project. Therefore, the blank flagging actions were modified as follows to take this into consideration. Positive results greater than the MDL but less than the CRQL are qualified as U at the reported concentration when affected by blank contamination.

Blank ID	Compound	Concentration	Reporting Limit	Action Level
Method Blank	acetone	9.2 ug/Kg	50 ug/Kg	2X RL
Method Blank	acetone	4.2J ug/Kg	50 ug/Kg	2X RL
61TB02	2-butanone	0.79J ug/L	10 ug/L	2X RL
ER26	2-butanone	0.88J ug/L	10 ug/L	2X RL
	benzene	1	1	RL
FB01	2-butanone	0.69J ug/L	10 ug/L	2X RL

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag
61SB12-00, 61SB12-01, 61SB12-05, 61SB18-05, 61SB19-01, 61SB19-02, 61SB19-00, 61SB17-01	2-butanone	U at reported value
61SB12-01, 61SB12-05, 61SB18-05, 61SB19-01, 61SB19-02, 61SB17-01, 61SB12-00	acetone	U at reported value
61SB12-00	benzene	U at reported value

SVOA

The associated method and/or QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table. Please note that the laboratory reported non-detect results down to the MDL for this project. Therefore, the blank flagging actions were modified as follows to take this into consideration. Positive results greater than the MDL but less than the CRQL are qualified as U at the reported concentration when affected by blank contamination.

Blank ID	Compound	Concentration	Reporting Limit	Action Level
Method Blank	bis(2-ethylhexyl)phthalate	11J ug/Kg	33 ug/Kg	2X RL
ER26	naphthalene	0.78 ug/L	0.19 ug/L	RL

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag
61SB12-00, 61SB12-01, 61SB12-05, 61SB18-05, 61SB19-00, 61SB17-01, 61SB12-05D, 61SB19-02	bis(2-ethylhexyl)phthalate	U at reported value
61SB12-00, 61SB12-01, 61SB19-01, 61SB19-00	naphthalene	U at reported value

Metals

Associated blanks exhibited contamination as noted in the following table. The laboratory reported non-detect results to the MDL for this project. Therefore, the blank flagging actions were modified to take this into consideration. Please see the Glossary of Qualification Flags and Abbreviations for details.

Blank ID	Analyte	Concentration	Action Level	Q Flag
ICB	antimony	0.07517J ug/L	>MDL up to RL	U

Please note, when qualifying samples for CCB contamination, associated samples are those just prior to or just following a CCB. Therefore, not all analytes in all samples are flagged for CCB contamination.

Associated samples and required qualifications are noted in the following table.

Sample ID	Analyte	Q Flag
all samples >MDL up to RL	antimony	U

Laboratory Control Samples

SVOA

The LCS associated with all the samples exhibited low recovery at 14% for pentachlorophenol (QC limits 28-117%); therefore all samples were qualified as estimated (J/UJ) for pentachlorophenol.

Matrix Spikes

Metals

The matrix spike pair submitted in this SDG exhibited non-compliant %R's for antimony and nickel, requiring qualification in the field samples. A summary of these non-compliances and affected samples are noted in the following table.

MS	Analytes	Samples	%R	Q Flag
61SB18-05	antimony	all samples	49/48	J/UJ
	nickel		63/69	

Serial Dilutions

Metals

The serial dilution analysis submitted in this SDG exhibited a non-compliant %D for cobalt, requiring qualification in the field samples. A summary of these non-compliances and affected samples are noted in the following table.

SD	Analytes	Samples	%D	Q Flag
61SB18-05	cobalt	all samples	11.3	J/UJ

Field Duplicates

VOA

Sample 61SB12-05 and field duplicate 61SB12-05D did not exhibit comparable results for iodomethane with 200% RPD; therefore results for this compound were qualified as estimated (J/UJ).

Metals

The field duplicate pair of samples 61SB12-05 and 61SB12-05D exhibited metals results that did not compare. The analyte barium exhibited a RPD that was ≥35% but less than 120% and was qualified as estimated J in both samples.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff
President

Jacqueline Cleveland
Vice President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q flag
61TB02	pentachloroethane	+/-	J/R
61TB02	acrolein propionitrile isobutyl alcohol	+/-	J/UJ
61SB12-01, 61SB12-05, 61SB18-05, 61SB19-01, 61SB19-02, 61SB19-00, 61SB17-01	isobutyl alcohol	+/-	J/R
61SB12-01, 61SB12-05, 61SB18-05, 61SB19-01, 61SB19-02, 61SB19-00, 61SB17-01	acrolein iodomethane acetonitrile 3-chloro-1-propene pentachloroethane 2-butanone 4-methyl-2-pentanone 2-hexanone 1,1,2,2-tetrachloroethane 1,2,3-trichloropropane 1,2-dibromo-3-chloropropane	+/-	J/UJ
61SB12-00	pentachloroethane	+/-	J/R
61SB12-00	acrolein acrylonitrile chloroethane acetone 2-butanone 4-methyl-2-pentanone 1,1,2,2-tetrachloroethane	+/-	J/UJ
61SB12-05D	pentachloroethane	+/-	J/R
61SB12-05D	acrolein acrylonitrile ethyl methacrylate trans-1,4-dichloro-2-butene chloroethane acetone 2-butanone 1,1,1-trichloroethane carbon tetrachloride cis-1,3-dichloropropene 4-methyl-2-pentanone 1,1,2-trichloroethane	+/-	J/UJ
61SB12-00, 61SB12-01, 61SB12-05, 61SB18-05, 61SB19-01, 61SB19-02, 61SB19-00, 61SB17-01	2-butanone	+	U at reported value
61SB12-01, 61SB12-05, 61SB18-05, 61SB19-01, 61SB19-02, 61SB17-01, 61SB12-00	acetone	+	U at reported value
61SB12-00	benzene	+	U at reported value
61SB12-05, 61SB12-05D	iodomethane	+/-	J/UJ

Summary of Data Qualifications, continued

SVOA

Sample ID	Compound	Results	Q flag
all samples	naphthalene	+/-	J/UJ
61SB12-00, 61SB12-01, 61SB12-05, 61SB18-05, 61SB19-01, 61SB19-00, 61SB17-01, 61SB12-05D	4-nitroquinoline-1-oxide	+/-	J/R
61SB12-00, 61SB12-01, 61SB12-05, 61SB18-05, 61SB19-01, 61SB19-00, 61SB17-01, 61SB12-05D	2,4-dinitrophenol benzo(g,h,i)perylene 2-naphthylamine pentachloronitrobenzene methapyrilene aramite, total famphur	+/-	J/UJ
61SB19-02	4-nitroquinoline-1-oxide	+/-	J/R
61SB19-02	hexachlorocyclopentadiene 2,4-dinitrophenol 3,3'-dichlorobenzidine benzo(b)fluoranthene benzo(g,h,i)perylene hexachloropropene 2-naphthylamine pentachloronitrobenzene methapyrilene 3,3-dimethylbenzidine famphur	+/-	J/UJ
61SB12-00, 61SB12-01, 61SB12-05, 61SB18-05, 61SB19-00, 61SB17-01, 61SB12-05D, 61SB19-02	bis(2-ethylhexyl)phthalate	+	U at reported value
61SB12-00, 61SB12-01, 61SB19-01, 61SB19-00	naphthalene	+	U at reported value
all samples	pentachlorophenol	+/-	J/UJ

Metals

Sample ID	Analyte	Results	Q flag
all samples	silver	+/-	J/UJ
all samples >MDL up to RL	antimony	>MDL up to RL	U
all samples	antimony nickel	+/-	J/UJ
all samples	cobalt	+	J
61SB12-05, 61SB12-05D	barium	+	J

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
N	analyte has been tentatively identified
JN	analyte has been tentatively identified, estimated value
R	result is rejected; the presence or absence of the analyte cannot be verified

Method/Preparation/Field QC Blank Qualification Flags (Q-Flags)

Organic Methods

NA	The sample result for the blank contaminant is greater than the RL (2X sample RL for common laboratory contaminants) when the blank value is less than the RL. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U*	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is qualified as non-detect U at the reported concentration.
RL**	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is changed to the RL and qualified as non-detect U.

* This guideline is used when the laboratory is reporting non-detects to the MDL. ** This guideline is used when the laboratory is reporting non-detects to the RL.

Inorganic Methods

ICB/CCB/PB Action:

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the ICB/CCB/PB result is less or greater than the RL.

Glossary of Qualification Flags and Abbreviations, continued

R -	Sample result is greater than the RL and less than the ICB/CCB/PB value when the ICB/CCB/PB value is greater than the RL.
J -	Sample result is greater than the ICB/CCB/PB value but less than 10X the ICB/CCB/PB value when ICB/CCB/PB value is greater than the RL.
J/UJ -	Sample result is less than 10X RL when blank result is below the negative RL.

Field QC Blank action:

Note – Use field blanks to qualify data only if field blank results are greater than prep blank results.
Do not use rinsate blank associated with soils to qualify water samples and vice versa.

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the FB result is less or greater than the RL.
R -	Sample result is greater than the RL and less than the FB value when the FB value is greater than the RL.
J -	Sample result is greater than the FB value but less than 10X the FB value when FB value is greater than the RL.

General Abbreviations

RL	reporting limit
IDL	instrument detection limit
MDL	method detection limit
CRDL	contract required detection limit
CRQL	contract required quantitation limit
+	positive result
-	non-detect result

TEST AMERICA SAVANNAH SDG 37369-3

DataQual

Environmental Services, LLC

Michael Baker, Jr., Inc.
Airside Business Park
100 Airside Drive
Moon Township, PA 15108

November 23, 2008
SDG# SWMU37369-3, Test America-Savannah
NAPR SWMU 71, Puerto Rico

Dear Mr. Kimes,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # SWMU37369-3. The data validation was performed in accordance with the SW-846 methods utilized by the laboratory, the Region II Standard Operating Procedures for the Validation of Organic Data Acquired Using SW-846 Methods (8260B-Rev 2, January 2006- SOP #HW-24; 8081A, October 2006-SOP HW-44), and professional judgment. Region II has not developed a validation checklist SOP for the methods used to assess the inorganic methods in this SDG (SW-846 methods 6020B, 7471A) or the organic methods for hydrocarbons (SW-846 methods 8015_DRO and 8015_GRO). Therefore, alternative worksheets were provided. Region II flagging conventions were used. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	VOA App IX	Pest	DRO	GRO	TMetals	DMetals
71GW06	680-37369-35	water	X	X	X	X	X	X
71TB02	680-37369-36	water				X		
71GW08	680-37369-37	water				X		
71GW08D	680-37369-38	water				X		
71GW08MS	680-37369-37MS	water				X		
71GW08MSD	680-37369-37MSD	water				X		

The following quality control samples were provided with this SDG: Sample 71GW08D-field duplicate of sample 71GW08; sample 71TB02-trip blank.

The samples were evaluated based on the following criteria:

- Data Completeness *
- Sample Condition *
- Technical Holding Times *
- GC/MS Tuning *
- GC Performance *
- Initial/Continuing Calibrations
- ICSA/ICSAB Standards
- CRDL Standards *
- Blanks

- Internal Standards *
- Surrogate Recoveries *
- Laboratory Control Samples *
- Matrix Spike Recoveries *
- Matrix Duplicate RPDs *
- Serial Dilutions
- Field Duplicates *
- Identification/Quantitation
- Reporting Limits *
- Tentatively Identified Compounds NA

* - indicates that qualifications were not required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. Please note that the reviewer added an F to the sample ID to indicate dissolved metals analysis when necessary. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page.

VOA

Due to high %D values, in the continuing calibrations, some compounds were qualified as estimated.

Blank contamination was noted in the method and QC blanks associated with samples in this batch. Qualifications were added to the data.

Pesticides

No qualifications to the data were required.

DRO/GRO

No qualifications to the data were required.

Metals

The ICSAB standards associated with the total metals analysis exhibited non-compliant recoveries below the QC limit for the analyte silver. Based on Region II guidelines all positive and non-detect results for silver in the total metals samples were qualified as estimated J/UJ.

Blank contamination was noted and qualification was required in the samples in this SDG.

The serial dilution submitted with the dissolved metals analysis exhibited a non-compliant %D for the analyte cobalt. The result for cobalt in the dissolved metals sample was qualified as estimated J/UJ.

The samples 71GW06 and 71GW06F exhibited a %D between the total metals and dissolved metals analysis that was greater than 20% for one analyte. This analyte was qualified as estimated J in the two samples.

Specific Evaluation of Data

Data Completeness

Clarification questions were asked of the laboratory regarding the metals fraction. A copy of the e-mail correspondence is included in the validation worksheets. Clarification questions were asked of the laboratory regarding the DRO/GRO fractions. A copy of these e-mail correspondences is included in the project file.

Please note that for the LCS in the Pesticides analysis, raw data final concentrations and Form 10 results did not reflect the reported concentrations for spiked compounds. The data on the quantitation pages was not always reflective of the extraction information. This happened because the quantitation page data were entered for soil extracts rather than water extracts. However, the Form 1 and Form 3 concentrations were correctly calculated and reported for the spike samples. There were no detections in the field sample.

Technical Holding Times

According to chain of custody records, sampling was performed on 06/03/08 and samples were received at the laboratory 06/05/08. All sample preparation and analysis was performed within Region II and/or method holding time requirements.

Initial/Continuing Calibration

VOA

Calibration standards exhibited %Ds values that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results are qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
CC 06/11/08	pentachloroethane	107.5%	all samples	J/R
	acrolein propionitrile isobutyl alcohol	63.1% 20.1% 34.0%		J/UJ

ICSA/ICSAB Standards

Metals

The ICSAB standards associated with the total metals analysis exhibited non-compliant recoveries less than the lower QC limit for the analyte silver (78%/79%). Based on Region II guidelines, reported positive and non-detect results for silver were qualified as estimated J/UJ in the total metals sample.

Blanks

VOA

The associated method and/or QC blanks exhibited contamination as noted in the following table. Compounds for which there was no action required, are not included in the following table. Please note that the laboratory reported non-detect results down to the MDL for this project. Therefore, the blank flagging actions were modified as follows to take this into consideration. Positive results greater than the MDL but less than the CRQL are qualified as U at the reported concentration when affected by blank contamination.

Blank ID	Compound	Concentration	Reporting Limit	Action Level
71TB01	acetone	5.2J ug/L	25 ug/L	2X RL
	2-butanone	0.67J	10	2X RL
	carbon disulfide	1.1J	2	RL
FB01	2-butanone	0.69J ug/L	10 ug/L	2X RL

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag
71GW06	acetone	U at reported value
71GW06	2-butanone	U at reported value
71GW06	carbon disulfide	U at reported value

Metals

Associated blanks exhibited contamination as noted in the following table. The laboratory reported non-detect results to the MDL for this project. Therefore, the blank flagging actions were modified to take this into consideration. Please see the Glossary of Qualification Flags and Abbreviations for details.

Blank ID	Analyte	Concentration	Action Level	Q Flag
PBW total	arsenic	0.3534J ug/L	>MDL up to RL	U
	tin	2.5480J ug/L	>MDL up to RL	U
ICB total	antimony	0.07517J ug/L	>MDL up to RL	U
ICB dissolved	antimony	0.11780J ug/L	>MDL up to RL	U
ER27	arsenic	0.31J ug/L	>MDL up to RL	U

Please note, when qualifying samples for CCB contamination, associated samples are those just prior to or just following a CCB. Therefore, not all analytes in all samples are flagged for CCB contamination.

Associated samples and required qualifications are noted in the following table.

Sample ID	Analyte	Q Flag
all samples >MDL up to RL	antimony	U
all samples >MDL up to RL	arsenic	U
71GW06	tin	U

Serial Dilution

Metals

The serial dilution submitted for the dissolved metals analysis exhibited a non-compliant %D for cobalt. A summary of this non-compliance and affected samples are noted in the following table.

SD	Analytes	Samples	%D	Q Flag
61GW03	cobalt	dissolved metals samples	44.7	J/UJ

Identification/Quantitation

Metals

The total and dissolved metals analysis exhibited a %D >20% but less than or equal to 50% for one analyte. Elements exhibiting >20% but less than or equal to 50% difference

between total and dissolved concentrations were qualified as estimated J based on the Region II guidelines. Specific action is noted in the following table.

Sample ID	Analyte	%D	Q Flag
71GW06, 71GW06F	vanadium	40%	J

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff
President

Jacqueline Cleveland
Vice President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q flag
all samples	pentachloroethane	+/-	J/R
all samples	acrolein propionitrile isobutyl alcohol	+/-	J/UJ
71GW06	acetone	+	U at reported value
71GW06	2-butanone	+	U at reported value
71GW06	carbon disulfide	+	U at reported value

Pesticides

Sample ID	Compound	Results	Q flag
No qualifications were required			

DRO/GRO

Sample ID	Compound	Results	Q flag
No qualifications were required			

Metals

Sample ID	Analyte	Results	Q flag
all total metals samples	silver	+/-	J/UJ
all samples	antimony	>MDL up to RL	U
all samples	arsenic	>MDL up to RL	U
71GW06	tin	>MDL up to RL	U
all dissolved metals samples	cobalt	+/-	J/UJ
71GW06, 71GW06F	vanadium	+	J

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
N	analyte has been tentatively identified
JN	analyte has been tentatively identified, estimated value
R	result is rejected; the presence or absence of the analyte cannot be verified

Method/Preparation/Field QC Blank Qualification Flags (Q-Flags)

Organic Methods

NA	The sample result for the blank contaminant is greater than the RL (2X sample RL for common laboratory contaminants) when the blank value is less than the RL. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U*	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is qualified as non-detect U at the reported concentration.
RL**	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is changed to the RL and qualified as non-detect U.

* This guideline is used when the laboratory is reporting non-detects to the MDL. ** This guideline is used when the laboratory is reporting non-detects to the RL.

Inorganic Methods

ICB/CCB/PB Action:

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the ICB/CCB/PB result is less or greater than the RL.

Glossary of Qualification Flags and Abbreviations, continued

R -	Sample result is greater than the RL and less than the ICB/CCB/PB value when the ICB/CCB/PB value is greater than the RL.
J -	Sample result is greater than the ICB/CCB/PB value but less than 10X the ICB/CCB/PB value when ICB/CCB/PB value is greater than the RL.
J/UJ -	Sample result is less than 10X RL when blank result is below the negative RL.

Field QC Blank action:

Note – Use field blanks to qualify data only if field blank results are greater than prep blank results.

Do not use rinsate blank associated with soils to qualify water samples and vice versa.

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the FB result is less or greater than the RL.
R -	Sample result is greater than the RL and less than the FB value when the FB value is greater than the RL.
J -	Sample result is greater than the FB value but less than 10X the FB value when FB value is greater than the RL.

General Abbreviations

RL	reporting limit
IDL	instrument detection limit
MDL	method detection limit
CRDL	contract required detection limit
CRQL	contract required quantitation limit
+	positive result
-	non-detect result

TEST AMERICA SAVANNAH SDG 37369-4

DataQual

Environmental Services, LLC

Michael Baker, Jr., Inc.
Airside Business Park
100 Airside Drive
Moon Township, PA 15108

November 21, 2008
SDG# SWMU37369-4, Test America-Savannah
NAPR, Puerto Rico

Dear Mr. Kimes,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG # SWMU37369-4. The data validation was performed in accordance with the SW-846 methods utilized by the laboratory, the Region II Standard Operating Procedures for the Validation of Organic Data Acquired Using SW-846 Methods (8260B-Rev 2, January 2006- SOP #HW-24 and 8270D-Rev 3, October 2006- SOP #HW-22), and professional judgment. Region II has not developed a validation checklist SOP for the methods used to assess the inorganic methods in this SDG (SW-846 methods 6020B, 7471A) or the organic methods for hydrocarbons (SW-846 methods 8015_DRO and 8015_GRO). Therefore, alternative worksheets were provided. Region II flagging conventions were used. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	VOA App IX	LL-SVOA App IX	Pesticides	PCBs	DRO	GRO	Metals
ER24	680-37369-29	water	X	X	X	X	X	X	X
ER25	680-37369-30	water	X	X	X	X	X	X	X
ER26	680-37369-31	water	X	X	X			X	X
ER27	680-37369-32	water	X	X	X		X	X	X
ER28	680-37369-33	water	X	X					X

The samples were evaluated based on the following criteria:

- Data Completeness *
- Sample Condition *
- Technical Holding Times
- GC/MS Tuning *
- GC Performance *
- Initial/Continuing Calibrations
- ICSA/ICSAB Standards
- CRDL Standards *
- Blanks *
- Internal Standards *
- Surrogate Recoveries *
- Laboratory Control Samples *
- Matrix Spike Recoveries NA

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- Matrix Duplicate RPDs NA
- Serial Dilutions *
- Field Duplicates NA
- Identification/Quantitation *
- Reporting Limits *
- Tentatively Identified Compounds NA

* - indicates that qualifications were not required based on this criteria

Overall Evaluation of Data/Potential Usability Issues

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page.

VOA

Due to high %D values, in the continuing calibrations, some compounds were qualified as estimated.

SVOA

All samples exceeded extraction-holding time, which required qualifications to the data.

The initial and continuing calibrations exhibited some compounds with low RRF values, which resulted in qualifying non-detected values as rejected for these compounds. Due to high %RSD and %D values, in the initial and continuing calibrations, some compounds were qualified as estimated.

Pesticides/PCBs

Two samples were extracted outside the recommended extraction holding time of 7 days from sampling for water samples. Results in these samples were qualified as estimated J/UJ.

DRO/GRO

Two samples for the DRO fraction were extracted outside the recommended extraction holding time of 7 days from sampling for water samples. Results in these samples were qualified as estimated J/UJ for DRO.

Metals

The ICSAB standards exhibited non-compliant recoveries requiring qualification in the field samples. The analyte silver was recovered below the lower QC limit. Based on Region II guidelines all positive and non-detect results for silver were qualified as estimated J/UJ.

Specific Evaluation of Data

Data Completeness

Resubmissions were required for the pesticide/PCB fraction due to incorrectly reported retention times and retention time windows. The laboratory provided all necessary corrected forms. A copy of the e-mail communication is included in the validation worksheets. Clarification questions were asked of the laboratory regarding the metals fraction. A copy of the e-mail correspondence is included in the validation worksheets. Clarification questions were asked of the laboratory regarding the DRO fraction. A copy of these e-mail correspondences is included in the project file.

Please note that for the QC spikes in the Pesticide/PCB fraction, raw data final concentrations do not reflect the actual concentration in the extract. The data on the quantitation pages was not reflective of the extraction information. Results were checked and reported results were correct. Also for QC spikes, the Form 10s did not always reflect the reported results. The final results were calculated as if the spikes were soil samples. However, all reported results were calculated and reflected in both the forms and raw data correctly. No qualifications were required.

Technical Holding Times

According to chain of custody records, sampling was performed on 5/31-06/04/08 and samples were received at the laboratory 06/05/08. All sample preparation and analysis was performed within Region II and/or method holding time requirements with the following exceptions.

SVOA

All samples exceeded extraction holding time by 8 to 12 days; therefore all results were qualified as estimated (J/UJ).

Pest/PCB

Samples ER24 and ER25 were extracted 2 to 3 days outside the extraction holding time. Therefore, all reported results were qualified as estimated J/UJ in the samples.

DRO/GRO

For the DRO fraction, samples ER24 and ER25 were extracted 2 to 3 days outside the extraction holding time. Therefore, all reported DRO results were qualified as estimated J/UJ in the samples.

Initial/Continuing Calibration

VOA

Calibration standards exhibited %Ds values that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results are qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
CC 06/11/08	pentachloroethane	107.5%	all samples	J/R
	acrolein	63.1%		J/UJ
	propionitrile	20.9%		
	isobutyl alcohol	34.0%		

SVOA

Calibration standards exhibited %RSD, %Ds and RRF values that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results are qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag
IC 06/21/08	pentachloronitrobenzene	0.0481	all samples	J/R
	benzo(k)fluoranthene	16.5%		J/UJ
	benzo(a)pyrene	15.9%		
CC 06/25/08	4-nitroquinoline-1-oxide	0.02492	all samples	J/R
	2,4-dinitrophenol	20.7%		J/UJ
	4,6-dinitro-2-methylphenol	21.5%		
	3,3'-dichlorobenzidine	47.9%		
	indeno(1,2,3-cd)pyrene	29.1%		
	a,a-dimethylphenethylamine	20.2%		
	hexachlorophene	21.0%		
	aramite, total	25.9%		
	thionazin	20.5%		
	phorate	22.7%		
	disulfoton	20.6%		
	famphur	26.9%		

ICSA/ICSAB Standards

Metals

The ICSAB standards associated with the total metals analysis exhibited non-compliant recoveries less than the lower QC limit for the analyte silver (78%/79%). Based on Region II guidelines, reported positive and non-detect results for silver were qualified as estimated J/UJ in all samples.

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,

Laura Maschhoff
President

Jacqueline Cleveland
Vice President

Summary of Data Qualifications

VOA

Sample ID	Compound	Results	Q flag
all samples	pentachloroethane	+/-	J/R
all samples	acrolein propionitrile isobutyl alcohol	+/-	J/UJ

SVOA

Sample ID	Compound	Results	Q flag
all samples	all results	+/-	J/UJ
all samples	pentachloronitrobenzene	+/-	J/R
all samples	benzo(k)fluoranthene benzo(a)pyrene	+/-	J/UJ
all samples	4-nitroquinoline-1-oxide	+/-	J/R
all samples	2,4-dinitrophenol 4,6-dinitro-2-methylphenol 3,3'-dichlorobenzidine indeno(1,2,3-cd)pyrene a,a-dimethylphenethylamine hexachlorophene aramite, total thionazin phorate disulfoton famphur	+/-	J/UJ

Pesticides/PCBs

Sample ID	Compound	Results	Q flag
ER24, ER25	all compounds	+/-	J/UJ

DRO/GRO

Sample ID	Compound	Results	Q flag
ER24, ER25	DRO	+/-	J/UJ

Metals

Sample ID	Analyte	Results	Q flag
all samples	silver	+/-	J/UJ

Glossary of Qualification Flags and Abbreviations

Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
N	analyte has been tentatively identified
JN	analyte has been tentatively identified, estimated value
R	result is rejected; the presence or absence of the analyte cannot be verified

Method/Preparation/Field QC Blank Qualification Flags (Q-Flags)

Organic Methods

NA	The sample result for the blank contaminant is greater than the RL (2X sample RL for common laboratory contaminants) when the blank value is less than the RL. The sample result for the blank contaminant is not qualified with any blank qualifiers.
U*	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is qualified as non-detect U at the reported concentration.
RL**	The sample result for the blank contaminant is less than the RL (2X sample RL for common laboratory contaminants) but greater than the MDL when the blank value is less than the RL. The sample result for the blank contaminant is changed to the RL and qualified as non-detect U.

* This guideline is used when the laboratory is reporting non-detects to the MDL. ** This guideline is used when the laboratory is reporting non-detects to the RL.

Inorganic Methods

ICB/CCB/PB Action:

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the ICB/CCB/PB result is less or greater than the RL.

Glossary of Qualification Flags and Abbreviations, continued

R -	Sample result is greater than the RL and less than the ICB/CCB/PB value when the ICB/CCB/PB value is greater than the RL.
J -	Sample result is greater than the ICB/CCB/PB value but less than 10X the ICB/CCB/PB value when ICB/CCB/PB value is greater than the RL.
J/UJ -	Sample result is less than 10X RL when blank result is below the negative RL.

Field QC Blank action:

Note – Use field blanks to qualify data only if field blank results are greater than prep blank results.
Do not use rinsate blank associated with soils to qualify water samples and vice versa.

No Action -	The sample result is greater than the RL and greater than ten times (10X) the blank value.
U -	The sample result is greater than or equal to the MDL but less than or equal to the RL, result is reported as non-detect at the reported concentration, when the FB result is less or greater than the RL.
R -	Sample result is greater than the RL and less than the FB value when the FB value is greater than the RL.
J -	Sample result is greater than the FB value but less than 10X the FB value when FB value is greater than the RL.

General Abbreviations

RL	reporting limit
IDL	instrument detection limit
MDL	method detection limit
CRDL	contract required detection limit
CRQL	contract required quantitation limit
+	positive result
-	non-detect result

PUERTO RICAN CHEMIST CERTIFICATION

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

PUERTO RICO CERTIFICATION

I Herby certify that I have reviewed the Quality Assurance Data for Project Number **680-36419-4,** and to the best of my knowledge, the results are correct and reliable.

Abraham Ortiz

$1.00 $1.00

A 1224375

Lic. Abraham Ortiz Chaves

Lic. 2

Jun 06, 09

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I Herby certify that I have reviewed the Quality Assurance Data for Project Number **680-37251-1,** and to the best of my knowledge, the results are correct and reliable.

Abraham Ortiz

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Lic Abraham Ortiz Charri

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Lic Abraham Ortiz Chaparro

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Lic. Abraham Ortiz Charriez

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PUERTO RICO CERTIFICATION

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Abraham Ortiz

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I Herby certify that I have reviewed the Quality Assurance Data for Project Number **680-37369-4**, and to the best of my knowledge, the results are correct and reliable.

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I Herby certify that I have reviewed the Quality Assurance Data for Project Number **680-37406-3,** and to the best of my knowledge, the results are correct and reliable.

Abraham Ortiz

$1.00 $1.00

A 1224330

Lic. Abraham Ortiz Charriez

Aug 6, 08

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PUERTO RICO CERTIFICATION

I Herby certify that I have reviewed the Quality Assurance Data for Project Number **680-37406-4**, and to the best of my knowledge, the results are correct and reliable.

Abraham Ortiz

$1.00 $1.00

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Lic. Abraham Ortiz Charriez

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APPENDIX D
PRELIMINARY HUMAN HEALTH RISK CALCULATIONS

TABLE D-1

SURFACE SOIL DATA AND COPC SELECTION SUMMARY
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PERTO RICO, CEIBA, PUERTO RICO

Contaminant	Criteria (1)	Contaminant Frequency / Range / Location			Background (2)	COPC Selection		Exposure Concentration Selection		
	Regional Residential Soil Screening Level	No. of Positive Detects / No. of Samples	Range of Positive Detections	Location of Maximum Detection	ULM	Selected as a COPC?	Rationale for Selection or Deletion	95% UCL (3) (ProUCL)	Exposure Concentration	Rationale for Concentration Selection
Metals (mg/kg)										
Arsenic	0.390 C	11/12	0.91 B - 3.7	62SB09-00	2.65	YES	ASL	2.32 (NP)	2.32	95% KM (BCA) UCL

Notes:

UCL - Upper Confidence Limit
COPC - Chemical of Potential Concern
ug/kg - microgram per kilogram
mg/kg - milligram per kilogram
C = Carcinogenic

Rationale Codes:

(ASL) Above Screening Level

Shaded constituents were identified as COPCs for quantitative risk evaluation.

(1) All non-carcinogenic criteria were divided by 10 to account for potential additive effects of chemicals.
USEPA Regional Residential Soil Screening Level Table (September, 2008)
(2) Revised Final II Summary Report for Environmental Background Concentrations (Baker, 2008): ULM
(3) ProUCL was used to calculate the 95% UCL and distribution (>8 detected site observations):
(NP) - Non-parametric distribution

TABLE D-2

SUMMARY OF EXPOSURE PARAMETERS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PERTO RICO, CEIBA, PUERTO RICO

Parameter	Units	Future Adult Residents RME	Future Young Child Residents RME
Soil Ingestion Rate of Soil (IR-S)	mg/day	100 USEPA, 1991	200 USEPA, 1991
Fraction Ingested from Source (Fi)	NA	1 Prof Judge[1]	1 Prof Judge[1]
Exposure Frequency (EF)	days/year	350 USEPA, 1991	350 USEPA, 1991
Exposure Duration (ED)	years	24 USEPA, 1991	6 USEPA, 1991
Exposure Time (ET)	hours/day	24 Prof Judge[2]	24 Prof Judge[2]
Surface Area Available for Contact (SA)	cm2/day	5,700 USEPA, 2004	2,800 USEPA, 2004
Respiration Rate (RR)	m3/hour	0.83 USEPA, 2002	0.83 USEPA, 2002
Conversion Factor (CF)	kg/mg	1.00E-06 USEPA, 1989	1.00E-06 USEPA, 1989
Averaging Time (Non-Cancer) (AT-N)	days	8,760 USEPA, 1989	2,190 USEPA, 1989
Other Parameters Body Weight (BW)	kg	70 USEPA, 1997	15 USEPA, 1997
Soil to Skin Adherence Factor (AF)	mg/cm2	0.07 USEPA, 2004	0.2 USEPA, 2004
Particulate Emission Factor (PEF)	m3/kg	1.36E+09 USEPA, 2002	1.36E+09 USEPA, 2002
Averaging Time (Cancer) (AT-C)	days	25,550 USEPA, 1989	25,550 USEPA, 1989

Notes:

RME - Reasonalble Maximum Exposure
Prof Judge - Professional Judgment

[1] Conservative assumption of 100% ingested from source.
[2] Conservatively assumes receptor remains at residence 24 hours/day.

As applicable, gastrointestinal absorption efficiencies (GIABS) and dermal absorption factors (ABS) obtained from RAGS Part E (USEPA, 2004).

USEPA, 1989. Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual (Part A) Interim Final.
USEPA, 1991. Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual Supplemental Gudiance. "Standard Default Exposure Factors."
USEPA, 1997. Exposure Factors Handbook. Vol. 1: General Factors. ORD. EPA/600/P-95/002Fa.
USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4 24. December 2002.
USEPA, 2004. Risk Assessment Guidance for Superfund Vol 1, Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). EPA/540/R-99/005.

TABLE D-3

HUMAN HEALTH RISK ASSESSMENT TOXICITY FACTORS
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PERTO RICO, CEIBA, PUERTO RICO

Constituents	Oral CSF $(mg/kg/day)^{-1}$	Inhalation CSF $(mg/kg/day)^{-1}$	Oral RfD $(mg/kg/day)^{-1}$	Inhalation RfD $(mg/kg/day)^{-1}$	Oral Absorption Factors (1)	Oral to (2) Dermal Adjustment	WOE	Target Organ (Systemic Toxicity)	Critical Effect (Systemic Toxicity)
Volatiles									
Arsenic	1.50E+00	1.51E+01	3.00E-04	8.57E-06	0.03	100%	A	(o) Skin / CVS	(o) Hyperpigmentation, keratosis, possible vascular complications

Notes:

CSF = Cancer Slope Factor
RfD = Reference Dose
WOE = Weight of Evidence

NA = Not Available
(o) = Toxicty due to oral exposure
(i) = Toxicity due to inhalation exposure

WOE / EPA Group:

A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen — Known/Likely (EPA classes A, B1, B2, C)
D - Not classifiable as a human carcinogen — Cannot be Determined (EPA class D)
E - Evidence of noncarcinogenicity — Not Likely (EPA class E)

Target Organ Abbreviations:

CVS = Cardiovascular System

(1) - ABS - Absorption Factors taken from RAGS Part E (USEPA, 2004)
(2) - Oral to dermal adjustment taken from RAGS Part E (USEPA, 2004)

TABLE D-4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PERTO RICO, CEIBA, PUERTO RICO

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	Arsenic	1.6E-06	--	2.0E-07	--	1.8E-06	Skin / CVS	0.01	--	<0.01	0.01
			Chemical Total	1.6E-06	--	2.0E-07	--	1.8E-06		0.01	--	<0.01	0.01
		Exposure Point Total						1.8E-06					0.01
	Exposure Medium Total							1.8E-06					0.01
	Air	Fugative Dust	Arsenic	--	2.4E-09	--	--	2.4E-09	NA	--	<0.01	--	<0.01
			Chemical Total	--	2.4E-09	--	--	2.4E-09		--	<0.01	--	<0.01
		Exposure Point Total						2.4E-09					<0.01
	Exposure Medium Total							2.4E-09					<0.01
Surface Soil Total								**1.83E-06**					**0.01**
Adult Residents Total								**1.83E-06**					**0.01**

Total Risk Across Surface Soil	1.8E-06	Total Hazard Index Across Surface Soil	0.01
Total Risk Across All Media and All Exposure Routes	1.8E-06	Total Hazard Index Across All Media and All Exposure Routes	0.01

Notes:
Target Organ Abbreviations:
CVS = Cardiovascular System

Oral and Dermal Exposure Routes:

Oral / Dermal Cardiovascular System HI =	0.01
Oral / Dermal Skin HI =	0.01

Ingestion Pathway Intake:
CDI (mg/kg-day) = C x IR x CF x Fi x EF x ED x 1/BW x 1/AT

Dermal Pathway Intake:
CDI (mg/kg-day) = C x CF x SA x AF x ABS x EF x ED x 1/BW x1/AT

Inhalation Pathway Intake:
CDI (mg/kg-day) = Ca x RR x ET x EF x ED x 1/PEF x 1/BW x1/AT

Carcinogenic Risk =
ILCR = ∑CDI*CSF

Noncarcinogenic Risk =
HQ = ∑CDI/RfD

TABLE D-5
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE I RFI REPORT
NAVAL ACTIVITY PERTO RICO, CEIBA, PUERTO RICO

Scenario Timeframe: Future
Receptor Population: Residents
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	Arsenic	3.8E-06	--	3.2E-07	--	4.1E-06	Skin / CVS	0.10	--	<0.01	0.11
			Chemical Total	3.8E-06	--	3.2E-07	--	4.1E-06		0.10	--	<0.01	0.11
		Exposure Point Total						4.1E-06					0.11
	Exposure Medium Total							4.1E-06					0.11
	Air	Fugative Dust	Arsenic	--	2.8E-09	--	--	2.8E-09	NA	--	<0.01	--	<0.01
			Chemical Total	--	2.8E-09	--	--	2.8E-09		--	<0.01	--	<0.01
		Exposure Point Total						2.8E-09					<0.01
	Exposure Medium Total							2.8E-09					<0.01
Surface Soil Total								**4.14E-06**					**0.11**
Young Child Residents Total								**4.14E-06**					**0.11**

Total Risk Across Surface Soil	4.1E-06
Total Risk Across All Media and All Exposure Routes	4.1E-06

Total Hazard Index Across Surface Soil	0.1
Total Hazard Index Across All Media and All Exposure Routes	0.1

Notes:
Target Organ Abbreviations:
CVS = Cardiovascular System

Oral and Dermal Exposure Routes:

Oral / Dermal Cardiovascular System HI =	0.1
Oral / Dermal Skin HI =	0.1

Ingestion Pathway Intake:
CDI (mg/kg-day) = C x IR x CF x Fi x EF x ED x 1/BW x 1/AT

Dermal Pathway Intake:
CDI (mg/kg-day) = C x CF x SA x AF x ABS x EF x ED x 1/BW x1/AT

Inhalation Pathway Intake:
CDI (mg/kg-day) = Ca x RR x ET x EF x ED x 1/PEF x 1/BW x1/AT

Carcinogenic Risk =
ILCR = ∑CDI*CSF

Noncarcinogenic Risk =
HQ = ∑CDI/RfD

APPENDIX E
SUMMARY OF ANALYTICAL RESULTS FROM PHASE II ECP

SUMMARY OF INORGANIC DETECTIONS IN SUBSURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE II ECP REPORT
NAVAL ACTIVITY PUERTO RICO

Site ID Sample ID Sample Date Sample Depth (ft bgs)	EPA Region III Industrial RBCs (mg/kg)	**EPA Region III Residential RBCs** (mg/kg)	2x Average Detected Background (mg/kg)	8E-01 8E-SB01-01 05/14/04 1.00 - 3.00	8E-03 8E-SB03-01 05/14/04 1.00 - 3.00	Number Exceeding EPA Region III Industrial RBCs	Range Exceeding EPA Region III Industrial RBCs	**Number Exceeding EPA Region III Residential RBCs**	**Range Exceeding EPA Region III Residential RBCs**	Number Exceeding 2x Average Detected Background	Range Exceeding 2x Average Detected Background	Location of Maximum Detection
Appendix IX Inorganics (mg/kg)												
Barium	7,200	550	222	180 N	**590** N	0/2		1/2	590N	1/2	590N	8E-SB03-01
Beryllium	200	16	0.74	0.77	0.56	0/2		0/2		1/2	0.77	8E-SB01-01
Chromium	310	23	133	2.7	8.2	0/2		0/2		0/2		8E-SB03-01
Cobalt	2,000	160	30.0	11	5.4	0/2		0/2		0/2		8E-SB01-01
Copper	4,100	310	193	22 N	14 N	0/2		0/2		0/2		8E-SB01-01
Lead	400[(1)]	400[(1)]	8.68	0.93	0.91	0/2		0/2		0/2		8E-SB01-01
Nickel	2,000	160	31.9	1.6 B	2.8 B	0/2		0/2		0/2		8E-SB03-01
Tin	61,000	4,700	2.96	2.4 B	2.3 B	0/2		0/2		0/2		8E-SB01-01
Vanadium	100	7.8	462	**24**	**34**	0/2		2/2	24 - 34	0/2		8E-SB03-01
Zinc	31,000	2,300	88.6	14 E	11 E	0/2		0/2		0/2		8E-SB01-01

Notes:

B - The reported result is an estimated concentration that is less than the PQL, but greater than or equal to the MDL.
N - The matrix spike recovery is not within control limtis.
E- The reported value is an estimated because of the presence of matrix interference.
(1) - 1996 Soil Screening Guidance.
ft bgs - feet below ground surface.
mg/kg - milligrams per kilogram.

Bold indicates exceedance of EPA Region III Residential RBCs
Underline indicates exceedance of 2 x Average Detected Background

SUMMARY OF INORGANIC DETECTIONS IN SURFACE SOIL
SWMU 62 - FORMER BUNDY DISPOSAL AREA
PHASE II ECP REPORT
NAVAL ACTIVITY PUERTO RICO

Site ID Sample ID Sample Date Sample Depth (ft bgs)	EPA Region III Industrial RBCs (mg/kg)	**EPA Region III Residential RBCs** (mg/kg)	2x Average Detected Background (mg/kg)	8E-01 8E-SS01 05/14/04 0.00 - 1.00	8E-02 8E-SS02 05/14/04 0.00 - 1.00	8E-02 8E-SS02D 05/14/04 0.00 - 1.00	8E-03 8E-SS03 05/14/04 0.00 - 1.00	Number Exceeding EPA Region III Industrial RBCs	Range Exceeding EPA Region III Industrial RBCs	**Number Exceeding EPA Region III Residential RBCs**	**Range Exceeding EPA Region III Residential RBCs**	Number Exceeding 2x Average Detected Background	Range Exceeding 2x Average Detected Background	Location of Maximum Detection
Appendix IX Inorganics (mg/kg)														
Arsenic	1.9	0.43	2.4	**1.3**	1.1 U	**0.91** B	1 U	0/4		2/4	0.91B - 1.3	0/4		8E-SS01
Barium	7,200	550	181	220 N	90 N	120 N	190 N	0/4		0/4		2/4	190N - 220N	8E-SS01
Beryllium	200	16	0.45	0.37 B	0.26 B	0.21 B	0.58	0/4		0/4		1/4	0.58	8E-SS03
Chromium	310	23	59.3	12	2.8	2.4	12	0/4		0/4		0/4		8E-SS01, 8E-SS03
Cobalt	2,000	160	44.0	12	1.9	2	11	0/4		0/4		0/4		8E-SS01
Copper	4,100	310	234	130 N	60 N	58 N	13 N	0/4		0/4		0/4		8E-SS01
Lead	400(1)	400(1)	125	18	1.3	0.91	2	0/4		0/4		0/4		8E-SS01
Mercury	31(2)	2.3(2)	0.11	0.039	0.02 U	0.021 U	0.038	0/4		0/4		0/4		8E-SS01
Nickel	2,000	160	16.6	6.4	1.1 B	1 B	3.4 B	0/4		0/4		0/4		8E-SS01
Sulfide	NE	NE	27.1	32 U	28 U	27 B	30 U	NE		NE		0/4		8E-SS02D
Tin	61,000	4,700	2.43	3.2 B	3.5 B	3 B	1.9 B	0/4		0/4		3/4	3B - 3.5B	8E-SS02
Vanadium	100	7.8	355	**82**	**34**	**36**	**35**	0/4		4/4	34 - 82	0/4		8E-SS01
Zinc	31,000	2,300	125	45 E	11 E	13 E	6.2 E	0/4		0/4		0/4		8E-SS01

Notes:

B - The reported result is an estimated concentration that is less than the PQL, greater than or equal to the MDL.
N - The matrix spike recovery is not within control limtis.
U - The compound was analyzed for, but was not detected at or above the MDL/PQL.
E- The reported value is an estimated because of the presence of matrix interference.
(1) - 1996 Soil Screening Guidance.
(2) - Value based on the RBC for Mercuric Chloride.
NE - Not Established.
ft bgs - feet below ground surface.
mg/kg - milligrams per kilogram.

Bold indicates exceedance of EPA Region III Residential RBCs
Underline indicates exceedance of 2 x Average Detected Background